

OBSOLETE

Operating instructions
操作说明书

Hand-held multi-function calibrator, model CEP6000

GB

CEP6000 型手持多功能校准仪

CN



Hand-held multi-function calibrator, model CEP6000

CEP6000 型手持多功能校准仪

WIKAL

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Prior to starting any work, read the operating instructions!
Keep for later use!

在开始任何工作之前，请阅读本操作说明书！
请妥善保存，以备将来使用！

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Declarations of conformity can be found online at www.wika.com.

1. General information

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1. General information

- The model CEP6000 hand-held multi-function calibrator described in these operating instructions has been manufactured using state-of-the-art technology. All components are subject to stringent quality and environmental criteria during production. Our management systems are certified to ISO 9001 and ISO 14001.
- These operating instructions contain important information on handling the instrument. Working safely requires that all safety instructions and work instructions are observed.
- Observe the relevant local accident prevention regulations and general safety regulations for the instrument's range of use.
- The operating instructions are part of the product and must be kept in the immediate vicinity of the instrument and readily accessible to skilled personnel at any time. Pass the operating instructions onto the next operator or owner of the instrument.
- Skilled personnel must have carefully read and understood the operating instructions prior to beginning any work.
- The general terms and conditions contained in the sales documentation shall apply.
- Subject to technical modifications.
- Factory calibrations / DKD/DAkkS calibrations are carried out in accordance with international standards.
- Further information:
 - Internet address: www.wika.com.cn / www.wika.com
 - Relevant data sheet: CT 83.01
 - Application consultant: Tel.: +49 9372 132-5049
Fax: +49 9372 132-8005049
CTServiceteam@wika.com

1. General information / 2. Short overview

Abbreviations, definitions

RTD	Resistance thermometer
TC	Thermocouple
2W	2-wire measurement Two test cables are used for the voltage supply. The measurement signal also provides the supply current.
3W	3-wire measurement Two test cables are used for the voltage supply. One test cable is used for the measurement signal.
4W	4-wire measurement Two test cables are used for the voltage supply. Two test cables are used for the measurement signal.
CJC	Cold junction compensation

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2. Short overview

2.1 Overview



- ① Display
- ② Keypad
- ③ Connections

MM/YYYY country code based on 10/2014 GB/CN

2. Short overview

2.2 Description

The model CEP6000 hand-held multi-function calibrator is a battery-operated hand-held instrument which can measure or simulate electrical parameters.

The model CEP6000 works with different thermocouples and resistance thermometers, among others.

Very high accuracy and diverse special functions make the instrument to a user-friendly and highly flexible calibration instrument.

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2.3 Scope of delivery

- Hand-held multi-function calibrator model CEP6000
- Operating instructions
- Test cables, three sets (red/black)
- 3.1 calibration certificate per DIN EN 10204
- Four AA batteries
- Protective rubber boot
- Quick Start Guide

Cross-check scope of delivery with delivery note.

3. Safety

3. Safety

3.1 Explanation of symbols

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WARNING!

... indicates a potentially dangerous situation that can result in serious injury or death, if not avoided.



CAUTION!

... indicates a potentially dangerous situation that can result in light injuries or damage to equipment or the environment, if not avoided.



DANGER!

... identifies hazards caused by electrical power. Should the safety instructions not be observed, there is a risk of serious or fatal injury.



Information

... points out useful tips, recommendations and information for efficient and trouble-free operation.

3.2 Intended use

The model CEP6000 hand-held multi-function calibrator is a battery-operated hand-held instrument which can measure and output/simulate current, voltage, resistance, RTD's, TC's, frequency and pulses.

In addition, external pressure sensors/pressure modules can be connected which enable pressure to measure with this calibrator. The WIKA model CPT6600 pressure modules and the Mensor model CPT6100/CPT6180 precision pressure sensors are compatible here.

This instrument is not permitted to be used in hazardous areas!

The instrument has been designed and built solely for the intended use described here, and may only be used accordingly.

The technical specifications contained in these operating instructions must be observed. Improper handling or operation of the instrument outside of its technical specifications

3. Safety

requires the instrument to be taken out of service immediately and inspected by an authorised WIKA service engineer.

Handle electronic precision measuring instruments with the required care (protect from humidity, impacts, strong magnetic fields, static electricity and extreme temperatures, do not insert any objects into the instrument or its openings). Plugs and sockets must be protected from contamination.

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The manufacturer shall not be liable for claims of any type based on operation contrary to the intended use.

3.3 Improper use



WARNING!

Injuries through improper use

Improper use of the instrument can lead to hazardous situations and injuries.

- ▶ Refrain from unauthorised modifications to the instrument.
- ▶ Do not use the instrument within hazardous areas.
- ▶ Only use accessories provided by WIKA.

