

# Portable Multi-Function Calibrator Model CEP6000

WIKA Data Sheet CT 83.01

## Applications

- Calibration service companies/service industry
- Instrument and control workshops
- Industry (Laboratories, workshops und production)
- Quality assurance

## Special Features

- Highest accuracy in class up to  $\pm 0.015\%$  of reading
- Source/Read thermocouples (13), RTDs (13), ohms, current, voltage, frequency and pulse trains (only source)
- Isolated mA/V read-back circuit for complete transmitter calibration
- Programming of setpoints to speed up calibration tasks
- Entry of custom RTD coefficients



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## Description

### General

The Multi-Function Calibrator CEP6000 provides a feature set unmatched in high accuracy, hand-held calibrators in its price range. The CEP6000 provides the functions and accuracy associated with fixed installation, laboratory instruments, and has everything needed for virtually any calibration task. Measure and source thermocouples, RTDs, current, voltage, frequency and source pulse trains. A communications port compatible with several pressure modules is provided, as is an isolated mA/V read-back circuit.

### Extensive applications

There is a wide range of application capabilities for the CEP6000. It can be used for calibration in industry (laboratory, production, workshops), in calibration service companies and service industry as well as for quality assurance.

### Intuitive Handling

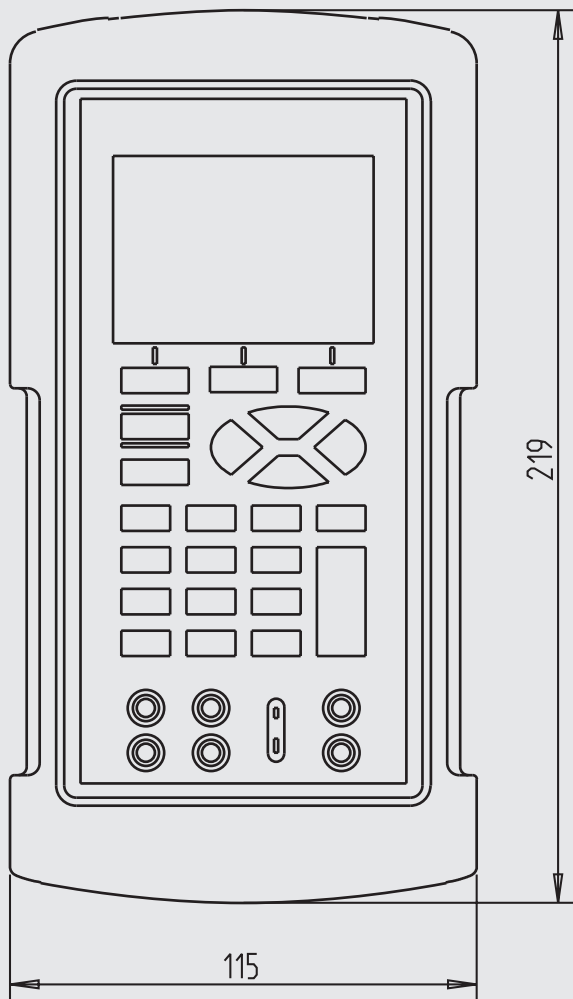
Arrow keys, direct numeric keypad entry, and three software-driven function buttons, plus a large backlit, menu-driven graphics display combine to provide a highly intuitive, simple yet powerful operator interface.

### Additional features

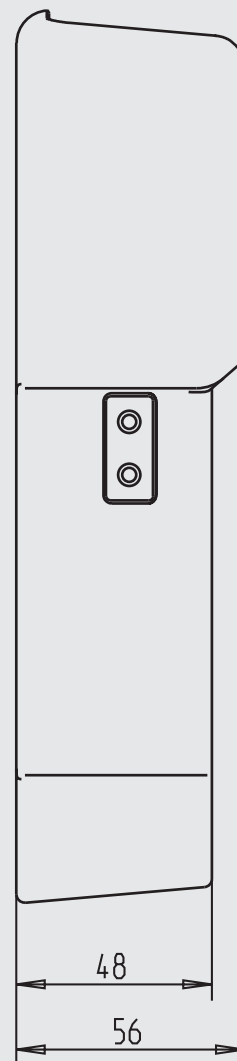
Built-in 250  $\Omega$  resistor for HART™ compatibility, 24 V loop power supply, compatibility with smart transmitters and PLCs, full fuseless protection, and a serial communications port for full control with ASCII commands, are just some of the additional features that make the CEP6000 the single, most indispensable tool available for virtually any calibration task. The CEP6000 is supplied in a rugged rubber boot.

