

## Documenting multi-function calibrator Model CEP6100

WIKA data sheet CT 83.51

### Applications

- Calibration service companies and service industry
- Measurement and control laboratories
- Industry (laboratory, workshop and production)
- Quality assurance

### Special features

- Calibrating and storing of up to 21 test points from up to 50 different test items
- Highest accuracy in class up to  $\pm 0.01\%$  of reading
- Measurement and simulation of thermocouples (13), resistance thermometers (13), resistance, current, voltage, frequency, pressure and pulse trains
- Isolated mA/V measuring channel for complete transmitter calibration (measuring and simulation at the same time)
- Entry of customer-specific resistance thermometer coefficients

### Description

#### General information

The model CEP6100 documenting multi-function calibrator provides unparalleled features in respect of other high-accuracy calibrators. It offers the functions and accuracy associated with stationary laboratory equipment, and has everything needed for virtually any calibration task.

Measuring and simulation of thermocouple, resistance thermometer, resistance, current, voltage, frequency, pressure and the generation of pulse trains is supported by the CEP6100. External pressure modules can be connected via a port. The built-in isolated mA/V measuring channel enables the complete calibration of transmitters to be carried out.

#### Documenting function

What makes this versatile calibrator best in class is the ability to fully document any calibration easily. With the CalLOG software, calibration certificates can be generated for the test items at the PC after calibration in the field.



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#### Extensive applications

Thanks to its multi-functionality, the CEP6100 offers a wide range of application possibilities. It can be used for calibration in industry (laboratories, production, workshops), in calibration service companies and in quality assurance.

#### Intuitive operation

Arrow keys, direct keyboard input and three software-driven function keys, plus a large backlit, menu-driven and graphical display have been combined into a intuitive, simple, yet powerful, user interface.

**Additional features**

An integrated 250  $\Omega$  resistor for HART™ compatibility, 24 V voltage supply, compatibility with smart transmitters and PLC's, full fuseless protection and a serial interface for full control with ASCII commands are just some of the additional features that make the CEP6100 an indispensable calibration tool. The CEP6100 is delivered with a robust rubber boot which protects it against shocks.

**Complete service case**

For service and maintenance applications, a fully equipped case system is available.

**Certified accuracy**

The accuracy of the CEP6100 is certified by a factory calibration certificate which accompanies the instrument. On request, we can provide a DKD/DAkkS calibration certificate for this instrument.

## Specifications

### Model CEP6100

<b>Basic instrument</b>	
<b>Indication</b>	
Display	2-part with 10 digits and character size 8 mm
<b>Input and output</b>	
Number and type	6 banana plug inputs for electrical parameters, resistance thermometers and thermocouples
Resistance thermometer (RTD)	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	Input: DC 30 V Output: DC 20 V
Current signal	Input: DC 24 mA Output: DC 24 mA
Resistance	0 ... 4,000 $\Omega$
Frequency/Pulse	2 CPM ... 10 kHz
Pressure	dependent on pressure module
Voltage supply	DC 24 V
<b>Special features</b>	
Resistance thermometers frequency response	5 ms; works with all pulsed transmitters
Customer-specific resistance thermometers	Entry of customer-specific resistance thermometer coefficients
Functions	Automatic step function
Resistance	HART® resistor 250 $\Omega$ (activatable)
Calibration function	Storing of up to 21 test points from up to 50 test items in the calibrator and subsequent evaluation via software
<b>Communication</b>	
Interface	RS-232, USB with optional serial adapter
<b>Voltage supply</b>	
Power supply	4 x 1.5 V AA batteries
Battery life	20 hours
Battery status indication	Icon in display for low battery level
<b>Permissible ambient conditions</b>	
Operating temperature	-10 ... +50 °C
Storage temperature	-20 ... +60 °C
Relative humidity	0 ... 90 % r. h. (non-condensing)
Temperature coefficient	$\pm 0.003$ % FS/°C, outside of 23 °C $\pm 5$ °C