Any use beyond or different to the intended use is considered as improper use.

Do not use this instrument in safety or emergency stop devices.

3.4 Responsibility of the operator

The instrument is used in the industrial sector. The operator is therefore responsible for legal obligations regarding safety at work.

The safety instructions within these operating instructions, as well as the safety, accident prevention and environmental protection regulations for the application area must be maintained.

3. Safety

3.5 Personnel qualification

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WARNING!

Risk of injury should qualification be insufficient

Improper handling can result in considerable injury and damage to equipment.

- ▶ The activities described in these operating instructions may only be carried out by skilled personnel who have the qualifications described below.

Skilled personnel

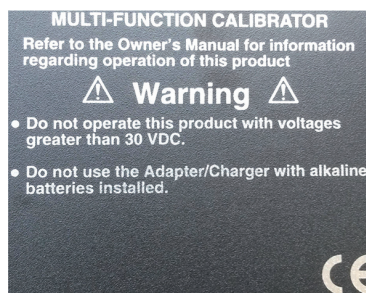
Skilled personnel, authorised by the operator, are understood to be personnel who, based on their technical training, knowledge of measurement and control technology and on their experience and knowledge of country-specific regulations, current standards and directives, are capable of carrying out the work described and independently recognising potential hazards.

Special operating conditions require further appropriate knowledge, e.g. of aggressive media.

3.6 Labelling, safety marks

Product label

The product label is located on the side of the instrument beneath the protective rubber boot.



- ① Binary code
- ② Serial no.

MM/YYYY country code based on 10/2014 GB/CN

3. Safety / 4. Design and function

Symbols



Before commissioning the instrument, ensure you read the operating instructions!

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Instruments bearing this mark comply with the relevant European directives.



This marking on the instruments indicates that they must not be disposed of in domestic waste. The disposal is carried out by return to the manufacturer or by the corresponding municipal authorities (see EU directive 2002/96/EC).

4. Design and function

The model CEP6000 hand-held multi-function calibrator is a battery-operated hand-held instrument which can measure and output/simulate current, voltage, resistance, RTD's, TC's, frequency and pulses.

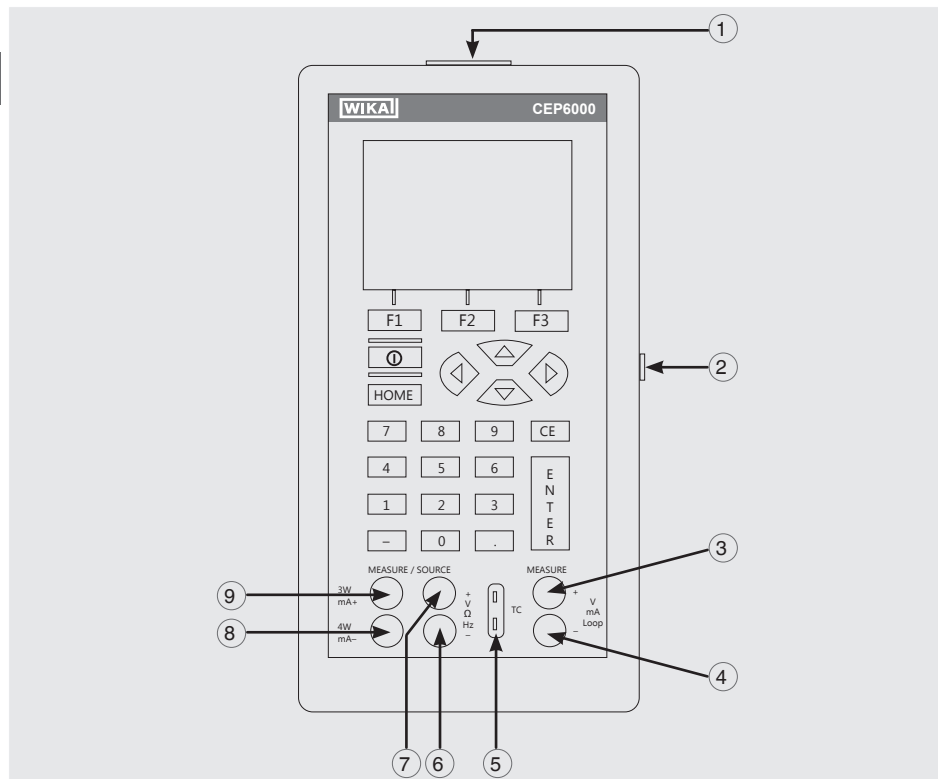
In addition, external pressure sensors/pressure modules can be connected which enable pressure to measure with this calibrator. The WIKA model CPT6600 pressure modules and the Mensor model CPT6100/CPT6180 precision pressure sensors are compatible here.