## Dimensions in mm

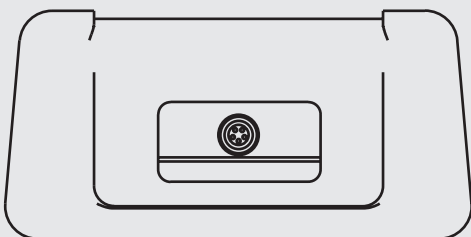
Front view



Side view



Top view



**Specifications****Model CEP6000**

Display	2-part with 10 places and character size 8 mm
Input and output	
Resistance thermometers	Pt100 (385, 3926, 3916), Pt200, Pt500, Pt1000, Ni120, Cu10, Cu50, Cu100, YSI400, Pt10, Pt50
Thermocouples	Type J, K, T, E, R, S, B, L, U, N, C, XK, BP
Voltage signal	0 ... 30 V DC
Current signal	0 ... 24 mA
Resistance	0 ... 400 $\Omega$ and 400 ... 4000 $\Omega$
Frequency / Pulse	2 CPM ... 10.00 kHz
Loop supply voltage	24 V DC
RTD frequency response	5 ms; works with all pulsed transmitter
Frequency	1 ... 20 V selectable amplitude
Pulse	1 ... 20 V selectable amplitude (source only)
Automatic step / ramp function	available
Direct entry of custom RTD coefficients	available
Setpoint setting	for each output function
Built-in resistor for HART™ Communications	available
Interface	RS-232, USB with optional serial adapter
Power supply	4 AA alkaline batteries, 6 V DC
■ Battery life	20 h
■ Low battery indicator	displayed icon near the end of battery life
EMC	EN 50 082-1 from 1992 and EN 55 022 from 1994 class B
Permissible	
■ Operating temperature	-10 ... +50 °C
■ Storage Temperature	-20 ... +70 °C
■ Stability	0.005 % of reading/°C outside of 23 °C $\pm$ 5 °C
Case	
Ingress protection	IP 52
Dimensions	220.9 x 106.6 x 58.4 mm
Weight	approx. 863 g

## Thermocouples output and input

TC type	Range (°C)		Absolute uncertainty ± (°C)	
	Minimum	Maximum	MIN	MAX
TC mV	-10.000 mV	+75.000 mV	0.02 % of reading ± 10 µV	
B	600	1820	1.2	1.5
C	0	2316	0.6	2.3
E	-250	+1000	0.2	0.6
J	-210	+1200	0.2	0.4
K	-200	+1372	0.3	0.6
L	-200	+900	0.2	0.25
N	-200	+1300	0.4	0.8
R	0	1767	1.2	1.2
S	0	1767	1.2	1.2
T	-250	+400	0.2	0.6
U	-200	+600	0.25	0.5
XK	-200	+800	0.2	0.2
BP	0	2500	0.9	2.3

## RTD output and input

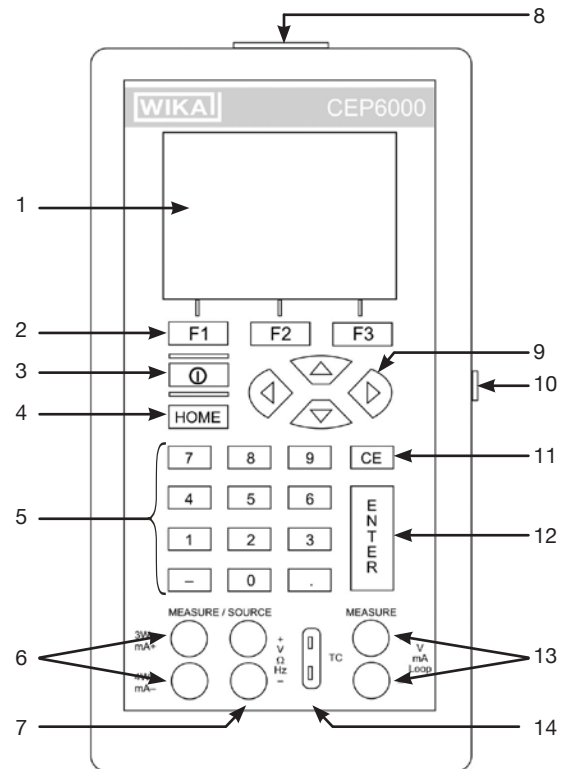
RTD type	Range (°C)		Absolute uncertainty ± (°C)	
	Minimum	Maximum	MIN	MAX
Pt 385, 100 Ω	-200.0	+800.0	0.10	0.29
Pt 3926, 100 Ω	-200.0	+630.0	0.10	0.24
Pt 3916, 100 Ω	-200.0	+630.0	0.08	0.25
Pt 385, 200 Ω	-200.0	+630.0	0.40	0.66
Pt 385, 500 Ω	-200.0	+630.0	0.18	0.34
Pt 385, 1000 Ω	-200.0	+630.0	0.10	0.25
Pt 385, 10 Ω	-200.0	+800.0	0.78	1.19
Pt 385, 50 Ω	-200.0	+800.0	0.18	0.39
Ni 120, 120 Ω	-80.0	+260.0	0.06	0.06
Cu 10	-100.0	+260.0	0.82	0.82
Cu 50	-180.0	+200.0	0.20	0.20
Cu 100	-180.0	+200.0	0.13	0.13
YSI 400	15.0	50.0	0.05	0.05