**Case**

Material	Plastic (with robust protective rubber boot)
Ingress protection	IP 52
Dimensions	see technical drawing
Weight	approx. 860 g

**CE conformity and certificates****CE conformity**

EMC directive	2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (portable test and measuring equipment)
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**Certificate**

Calibration	Standard: 3.1 calibration certificate per DIN EN 10204 Option: DKD/DAkkS calibration certificate
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Approvals and certificates, see website

Input and output signals	Measuring range	Accuracy (of reading)
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**Current signal**

Output	DC 0.000 ... 24.000 mA	0.01 % ±2 µA
Input	DC 0.000 ... 24.000 mA (isolated)	0.01 % ±2 µA
	DC 0.000 ... 24.000 mA (not isolated)	0.01 % ±2 µA

**Voltage signal**

Output	DC 0.000 ... 20.000 V	0.01 % ±2 mV
Input	DC 0.000 ... 30.000 V (isolated)	0.01 % ±2 mV
	DC 0.000 ... 20.000 V (not isolated)	0.01 % ±2 mV

**Resistance**

			Stimulus current
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
	401 ... 1,500 Ω	0.015 % ±0.3 Ω	0.05 ... 0.8 mA
	1,501 ... 4,000 Ω	0.015 % ±0.3 Ω	0.05 ... 0.4 mA
Input	0.00 ... 400.00 Ω	0.015 % ±0.03 Ω	
	400.1 ... 4,000.0 Ω	0.015 % ±0.3 Ω	

**Frequency <sup>1)</sup>**

Output	2.0 ... 600.0 CPM <sup>2)</sup>	0.05 %
	1.0 ... 1,000.0 Hz	0.05 %
	1.0 ... 10.0 kHz	0.25 %
Input	2.0 ... 600.0 CPM <sup>2)</sup>	0.05 % ±0.1 CPM <sup>2)</sup>
	1.0 ... 1,000.0 Hz	0.05 % ±0.1 Hz
	1.00 ... 10.00 kHz	0.05 % ±0.01 kHz

**Pulse <sup>1)</sup>**

Output	1 ... 30,000 counts
	2.0 CPM <sup>2)</sup> ... 10.0 kHz

**Pressure**

Input	dependent on pressure module
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1) Selectable amplitude of 1 ... 20 V based on a square wave

2) Counts per minute

Input and output signals	Measuring range	Accuracy (all errors incl.)	
<b>Thermocouple voltage signals</b>	-10.000 ... +75.000 mV	0.015 % of reading ±10 µV	
<b>Thermocouples</b>		Without cold junction compensation	With cold junction compensation <sup>3)</sup>
Type J	-210.0 ... -150.0 °C	0.4 °C	0.6 °C
	-149.9 ... +1,200.0 °C	0.2 °C	0.4 °C
Type K	-200.0 ... -100.0 °C	0.5 °C	0.7 °C
	-99.9 ... +600.0 °C	0.2 °C	0.4 °C
	600.1 ... 1,000.0 °C	0.3 °C	0.5 °C
	1,000.1 ... 1,372.0 °C	0.4 °C	0.6 °C
Type T	-250.0 ... -200.0 °C	1.5 °C	1.7 °C
	-199.9 ... 0.0 °C	0.5 °C	0.7 °C
	0.1 ... 400.0 °C	0.2 °C	0.4 °C
Type E	-250.0 ... -200.0 °C	1.0 °C	1.2 °C
	-199.9 ... -100.0 °C	0.3 °C	0.5 °C
	-99.9 ... +1,000.0 °C	0.2 °C	0.4 °C
Type R	0 ... 200 °C	1.7 °C	1.9 °C
	201 ... 1,767 °C	1.0 °C	1.2 °C
Type S	0 ... 200 °C	1.7 °C	1.9 °C
	201 ... 1,767 °C	1.1 °C	1.3 °C
Type B	600 ... 800 °C	1.5 °C	1.7 °C
	801 ... 1,000 °C	1.2 °C	1.4 °C
	1,001 ... 1,820 °C	1.0 °C	1.2 °C
Type C	0.0 ... 1,000.0 °C	0.5 °C	0.7 °C
	1,000.1 ... 2,316.0 °C	1.5 °C	1.7 °C
Type XK	-200.0 ... +800.0 °C	0.2 °C	0.4 °C
Type BP	0.0 ... 800.0 °C	1.9 °C	2.1 °C
	800.1 ... 2,500.0 °C	0.6 °C	0.8 °C
Type L	-200.0 ... +900.0 °C	0.2 °C	0.4 °C
Type U	-200.0 ... 0.0 °C	0.4 °C	0.6 °C
	0.1 ... 600.0 °C	0.2 °C	0.4 °C
Type N	-200.0 ... -100.0 °C	0.8 °C	1.0 °C
	-99.9 ... +1,300.0 °C	0.3 °C	0.5 °C

