



Two-in-One

METRACAL | **MC**
MULTIMETER | CALIBRATOR

Universal Calibrator,
Simulator and Multimeter

Measuring and Calibration

Calibration and Measurement – Efficient and Time-saving thanks to Simulation

The new, extremely compact and cost-effective METRACAL MC multi-functional process calibrator is distinguished by its ruggedness, easy handling, outstanding functionality, accuracy and PC systems compatibility.

The METRACAL MC streamlines measuring, calibration and inspection work for chemical processes, in the lab and in R&D, for the production of electronic measuring transducers and when balancing and calibrating metrology components.

The integrated multimeter and calibrator make it possible for measuring technicians to simulate sensor conditions at the inputs of transducers, transmitters and buffer amplifiers, and at the same time to accurately measure the electrically isolated signal output, and to save results to memory on-site. The instrument is equipped with a bidirectional infrared interface for subsequent documentation of test results at a PC, and for the transmission of stored measured values. The measuring, simulation and calibrating functions are very comprehensive and include current (mA), voltage (mV, V), resistance (0 to 2000 Ω), pulse count and frequency (Hz), as well as temperature measurement and simulation of resistance temperature detectors (Pt100, Pt1000, Ni100, Ni 1000) and thermocouples (J, K, T, L, R, B, S, E, U, N) which can be displayed as desired in $^{\circ}\text{C}$ or $^{\circ}\text{F}$. The calibration and measuring functions can be scaled as electrical quantities, or as percentage values of an adjustable measuring span. In this way, error can be elegantly indicated as a percentage at the high contrast LCD without any additional tools.



Features

- Universal calibrator, simulator and multimeter for mA/mV...V/ $^{\circ}\text{C}$ (Pt100/1000, Ni100/1000, thermocouples J, L, T, U, K, E, S, R, B and N)/30 to 2000 Ω
- Dual mode: simultaneous simulation and measurement (U/I)
- Measurement and simulation in absolute terms and as percentages (scaled)
- Memory for measurement results: 2 MB
- Frequency and pulse run generator: 1 Hz to 2 kHz
- Ramp and staircase functions
- Interface and METRAWin[®] 90-2 calibration software
- Transmitter simulator (sink: 0 to 24 mA)
- DKD calibration certificate included
- Rugged, EMC compliant design
- Precision multimeter (V, A, Ω , F, Hz, $^{\circ}\text{C}/^{\circ}\text{F}$) 30,000 (60,000) digits and triple display
- TRMS AC measurement to 1 kHz

DKD



DQS

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Outstanding Functionality for On-Site Use

Process engineers can use the METRACAL MC as a calibrator and a multimeter simultaneously, e.g. in order to simulate sensor conditions at the input of a transmitter while measuring and saving the output signal at the same time.

METRACAL MC in action for chemical process engineering, in pharmaceuticals production, for gas transport and gas production, in refineries and for calibration service providers.

In electrical engineering and electronics:
Long-term testing of recording devices with precision ramps, linearity testing with step generator

Applications in systems and equipment:
Manufacturers of systems, ovens, maritime electronics, control boards, control centers etc., for adjusting and calibrating instruments and modules



Convenient operation with keys and cursor field



Multiple display, e.g. functions and output value or measurement and simulation values etc.



Illuminated display



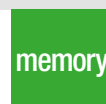
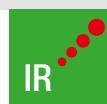
Separate fuse compartment



