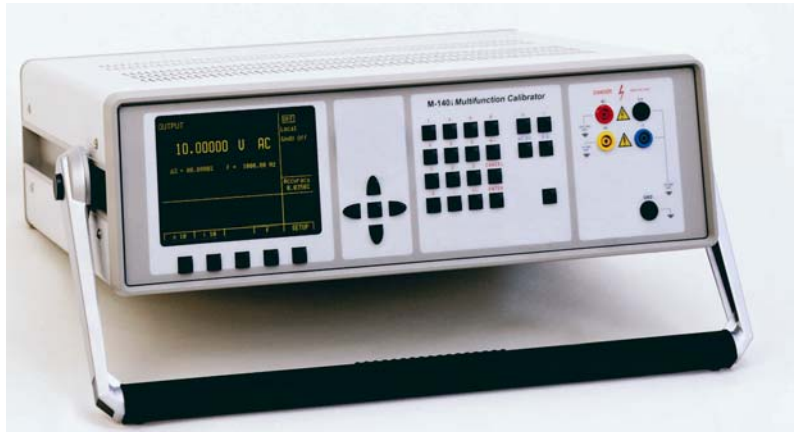


- ✓ DC and AC Voltages
- ✓ DC and AC Currents
- ✓ Thermocouples
- ✓ Data Port RS232
- ✓ High Precision
- ✓ Easy to use



Model OCM140-i is a bus compatible multifunction calibrator for precise generation of DC and AC voltages and currents. It is mainly designed for calibration by manufacturers of electronic instrumentation. It also finds its application at laboratories, design and service departments as well as at institutions that have to frequently calibrate their equipment in accordance with their internal quality certification system.

Appart of the DC and AC voltages and currents also thermocouples are simulated.

OCM-140 is a high accuracy and high stability instrument with easy operation, which can be used for the calibration of multimeters, analog instruments, panelmeters, clamp amperemeters, hand held calibrators, thermometers, data-loggers, X-Y recorders, etc.

VOLTAGE and CURRENT

The calibrator's main function is the generation of DC- and AC- voltage between 0 μ V and 1000 V and DC-

and AC- currents from 1 μ A to 20 A. The frequency range is programmable from 20Hz to 100kHz. By using an optional output booster clamp amperemeters can be calibrated from 50 μ A to 500A.

The best accuracy for DC voltage is 0.0035%, for AC voltage 0.03%, for DC current 0.013% and for AC current 0.055%.

THERMOCOUPLES

The calibrator can simulate DIN thermocouples R, S, B, J, K, T, E and N. The cold junction can be set with the keyboard directly as temperature in °C. The achieved accuracy is 0.4°C.

OPERATION

The instrument is operated via the keyboard at the front. The entry is supported by a large scale display with concentrated information.

Standard functions are integrated which simplify the operation during the calibration, such as entry of the absolut and relativ tolerances and error bands, calibration sequences,

grounding terminals and other. Some of the keys are directly assigned to frequently used functions. The instrument is equipped with RS232 communication data bus. By using the WinQbase installed in a PC, automatic testing and calibrating operations can be performed.

The soft manager *WinQbase* is optional available for operation under Windows and is suitable for data entry with automatic calibration mode.

EASY TO USE

There are additional functions available, which simplify the use of the instrument, such as programming the relativ error band, displaying the actual uncertainty of the generated signal, calibration procedures, etc.

The large scale LCD display shows the menu steps, the generated parameters as well as other additional information. Some of the keys are directly assigned to frequently used functions.

SPECIFICATIONS

The stated errors are defined for an ambient temperature of $23\text{ °C} \pm 2\text{ °C}$ and after a warm-up time of 60 minutes. They contain the long time stability, the temperature coefficient, the load characteristics, the mains stability and the tracibility to the national standards. The parameters are valid for 12 month.

DC und AC VOLTAGE

RANGE	% of value + % of range	% of value + % of range	% of value + % of range	% of value + % of range
	DC	20Hz – 10kHz	10kHz – 50kHz	50kHz – 100kHz
0 μ V - 20mV **	0.05+0.0+10 μ V	0.2+0.05+20 μ V	0.20+0.10+20 μ V	0.20+0.10+20 μ V
20mV - 200mV	0.01+0.0+10 μ V	0.1+0.03+20 μ V	0.15+0.05+20 μ V	0.15+0.05+20 μ V
200mV - 2V	0.003+0.0008	0.025+0.005	0.05+0.01	0.05+0.01
2V - 20V	0.003+0.0005	0.025+0.005	0.05+0.03	0.05+0.03
20V - 240V	0.003+0.0005	0.025+0.010	---	---
240V - 1000V	0.005+0.005	0.03+0.02 *	---	---

* for Frequencies < 1000 Hz

** DC voltage from 0 μ V, AC voltage from 1mV

DC and AC CURRENT

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

By using the 500A-coil (Option M140-50) the corresponding ranges have to be multiplied by 50. Additional inaccuracy of 0.3% from value has to be added to the specifications.

THERMOELEMENTE to IST 90 and PTS 68

R	Range (°C)	-50 ... 0	0 ... 400	400 ... 1000	1000 ... 1770
	Max. Error (°C)	3.2	2.1	1.4	1.7
S	Range (°C)	-50 ... 0	0 ... 250	250 ... 1400	1400 ... 1770
	Max. Error (°C)	2.7	2.1	1.7	2.0
B	Range (°C)	400 ... 800	800 ... 1000	1000 ... 1500	1500 ... 1820
	Max. Error (°C)	2.8	1.8	1.6	1.8
J	Range (°C)	-210 ... -100	-100 ... 150	150 ... 700	700 ... 1200
	Max. Error (°C)	0.9	0.5	0.6	0.7
T	Range (°C)	-200 ... -100	-100 ... 0	0 ... 100	100 ... 400
	Max. Error (°C)	0.9	0.5	0.4	0.4
E	Range (°C)	-250 ... -100	-100 ... 280	280 ... 600	600 ... 1000
	Max. Error (°C)	1.6	0.4	0.5	0.5
K	Range (°C)	-200 ... -100	-100 ... 480	480 ... 1000	1000 ... 1372
	Max. Error (°C)	1.0	0.6	0.7	0.8
N	Range (°C)	-200 ... -100	-100 ... 0	0 ... 580	580 ... 1300
	Max. Error (°C)	1.2	0.7	0.6	0.8

Further Specifications

Warm-up time for full specifications: 60 min.
 Working Temperature: $23 \pm 10\text{ °C}$
 Storing Temperature: 0 to 40 °C @ max. 80% r.F.
 Reference Temperature: $23\text{ °C} \pm 2\text{ °C}$
 Ambient Pressure: 860 to 1060 hPa
 Dimensions: 450 x 480 x 150 mm, weight 28 kg
 Supply: 115V/230V, $\pm 10\%$, 50-60Hz, 250 VA at the full load.