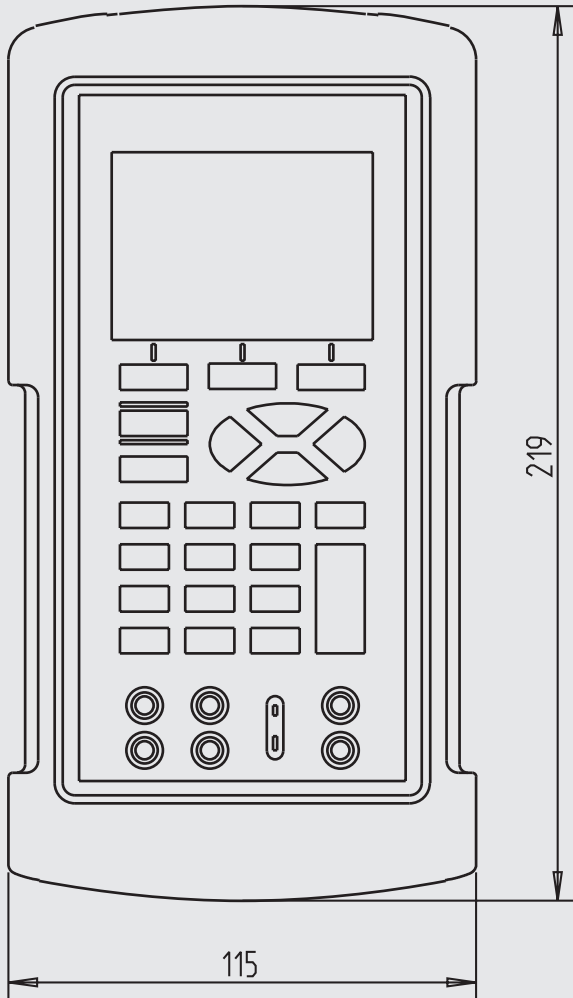
3) Error of cold junction compensation outside of 23 °C ±5 °C is 0.05 °C/°C