4.1 Front foil

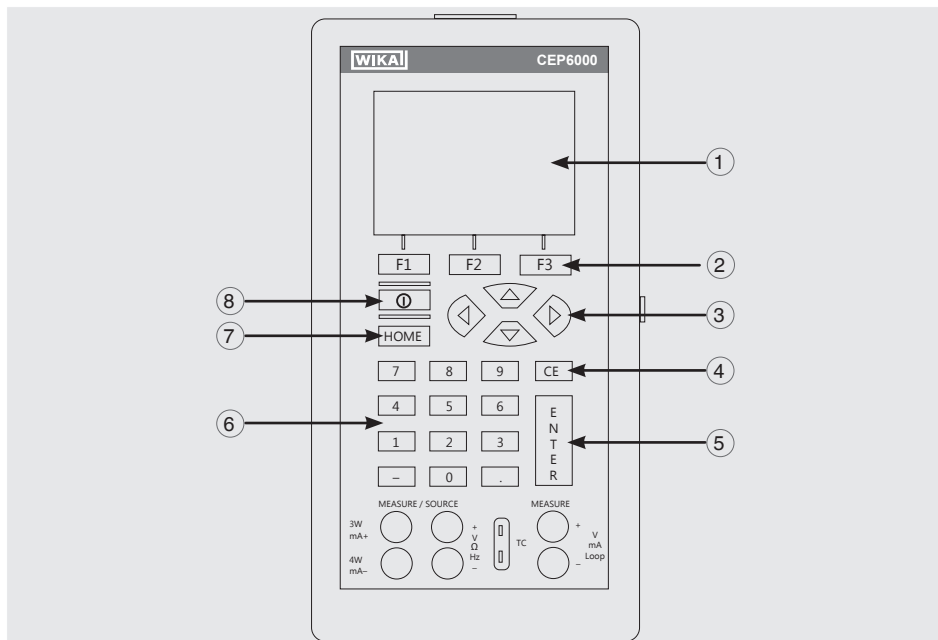
The following figures show the location of the input and output terminals and also the positions of the buttons on the calibrator.

4. Design and function

4.1.1 Connections



- ① **Connection for external pressure module**
Connects the calibrator with a pressure module for pressure measurement.
- ② **Serial interface**
Connects the calibrator with a PC for remote operation.
- ③ + ④ **(Isolated) Current and voltage input as well as for output of DC 24 V voltage supply**
Terminals for the measurement of current, voltage and separate current loop supplies.
- ⑤ **Thermocouple input/output**
Terminal for the measurement or simulation of thermocouples. Suitable for polarised miniature connectors for thermocouples.
- ⑥ + ⑦ **Voltage, resistance thermometers (2-wire), frequency, pulse, input/output**
Terminals for the simulation and measurement of voltage, frequency, pulse trains and resistance thermometers (RTDs).
- ⑧ + ⑨ **Current, resistance thermometers (3-wire, 4-wire), input/output**
Terminals for the simulation and measurement of current and also for resistance thermometer measurements with 3- and 4-wire connection.



4.1.2 Key function

- ① **Display**
- ② **Function keys, used to operate the menu bar at the bottom of the calibrator display**
The [F1] key acts to select the options in the left-hand box, the [F2] key acts for the selection of the functions in the middle box and the [F3] key for the selection of the functions in the right-hand box.
- ③ **Modification of individual digits of the output value; increase, decrease or ramp output value**
Use the left and right arrow buttons to select which digit in the output value should be changed. With the up and down arrow keys, the output value can be increased, decreased or changed to a ramp form.
- ④ **Clear the input value**
The last numerical value input will be deleted.
- ⑤ **ENTER**
Confirms the input of numerical values.
- ⑥ **Numeric keys**
Used for the input of numerical values.
- ⑦ **HOME, returns to main menu**
Reverts back to the start menu on the menu bar.

4. Design and function

- 8 **ON/OFF**
Switches the calibrator on and off.

GB 4.2 Batteries

4.2.1 Selecting the batteries or rechargeable batteries

The model CEP6000 works with four alkaline batteries (AA) or with four NiMH rechargeable batteries (AA).

4.2.2 Using the power supply unit



CAUTION!

Physical injuries and damage to property and the environment

If alkaline batteries are used in the model CEP6000 hand-held multi-function calibrator, when the power supply unit is used at the same time, overheating, severe damage and leakage can occur. Leakage of electrolyte from batteries presents a significant health risk.

- ▶ Only ever use the power supply unit without batteries or with NiMH rechargeable batteries in the instrument.
- ▶ Only use undamaged and fault-free power supply units.
- ▶ Use WIKA accessories.