## Standard signals output and input

	Range	Absolute uncertainty (of reading)	
Current signal			
■ Output	0 ... 24.000 mA	0.015 % ± 2 µA	
■ Input	0 ... 24.000 mA	0.015 % ± 2 µA	
Voltage signals			
■ Output	0 ... 20.000 V DC	0.015 % ± 2 mV	
■ Input	0 ... 30.000 V DC (isolated)	0.015 % ± 2 mV	
	0 ... 20.000 V DC (non-isolated)	0.015 % ± 2 mV	
Resistance			Stimulus Strom
■ Output	5.0 ... 400.0 Ω	0.015 % ± 0.1 Ω	0.1 ... 0.5 mA
	5.0 ... 400.0 Ω	0.015 % ± 0.03 Ω	0.5 ... 3.0 mA
	400.0 ... 1500.0 Ω	0.015 % ± 0.3 Ω	0.05 ... 0.8 mA
	1500.0 ... 4000.0 Ω	0.015 % ± 0.3 Ω	0.05 ... 0.4 mA
■ Input	0 ... 400.0 Ω	0.015 % ± 0.03 Ω	
	400.0 ... 4000.0 Ω	0.015 % ± 0.3 Ω	
Frequency			
■ Output	2 ... 600.0 CPM	0.05	
	1 ... 1000.0 Hz	0.05	
	1 ... 10.00 kHz	0.125	
■ Input	2 ... 600.0 CPM	0.05	± 0.1 CPM
	1 ... 1000.0 Hz	0.05	± 0.1 Hz
	1 ... 10.00 kHz	0.05	± 0.01 kHz
Pulse			
■ Output	1 ... 30,000 counts		
	2 CPM ... 10 kHz		

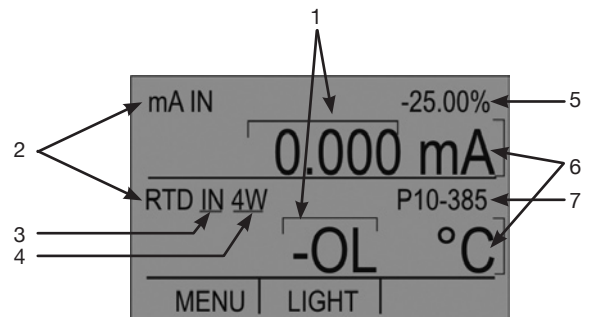
## Overview keypad of CEP6000

- 1) Display
- 2) F1, F2, F3, function keys, used to operate the menu bar at the bottom of the calibrator display
- 3) On/Off
- 4) HOME, returns to home menu
- 5) Numeric keys
- 6) MEASURE/SOURCE, mA terminals, 3W, 4W
- 7) MEASURE/SOURCE, V, RTD 2W, Hz
- 8) Connector for external pressure module
- 9) User arrow, select which decade to be changed in output value; increase, decrease or ramp output value
- 10) Interface, Serial port
- 11) Clear Entry, allows the user to clear a value
- 12) Enter key
- 13) Input terminals for measuring current, voltage and supplying mA terminals loop power
- 14) Thermocouple Input/Output



## Overview of the display

- 1) Numeric displays
- 2) Primary parameters
- 3) Input/Output control
- 4) Additional settings
- 5) Span indicator
- 6) Units
- 7) Sensor types



## Scope of supply

- Portable Multi-Function Calibrator CEP6000
- Operation instructions
- Test leads, 3 sets (red/black)
- Calibration certificate 3.1 per DIN EN 10 204
- 4 AA NiMH batteries
- Protective rubber boot

## Option

- DKD calibration certificate

## Accessories

- Rechargeable battery kit, incl. 4 NiMH batteries, quick charger, power cord, adapters
- Battery set, 4 NiMH batteries
- AC mains adapter / charger
- RS-232 communications cable
- USB serial converter
- Thermocouple wire kit J,K,T,E with mini plugs
- Thermocouple wire kit R/S, N, B with mini plugs
- Low EMF beryllium copper test leads (red)
- Low EMF beryllium copper test leads (black)
- Test leads, 1 set (red/black)

## Products and Services within our Calibration Technology Program

- |  |  |
|--|--|
| ■ DKD calibration services for pressure                              | ■ DKD calibration services for temperature                         |
| ■ Repair of all makes of calibration units                           | ■ Temperature dry-well calibrators                                 |
| ■ Portable pressure measuring devices for test and calibration tasks | ■ Calibration baths and furnaces                                   |
| ■ Precision pressure measuring units and pressure controllers        | ■ Temperature measuring instruments for test and calibrating tasks |
| ■ Primary standards for pressure                                     | ■ Precision thermometers   |
| ■ Testing technology system solutions                                | ■ Primary standards for temperature                                |
|  | ■ Consulting and seminars  |

Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.