Input and output signals	Measuring range	Accuracy (all errors incl.)
<b>Resistance thermometer 4)</b>		
Pt100 (385)	-200.0 ... -80.0 °C	0.08 °C
	-79.9 ... 0.0 °C	0.13 °C
	0.1 ... 100.0 °C	0.14 °C
	100.1 ... 300.0 °C	0.15 °C
	300.1 ... 400.0 °C	0.18 °C
	400.1 ... 630.0 °C	0.21 °C
	630.1 ... 800.0 °C	0.26 °C
Pt100 (3926)	-200.0 ... -80.0 °C	0.07 °C
	-79.9 ... 0.0 °C	0.10 °C
	0.1 ... 100.0 °C	0.11 °C
	100.1 ... 300.0 °C	0.13 °C
	300.1 ... 400.0 °C	0.17 °C
	400.1 ... 630.0 °C	0.19 °C
Pt100 (3916)	-200.0 ... -80.0 °C	0.07 °C
	-79.9 ... 0.0 °C	0.10 °C
	0.1 ... 100.0 °C	0.11 °C
	100.1 ... 260.0 °C	0.13 °C
	260.1 ... 400.0 °C	0.17 °C
Pt200 (385)	-200.0 ... -80.0 °C	0.35 °C
	-79.9 ... 0.0 °C	0.40 °C
	0.1 ... 100.0 °C	0.42 °C
	100.1 ... 300.0 °C	0.45 °C
	300.1 ... 400.0 °C	0.52 °C
Pt500 (385)	-200.0 ... -80.0 °C	0.15 °C
	-79.9 ... 0.0 °C	0.18 °C
	0.1 ... 100.0 °C	0.19 °C
	100.1 ... 260.0 °C	0.21 °C
	260.1 ... 300.0 °C	0.25 °C
	300.1 ... 400.0 °C	0.26 °C
	400.1 ... 630.0 °C	0.29 °C
Pt1000 (385)	-200.0 ... -80.0 °C	0.10 °C
	-79.9 ... 0.0 °C	0.12 °C
	0.1 ... 260.0 °C	0.14 °C
	260.1 ... 300.0 °C	0.17 °C
	300.1 ... 400.0 °C	0.19 °C
	400.1 ... 630.0 °C	0.22 °C
Pt10 (385)	-200.0 ... -80.0 °C	0.76 °C
	-79.9 ... 0.0 °C	0.78 °C
	0.1 ... 100.0 °C	0.83 °C
	100.1 ... 300.0 °C	0.92 °C
	300.1 ... 400.0 °C	0.98 °C
	400.1 ... 630.0 °C	1.05 °C
	630.1 ... 800.0 °C	1.16 °C
Pt50 (385)	-200.0 ... -80.0 °C	0.16 °C
	-79.9 ... +300.0 °C	0.23 °C
	300.1 ... 400.0 °C	0.27 °C
	400.1 ... 630.0 °C	0.30 °C
	630.1 ... 800.0 °C	0.36 °C
Ni120	-80.0 ... +260.0 °C	0.06 °C
Cu10	-100.0 ... +260.0 °C	0.77 °C
Cu50	-180.0 ... +200.0 °C	0.16 °C
Cu100	-180.0 ... +200.0 °C	0.08 °C
YSI400	15.0 ... 50.0 °C	0.05 °C

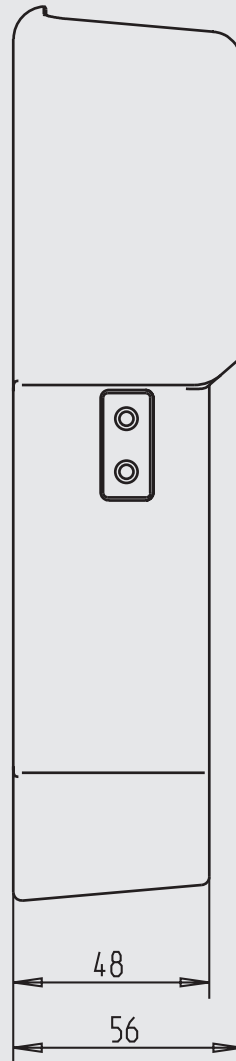
4) Accuracy based on a 4-wire connection