Using the power supply unit:

1. Remove alkaline batteries from the model CEP6000 hand-held multi-function calibrator or insert rechargeable batteries in the calibrator's compartment.
2. Connect the power supply unit to the calibrator.
3. Insert the power cord into the power connector.



Ensure that the correct power supply is present when doing this.

The NiMH rechargeable batteries in the instrument are recharged slowly. Recharging takes between approx. 10 and 12 hours.

4. After use, disconnect the power cord from the mains and the calibrator.

5. Transport, packaging and storage

5. Transport, packaging and storage

5.1 Transport

Check the model CEP6000 hand-held multi-function calibrator for any damage that may have been caused by transport.

Obvious damage must be reported immediately.

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CAUTION!

Damage through improper transport

With improper transport, a high level of damage to property can occur.

- ▶ When unloading packed goods upon delivery as well as during internal transport, proceed carefully and observe the symbols on the packaging.
- ▶ With internal transport, observe the instructions in chapter 5.2 “Packaging and storage”.

If the instrument is transported from a cold into a warm environment, the formation of condensation may result in instrument malfunction. Before putting it back into operation, wait for the instrument temperature and the room temperature to equalise.

5.2 Packaging and storage

Do not remove packaging until just before use.

Keep the packaging as it will provide optimum protection during transport (e.g. change in place of use, sending for repair).

Permissible conditions at the place of storage:

- Storage temperature: -20 ... +70 °C
- Humidity: 0 ... 90 % relative humidity (non-condensing)

Avoid exposure to the following factors:

- Direct sunlight or proximity to hot objects
- Mechanical vibration, mechanical shock (putting it down hard)
- Soot, vapour, dust and corrosive gases
- Hazardous environments, flammable atmospheres

5. Transport, packaging and storage / 6. Commissioning, ...

Store the model CEP6000 hand-held multi-function calibrator in its original packaging in a location that fulfils the conditions listed above. If the original packaging is not available, pack and store the instrument as described below:

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1. Wrap the instrument in an antistatic plastic film.
2. Place the instrument, along with shock-absorbent material, in the packaging.
3. If stored for a prolonged period of time (more than 30 days), place a bag containing a desiccant inside the packaging.

6. Commissioning, operation



ATTENTION!

Damage through electric shock

Higher voltages than the rated voltage can cause damage to the multi-function calibrator. With any damage to the case or the test cables, an electric shock can result from any contact.

- ▶ Apply the correct rated voltage, see chapter 10 “Specifications”.
- ▶ Do not use the calibrator if it is damaged. Prior to use check the case of the calibrator. Pay attention to missing plastic components and cracks, in particular to the insulation around the connections.
- ▶ Do not use the calibrator in case of malfunction. The instrument protection might be compromised. In case of doubt, have the calibrator checked.
- ▶ The battery compartment must be closed and sealed.
- ▶ Change the batteries as soon as the battery symbol is displayed.
- ▶ Always use the correct connector sockets, functions and measuring ranges for the measurement or simulation.
- ▶ Only open the battery compartment once all cable connections have been disconnected from the calibrator.
- ▶ Check the test cables for damaged insulation or bare metal components. Test the continuity of the test cables. Replace any damaged test cable before using the calibrator.
- ▶ Do not touch the metal parts at the test cables.

As soon as the model CEP6000 hand-held multi-function calibrator is turned on, by pressing the **ON/OFF** key, it will go through a short self-test routine. During this routine, the display shows the current firmware version and the auto-shutdown status. The calibrator requires a maximum of 5 minutes warm-up to reach its specified accuracy. Large changes in ambient temperature may make a longer warm-up period necessary.

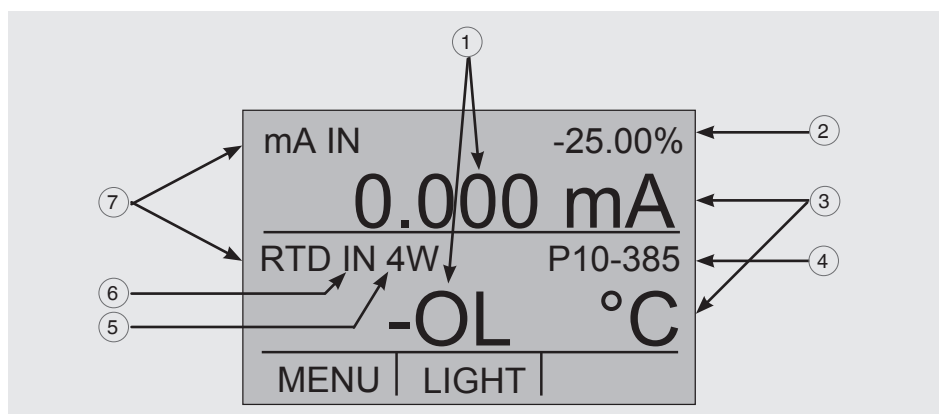
6. Commissioning, operation

6.1 Main display

The display of the multi-function calibrator is subdivided into 3 main sections: the upper display, the lower display and the menu bar.

