M-142i Multifunction Calibrator

Multifunction calibrator M-142i is calibrator determined mainly as standard of electric voltage and current in calibration laboratories. It can be used for calibration, testing and adjustment of voltmeters, ammeters and multimeters

Calibrator is simpler and low cost version of model M-142.

Basic parameters

Basic function of the calibrator is generating of the calibrated ***DC/AC voltage*** in the range from 0 µV to 1000 V and ***DC/AC current*** in the extended range from 0 to 30 A. Using a 50-turn coil the current range can be increased to 1000 A for clamp ammeters calibrations. The best accuracy of the calibrator on DC voltage ranges is 0.0010%, on AC voltage ranges 0.025%, on DC current ranges 0.013% and on AC current ranges 0.055%. Maximum frequency range is from 20 Hz to 100 kHz for harmonic output waveform. For calibrations of the thermometers and temperature regulators, the function of ***simulation of temperature sensors*** is determined. Calibrator is able to simulate all TC sensors of the R, S, B, J, T, E, K and N types as well. TC cold junction compensation is made by entering value from the keyboard.

User comfort

M-142 Calibrator is equipped with a number of other functions which make its use easier. Among them belong possibility to set relative deviations from the actual value of the selected output signal, displaying of the output signal uncertainty, internal calibration procedure and others. Concept of the calibrator's control and indication uses a large area luminescence display on which all necessary information is concentrated. The control is performed by selection from the menu. Moreover, frequently used functions have firmly assigned keys with direct control. As standard calibrator is equipped with RS-232 serial port making it possible to be controlled by personal computer.

The calibrator is compatible to MEATEST WinQbase/CALIBER calibration systems.

Specification

DC/AC voltage sin

Voltage range: 0 to 1000 V
Frequency voltage: 20 Hz to 100 kHz
Resolution: 6½ dig.
Frequency uncertainty: 0.005 %

Range	% of value + uV	% of value + uV	% of value + uV	% of value + uV
	DC	20 Hz - 10 kHz	10 kHz - 50 kHz	50 kHz - 100 kHz
0 mV - 20 mV	0.005 + 6	0.2 + 30	0.20 + 30	1.0 + 30
20mV - 200mV	0.0015 + 8	0.1 + 80	0.15 + 120	0.3 + 120
200 mV - 2 V	0.0012 + 10	0.018 + 100	0.05 + 200	0.2 + 1000
2 V - 20 V	0.0010 + 50	0.018 + 1000	0.05 + 6000	0.2 + 10000
20 V - 240 V	0.0015 + 500	0.018 + 10 m	- -	- -
240 V - 1000 V	0.005 + 20 000	0.03 + 200 m *	- -	- -

* Maximal frequency 1000 Hz

DC/AC current sin

Voltage range: 0 to 30 A
Frequency range: 20 Hz to 10 kHz
Resolution: 6½ dig.
Frequency uncertainty: 0.005 %

Range	% of value+ µA	% of value+ µA	% of value+ µA	% of value+ µA
	DC	20 Hz - 1 kHz	1 kHz - 5 kHz	5 kHz - 10 kHz
1 µA - 200 µA	0.05 + 0.02	0.15 + 0.02	0.30 +0.22	- -
200 µA - 2 mA	0.02 + 0.1	0.07 + 0.2	0.20 + 1	0.50 + 1.4
2 mA - 20 mA	0.01 + 0.6	0.05 + 1	0.20 + 10	0.50 + 14
20 mA - 200 mA	0.01 + 6	0.05 + 10	0.20 + 100	0.50 + 140
200 mA - 2 A	0.015 + 100	0.05 + 100	- -	- -
2 A - 20 A	0.02 + 2 000	0.10 + 6000	- -	- -
20 A - 30 A *	[0.02 + 0.003* (I-20)] + 2000	[0.1 + 0.003* (I-20)] + 6000	- -	- -

* I is set current value in A
Additional uncertainty when current coil Option 140-50 applied is 0.3 %. Output current is multiplied by factor 25 or 50.

TC temperature sensor simulation

Types R, S, B, J, T, E, K, N
Range of temperature -250 °C - 1820 °C
Temperature simulation accuracy 0.4 °C - 4.0 °C
Temperature scale ITS 90, PTS 68

R	Range [°C]	-50 – 0	0 - 400	400 – 1000	1000 – 1767
	Accuracy [°C]	2.0	1.5	0.9	1.0
S	Range [°C]	-50 - 0	0 - 250	250 – 1400	1400 – 1767
	Accuracy [°C]	1.8	1.5	1.0	1.0
B	Range [°C]	400 - 800	800 – 1000	1000 – 1500	1500 – 1820
	Accuracy [°C]	1.9	1.1	1.0	0.9
J	Range [°C]	-210 – -100	-100 – 150	150 – 700	700 – 1200
	Accuracy [°C]	0.6	0.4	0.3	0.4
T	Range [°C]	-200 – -100	-100 - 0	0 – 100	100 – 400
	Accuracy [°C]	0.6	0.4	0.3	0.4
E	Range [°C]	-250 - -100	-100 - 280	280 – 600	600 – 1000
	Accuracy [°C]	0.9	0.3	0.2	0.2
K	Range [°C]	-200 - -100	-100 – 480	480 – 1000	1000 – 1372
	Accuracy [°C]	0.7	0.4	0.4	0.5
N	Range [°C]	-200 - -100	-100 – 0	0 – 580	580 – 1300
	Accuracy [°C]	1.0	0.5	0.5	0.5

Accessories (included)

Power line cable	1 pc
Operation manual	1 pc
Option 10/11 : Test cable for 1000V - 20 A, black/red	2 pcs

Options (extra ordered)

Option 140-50	Current coil with 25/50 turns. Suitable for clamp A-meters testing up to 1000 A.	
Option 10	Test cable 20A/1000V (black)	
Option 11	Test cable 20A/1000V (red)	
Option 20	Test cable BNC/BNC 1m	
Cable RS-232	RS-232, 2m	
WinQbase	Database SW	
CALIBER	SW module for automatic calibration of multimeters.	