**Dimensions in mm**

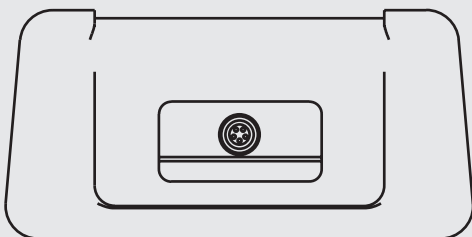
**Front view**



**Side view**

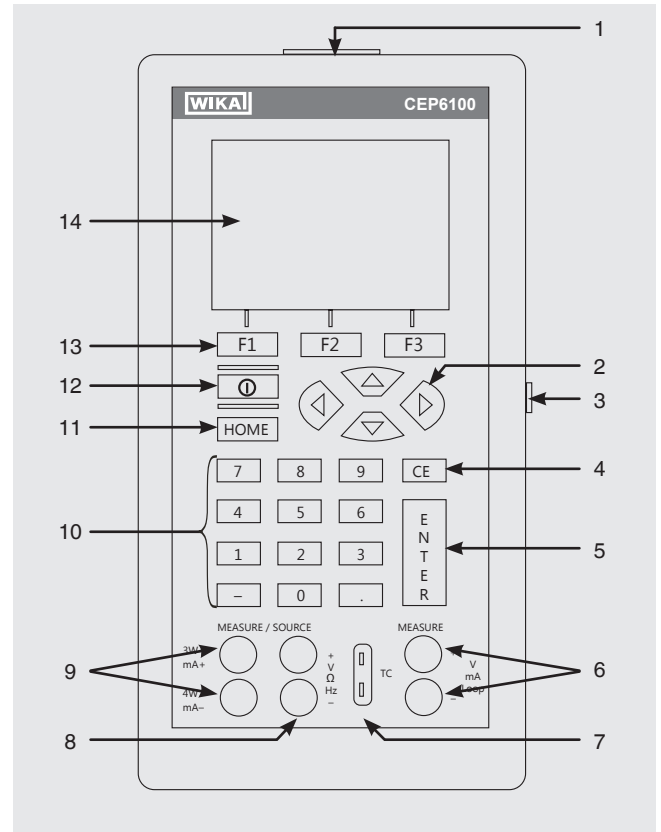


**Top view**



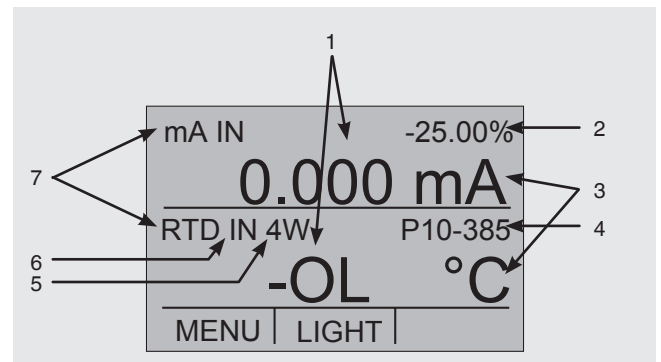
## Front foil

- 1) Connection for external pressure module
- 2) Modification of individual digits of the output value; increase, decrease or ramp output value
- 3) Serial interface
- 4) Clear the input value
- 5) ENTER
- 6) (Isolated) Current and voltage input as well as for output of DC 24 V supply voltage
- 7) Thermocouple input/output
- 8) Voltage, resistance thermometers (2-wire), frequency, pulse, input/output
- 9) Current, resistance thermometers (3-wire, 4-wire), input/output
- 10) Numeric keys
- 11) HOME, returns to main menu
- 12) ON/OFF
- 13) Function keys, used to operate the menu bar at the bottom of the calibrator display
- 14) Display



## Overview of the display

- 1) Numeric display
- 2) Display of the span
- 3) Units
- 4) Sensor type
- 5) Additional settings
- 6) Input/output display
- 7) Primary parameters



