M-140i Multifunction calibrator

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Multifunction calibrator M-140i is calibrator, determined mainly as standard of electric quantities in calibration laboratories. It can be used for calibration of electrical quantity meters from the field of voltage and current.

Calibrator is simpler and low cost version of model M-140.

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 range from 0 to 20 A . Using a 50-turn coil the current range can be extended from 50 µA to 500 A. The best accuracy of the calibrator on DC voltage ranges is 0.0035%, on AC voltage ranges 0.03%, 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 of is made by entering value from the keyboard.

User comfort

M-140 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 can be included into MEATEST WinQbase/CALIBER software calibration systems.

Specification

DC/AC voltage

range	% of value + % of range	% of value + % of range	% of value + % of range	% of value + % of range
	DC	***20 Hz - 10 kHz***	***10 kHz - 50 kHz***	***50 kHz - 100 kHz***
0 mV - 20 mV **	0.05 + 0.0 + 10 µV	0.20 + 0.05 + 20 µV	0.20 + 0.10 + 20 µV	0.20 + 0.10 + 20 µV
20mV - 200mV	0.01 + 0.0 + 10 µV	0.1 + 0.03 + 20 µV	0.15 + 0.05 + 20 µV	0.15 + 0.05 + 20 µV
200 mV - 2 V	0.003 + 0.0008	0.025 + 0.005	0.05 + 0.01	0.05 + 0.01
2 V - 20 V	0.003 + 0.0005	0.025 + 0.005	0.05 + 0.03	0.05 + 0.03
20 V - 240 V	0.003 + 0.0005	0.025 + 0.010	--	--
240 V - 1000 V	0.005 + 0.005	0.03 + 0.02 *	--	--

DC/AC current

range	% of value + % of range	% of value + % of range	% of value + % of range	% of value + % of range
	DC	*20 Hz - 1 kHz*	*1 kHz - 5 kHz*	*5 kHz - 10 kHz*
1 µA - 200 µA	0.05 + 0.0 + 20 nA	0.15 + 0.0 + 20 nA	0.30 + 0.10 + 20 nA	--
200 µA - 2 mA	0.02 + 0.005	0.07 + 0.01	0.20 + 0.05	0.20 + 0.05
2 mA - 20 mA	0.01 + 0.003	0.05 + 0.005	0.20 + 0.05	0.20 + 0.05
20 mA - 200 mA	0.01 + 0.003	0.05 + 0.005	0.20 + 0.05	0.20 + 0.05
200 mA - 2 A	0.015 + 0.005	0.05 + 0.005	--	--
2 A - 20 A	0.02 + 0.010	0.10 + 0.03	--	--

When option 130-50 Current coil is used, add uncertainty 0.3 % of the set current to the value specified in the above table. Output current is multiplied by factor 50.

Frequency uncertainty: 0.005 %
Frequency resolution: 6 digit, min. step 0.001 Hz

Thermocouple sensor simulation

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

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)	
Cable RS-232	Cable RS-232, 2m	
WinQbase	Application SW for inventory of meters and	
CALIBER	SW module for automatic calibration of meters	