Separate battery compartment



Connector jack for external power pack



Calibrator

Function	Simulator Range	Basic Error (\pm)	Parameter
V $\overline{=}$	1 μ V to 15.000 V	0.05% + 0.02 mV	$R_L \geq 1 \text{ k}\Omega$
mA= source	1 μ A to 24.000 mA	0.05% + 2 μ A	$U_{int} \leq 27 \text{ V}$
mA= sink	1 μ A to 24.000 mA	0.05% + 2 μ A	$U_{ext} \leq 4 \text{ to } 27 \text{ V}$
Hz	1.0 Hz to 2 kHz	0.05% + 0.2 Hz	$\hat{U} 1 \text{ mV to } 15 \text{ V}$
Ω	5.0 to 2000.0 Ω	0.05% + 2 Ω	$I_S = 0.05 \text{ to } 5 \text{ mA}$
$^{\circ}\text{C}$ RTD	-200.0 to +850.0 $^{\circ}\text{C}$ -200.0 to +300.0 $^{\circ}\text{C}$ -60.0 to +180.0 $^{\circ}\text{C}$	0.1% + 0.2 to 0.5 K	Pt 100 Pt 1000 Ni 100, Ni 1000
$^{\circ}\text{C}$ Thermocouple	-270.0 to +1820 $^{\circ}\text{C}$ ¹	0.1% + 0.02 mV	Type K, J, T, B, E, R, N, S, L, U CJ internal or external

¹ Depending on sensor type

Multimeter

Function	Measuring Range	Basic Error (\pm) ¹	Parameter
V=	1 μ V to 300 V	0.05% ¹	$R_i = 20 \text{ M}\Omega$
V~	10 μ V to 300 V	0.2% ¹	$R_i = 9 \text{ M}\Omega$
mA=	10 nA to 300 mA	0.05% ¹	$\Delta V 150 \text{ mV}$
mA~	10 nA to 300 mA	0.5% ¹	$\Delta V 150 \text{ mV}$
Hz	1.00 Hz to 300.00 kHz	0.05%	
Ω	10 m Ω to 30.000 M Ω	0.07% ¹	$I_S 250 \mu\text{A} \div 1 \text{ mA}$
F	10 pF to 300.0 μ F	1%	$U_S \leq 3 \text{ V}$
$^{\circ}\text{C}$ RTD	-200.0 to +850.0 $^{\circ}\text{C}$ -200.0 to +300.0 $^{\circ}\text{C}$ -60.0 to +180.0 $^{\circ}\text{C}$	0.3% ¹	Pt 100 Pt 1000 Ni 100, Ni 1000
$^{\circ}\text{C}$ Thermocouple	-270,0 to +1820 $^{\circ}\text{C}$	0.2% ¹	Type K, J, T, B, E, R, N, S, L, U CJ internal or external

¹ ± 2 to 30 digits

Devices, Systems and Accessories



Description	Type	Article Number
Multimeter and process calibrator for measurement and simulation of electrical quantities	Metracal MC	M245A
Pt100 temperature sensor for surface and immersion measurements, -40 to +600 $^{\circ}\text{C}$	Z3409	GTZ3409000R0001
Pt1000 temperature sensor for measurement in gases and liquids, -50 to +220 $^{\circ}\text{C}$	TF220	Z102A
Pt100 oven sensor, -50 to +550 $^{\circ}\text{C}$	TF550	GTZ3408000R0001
Cordura belt pouch for METRAHIT multimeters	HitBag	Z115A
Imitation leather ever-ready case with cable compartment	F836	GTZ3302000R0001
Hard case for one instrument and accessories	HC20	Z113A
Hard case for two instruments and accessories	HC30	Z113A
Fuse for all mA current measuring ranges (10 ea.)	FF0,63 A/400 V	Z109M
Fuse for calibrator (10 ea.)	FF0,63 A/400 V	Z109M
Software Accessories		
Bidirectional interface adapter, IR-USB	USB X-TRA	Z216C
Calibration software for controlling the METRACAL MC and for analysis of calibration results	METRAwin90-2 ¹	Z211A
Current Clamp Transformers and Current Sensors as Accessories²		
Current clamp transformer, 1...200 A~, 1000:1, 48...65...400 Hz	WZ11A	Z208A
Current clamp transformers/sensors, frequency range: 45...65...500 Hz, clamp opening: 15 mm max. cable diameter	WZ12A...D	Z219A/B/...C
Current clamp sensors, 0.01...1000 A= (DC), A~ (AC)	CP30/CP330/CP1100/Z13B	Z201B, Z202B, Z203B, Z13B

¹ In preparation ² Refer to our Measuring Instruments and Testers catalog for more current clamp transformers and current sensors.



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