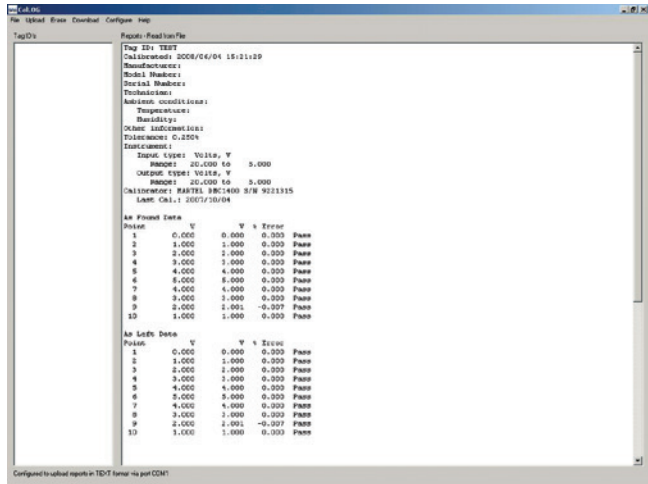
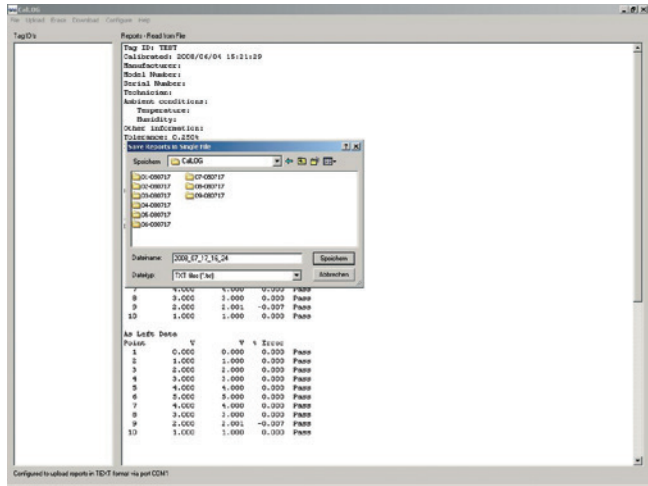
## Calibration function

Adding documentation to your normal workflow is easy. Before you start a calibration, simply choose **“DOCUMENT”** from the calibrator operating menu. Then choose the calibrator input and output types. A neat feature is that you can choose input or output or both input and output. That allows you to calibrate and document virtually anything. Connect the calibrator to the instrument you are testing and use it as you normally would. After each calibration point, just press the **“SAVE”** key; as soon as you have finished the calibration, press the **“DONE”** key.

The calibrator will then prompt you to enter tag and instrument data, technician ID, ambient conditions and so on. Save this information and you have completed the **“AS FOUND”** part of your test. You can also choose to have the calibrator evaluate the **“PASS/FAIL”** status of the instrument by supplying an allowable error tolerance in terms of the full scale performance of the instrument. If the instrument passes, you can choose to copy the **“AS FOUND”** data to the **“AS LEFT”** data, and you have completely documented your calibration.

When the day's work is over, you can save the data to a PC. The CalLOG software, which is included in the scope of supply, allows to document and generate calibration certificates.

CalLOG will even organise your calibrations in subdirectories to keep your data in easy to find and retrieve status. The CEP6100 is all you need to have a complete, organised and paperless calibration system.





## Scope of delivery

- Documenting multi-function calibrator model CEP6100
- Operating instructions
- Test cable, three sets (red/black)
- 3.1 calibration certificate per DIN EN 10204
- Four AA batteries
- Protective rubber boot
- RS-232 interface cable
- USB serial adapter
- Quick Start Guide
- CalLOG Software

## Option

- DKD/DAkkS certified accuracy

## Accessories

### Voltage supply

- Battery charger set, including four rechargeable AA batteries, quick charger, power cord, adapters
- Battery set, consisting of four rechargeable AA batteries
- AC mains adapter/charger

### Interface

- RS-232 interface cable
- USB serial adapter

### Test cables

- Thermocouple wire kit J, K, T, E with plugs
- Thermocouple wire kit R/S, N, B with plugs
- Beryllium copper cable with low thermoelectric voltage (red)
- Beryllium copper cable with low thermoelectric voltage (black)
- Test cable, one set (red/black)

### Other

- Portable certificate printer, incl. charger, communications cable, roll of paper
- Service case

## Ordering information

Model / Transport case / Calibration / Additional order information



Complete service case model CEP6100 and optional accessories