- The upper display is used for the measurement of direct current voltages, direct current (with or without loop voltage) and for pressure measurement.
- The lower display can be used both for measurement and for simulation.
- The menu bar (at the bottom of the display) serves for configuration of the upper and lower display (according to the desired function).

The following figure shows the location of the various display fields, which are described in the table.



① Numeric display

Displays the numeric value of the measured or simulated signals.

A measurement "OL" or "-OL" signals a value outside of the measuring range.

② Display of the span

Only for the display "mA" and "mA LOOP".

Displays the current measured value with respect to 4 mA = 0 % and 20 mA = 100 %.

③ Units

Displays the corresponding unit for measurement or output/simulation.

For "RTD" (resistance thermometer) and "TC" (thermocouple), °C or °F are offered; for "FREQ" (frequency) and "PULSE" (pulse), CPM, Hz or kHz.

6. Commissioning, operation

4 Sensor type

For measurements and simulation of various resistance thermometers (RTDs) and thermocouples (TCs).

All possible sensor types are stated in the specifications (see chapter 10 "Specifications"). The options also show the amplitude of the pulse or frequency simulation and the pressure unit.

5 Additional settings

Only available for the option "TC measurement" (thermocouple) and "RTD measurement" (resistance thermometer).

With the option "TC", this setting switches the cold junction compensation (CJC) on or off.

With RTD measurements, this setting defines the number of wires for the measurement (2W = 2-wire measurement, 3W = 3-wire measurement, 4W = 4-wire measurement).

6 Input/output display

Switches the lower display between input mode (measuring) and output mode (output/simulation).

7 Primary parameters

Defines which parameter will be measured or outputted/simulated.

The available options for the upper display are: "VOLTS IN" (input voltage), "PRESSURE" (pressure), "mA IN" (input current in mA) and "mA LOOP" (mA with DC 24 V voltage supply).

The available options for the lower display are: "VOLTS" (voltage), "TC" (thermocouple), "RTD" (resistance thermometer), "FREQ" (frequency), "PULSE" (pulse), "PRESSURE" (pressure) and "mA" (current) or "mA 2W SIM" (current simulation).

6.2 Menu bar

The display parameters are managed via the menu bar, which is found along the bottom of the LCD display. The function keys [F1], [F2] and [F3] enable navigation through all levels and options of the menu bar. The upper menu level is the start menu.

One can return to this at any time with the [HOME] key. There are three variants of the start menu: the input start menu, the output start menu and the pulse start menu.

6.2.1 Menu function "Measuring"

In the start menu for the function "Measuring", only the options "MENU" and "LIGHT" are active. The option "MENU" calls the next menu level to the menu bar, i.e. to call the main

6. Commissioning, operation

menu. Press the corresponding function key, [F1], to call the main menu.

The option "LIGHT" switches on the backlight for the LCD display. Press the corresponding function key [F2] to switch on the backlighting.



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6.2.2 Menu function "Output"

In the start menu for the function "Output" there are three active options "MENU", "LIGHT" and "STEP" or "RAMP".

The first two options work just like in the start menu. The third option can be selected via the automatic output function menu option, and acts to switch on or off the selected automatic function. For further information, see chapter 6.5.2 "Using the automatic output functions". The automatic output functions are stopped as soon as the menu is exited or the [HOME] key is pressed.



6.2.3 Menu function "Pulse output"

The pulse start menu also has three active options, "MENU", "TRIG" and "COUNTS".

The options "TRIG" and "COUNTS" are used for pulse simulation. The function of these options is explained in chapter 6.5.7 "Pulse output".



6.2.4 Menu function "UPPER", "LOWER" and "MORE"

The next level of the menu bar is the main menu itself. Which levels are available under the main menu depends on the selected operating mode of the calibrator. The options are "UPPER", "LOWER" and "MORE".

With "UPPER", the selection menu for the parameters of the upper display will be called. With "LOWER", the selection menu for the parameters of the lower display will be called. "MORE" switches to the next menu level.



6. Commissioning, operation

6.2.5 Menu function “Automatic output function”

The “Automatic output function” is a menu function in the “Output” mode and is called by pressing “MORE”. The options are “AUTO FUNC”, “NEXT” and “DONE”.

With “AUTO FUNC” the parameters of the automatic output function can be set. “NEXT” switches to the next menu function and “DONE” returns to the start menu. For further information, see chapter 6.5.2 “Using the automatic output functions”.



A screenshot of a menu display with three options: "AUTO FUNC", "NEXT", and "DONE", separated by vertical bars.

6.2.6 Menu function “Contrast”

The next menu level is the contrast menu. The options are “CONTRAST”, “NEXT” and “DONE”.

The option “CONTRAST” acts to set the contrast. “NEXT” switches to the next menu function and DONE returns to the start menu. The contrast can be set with the arrow keys [F1, F2], which are displayed after selecting the option “CONTRAST”.

In certain cases, large changes in contrast can make the display difficult to read under normal conditions. If the display is too bright or too dark for the values to be read, the following steps should be taken in order to reset the contrast setting to the default.

1. Turn the instrument on while holding the [HOME] key down.
2. Hold this button down for 10 seconds in order to reset the factory settings for the contrast. If the display is so light that it is not possible to see whether the instrument is switched on or off, use the button for the backlighting as an indication of this.



A screenshot of a menu display with three options: "CONTRAST", "NEXT", and "DONE", separated by vertical bars.

6.2.7 Menu function “Automatic switch-off”

The main menu for the automatic switch-off contains the options “AUTO OFF”, “NEXT” and “DONE”.

The option “AUTO OFF” acts to switch on and off the automatic switch-off function and specifies how long the instrument remains in standby before it switches off. “NEXT” switches to the next menu function and “DONE” returns to the start menu.



A screenshot of a menu display with three options: "AUTO OFF", "NEXT", and "DONE", separated by vertical bars.

6. Commissioning, operation

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6.2.8 Menu function “Frequency or pulse output”

When the lower display is used for frequency or pulse outputs, in addition, the sub-menu for frequency is displayed after the main menu. The options are “FREQ LEVEL”, “NEXT” and “DONE”.

The option “FREQ LEVEL” enables the setting of the amplitude of the oscillation. “NEXT” switches to the next menu function and “DONE” returns to the start menu.



FREQ LEVEL | NEXT | DONE

6.2.9 Menu function “Probe-specific coefficients”

If the calibrator is working in the “RTD CUSTOM” mode, following the main menu, the RTD menu for the user-defined configuration is displayed. The options are “SET CUSTOM”, “NEXT” and “DONE”.

The option “SET CUSTOM” enables the input of the coefficients of a user-defined “PRT” (platinum resistance thermometer) into the calibrator. “NEXT” switches to the next menu function and “DONE” returns to the start menu.



SET CUSTOM | NEXT | DONE

6.2.10 Menu function “ZERO”

Resetting the pressure to the zero value is the final option on selecting “MORE” in the main menu and is only shown if an external pressure sensor is connected. The options are “ZERO”, “NEXT” and “DONE”.

The option “ZERO” acts to reset the pressure to zero. “NEXT” switches to the next menu function and “DONE” returns to the start menu. For further information on resetting to 0, see chapter 6.4.4 “Measuring pressure”.



ZERO ♀ | NEXT | DONE

6. Commissioning, operation

6.2.11 Menu function “Parameter selection”

The menu for parameter selection is called via the main menu using “UPPER” or “LOWER”. The options are “SELECT”, “NEXT” and “DONE”. When selected, one parameter flashes in the display.

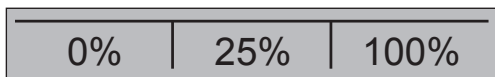
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Using the option “SELECT”, the parameter can be altered. With the option “NEXT”, one can switch to another variable. “DONE” switches back to the start menu and accepts the selection.



6.3 Cursor control/set point control

The output value can be changed using the four arrow keys on the keypad. If an arrow key is pressed, a cursor appears under the last digit of the output value. Use the left and right arrow buttons to select which digit in the output value should be changed. With the up and down arrow keys, the output value can be increased or decreased. The menu bar will change to the set point menu, as soon as one of the four arrow keys is pressed.



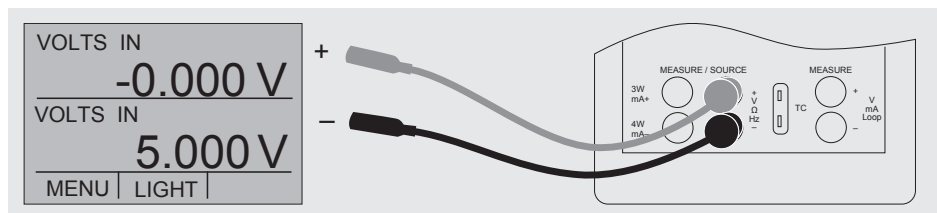
The three function keys are assigned the values “0 %”, “25 %” and “100 %”. The value for 0 and 100 % can be saved through the input of a value, when the corresponding function key is held down at the same time. The key for “25 %” then switches to the value corresponding to 25 %.

6.4 Using the measuring modes (lower display)

6.4.1 Measuring voltage and frequency

To measure voltage or frequency, follow the steps below:

1. In the main menu, switch to the lower display “LOWER” and select “V” or “FREQ”.
2. The input/output setting must be set to “IN”.
3. Connect the test cables (see following figure).



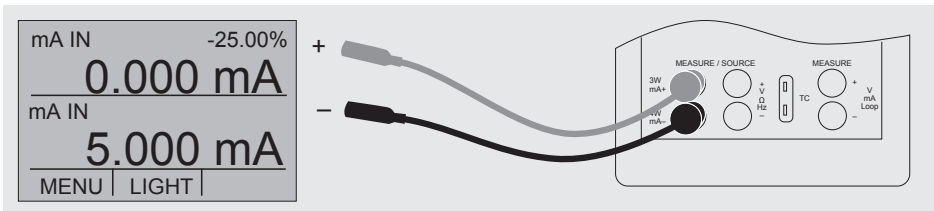
Measuring voltage and frequency with the input and output terminals

6. Commissioning, operation

6.4.2 Measuring current (mA)

To measure current in mA, follow the steps below:

1. In the main menu, switch to the lower display “LOWER” and select “mA”.
2. The input/output setting must be set to “IN”.
3. Connect the test cables (see following figure).

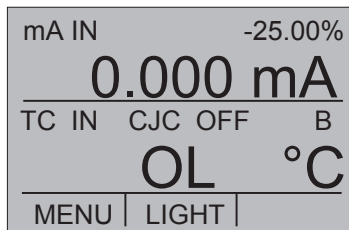


Measurement of the current in mA at the input and output terminals

6.4.3 Measuring temperature

6.4.3.1 Using thermocouples

The calibrator supports the following types of thermocouples: B, C, E, J, K, L, N, R, S, T, U, BP and XK. The typical characteristics of all of these types are described in chapter 10 “Specifications”. The calibrator also has a “CJC” (cold junction compensation) function. In normal operation, the function will be activated, and it will measure the effective temperature of the thermocouple. If the option “CJC” is deactivated, the calibrator measures the difference between the thermocouple at the connection point and the input terminal of the thermocouple.



The CJC option should only be deactivated when the calibration is being made with an external ice bath.

To measure temperature with the thermocouple, follow the steps below:

1. Connect the wires of the thermocouple to the input/output of the calibrator using the thermocouple mini-connector (see following figure).

6. Commissioning, operation



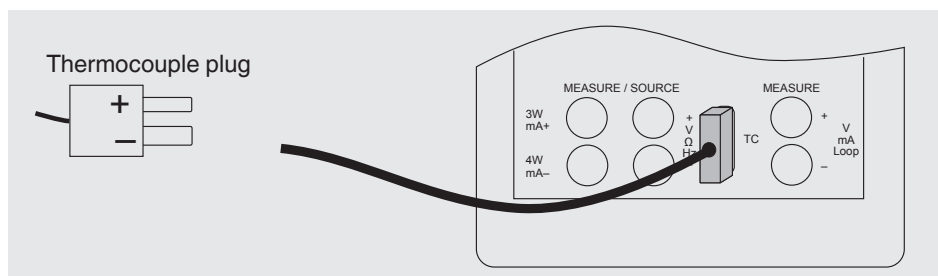
The connecting cable for the thermocouple must match the type of the thermocouple being calibrated.

GB

2. In the main menu, switch to the lower display “LOWER” and select “TC”.
3. The input/output setting must be set to “IN”.
4. Select the corresponding thermocouple model in the menu.
5. Select temperature unit.



In the interests of optimum accuracy, wait 2 to 5 minutes so that the temperature between the mini-connector and the calibrator stabilises. After this, carry out the measurement.



Measurement of the temperature at the thermocouple terminal

The calibrator can measure the voltage of the thermocouple in mV, so that the temperature can be determined with the aid of a table if the corresponding thermocouple type is not supported by the calibrator. For the case described above, proceed and select “mV” as the type.

6.4.3.2 Using resistance thermometers (RTDs)

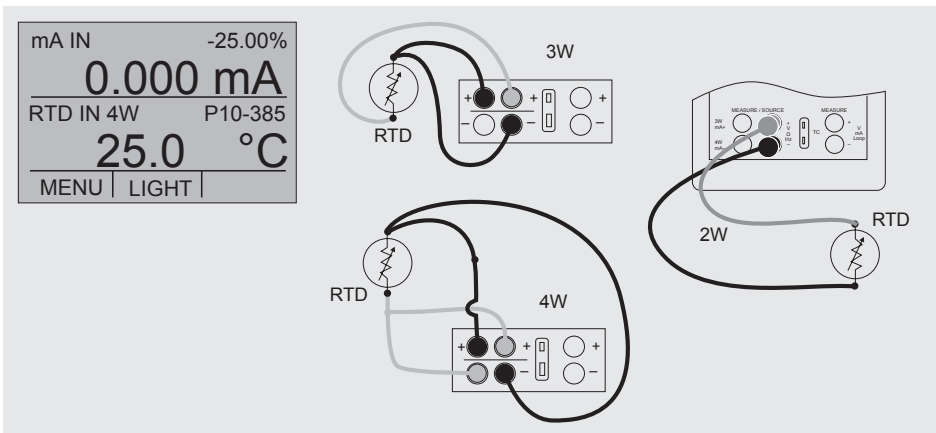
The supported resistance thermometers are detailed in the specifications in chapter 10 “Specifications”. The specific characteristic of RTDs is their temperature-dependent resistance (R_0). The calibrator can work with input signals with 2-, 3- or 4-wires, where input measurements with 4-wire connection are the most accurate.

To measure temperature with resistance thermometers, follow the steps below:

1. In the main menu, switch to the lower display “LOWER” and select “RTD”.
2. The input/output setting must be set to “IN”.
3. Select 2-, 3- or 4-wire connection “2W, 3W, 4W”.

6. Commissioning, operation

4. Select the corresponding RTD type in the menu.
5. Select temperature unit.
6. Connect the RTD wires (see following figure).



Measuring the temperature with RTD probe connected

The resistance can also be measured with this function. For this, follow the steps as described above, and as RTD type, select "OHMS". With this option and a measurement table, an RTD probe that is not programmed into the calibrator can also be used for measurement.

6.4.4 Measuring pressure



CAUTION! **Pressurisation**

Damage within the pressure system due to open valves.

1. Close the valve.
2. Release the pressure slowly.
3. Connect the pressure module to the pressure line.



ATTENTION! **Damage to the threaded connections**

The pressure module can be damaged by over-tightening the threaded connection.

- ▶ Use suitable tools.
- ▶ Tighten the pressure connection with a maximum of 13.6 Nm (torque spanner).

6. Commissioning, operation



- ▶ Never exceed the permissible maximum pressure.
- ▶ Only use pressure modules with compatible media. See specification of the pressure module.

GB

To measure pressure with external pressure modules, follow the steps below:

1. Connect the pressure module to the calibrator using the pressure module adapter (see following figure).



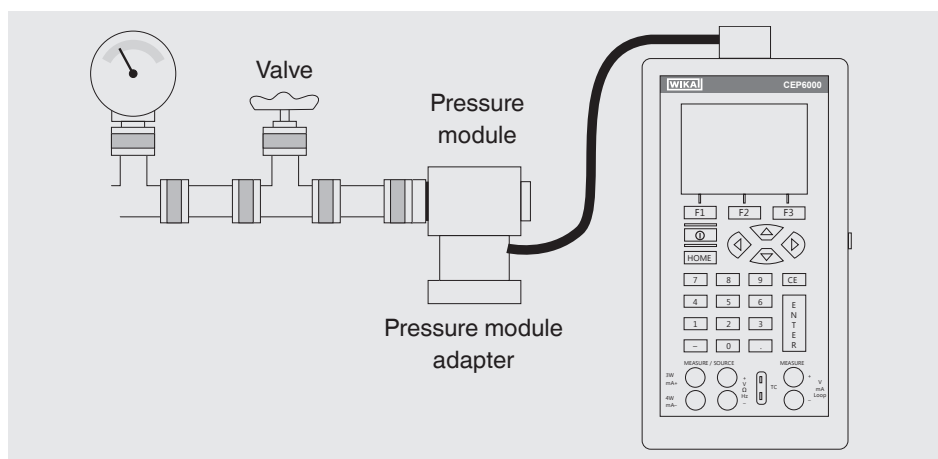
For the connection of the pressure module to the calibrator, a WIKA pressure module adapter must be used.

2. From the main menu, switch to the upper or lower display as required. The calibrator measures pressure in the upper as well as the lower display. In this way, pressure can be measured on two different units at the same time.
3. As the primary parameter, select "PRESSURE".
4. Select the desired unit of measure.



- With high-pressure modules, technical units of measure that are only used for low pressure ranges, such as inH_2O , cmH_2O , etc., are not valid selections. If one of these units is selected with a high-pressure module connected, "----" is shown on the display.

5. Set the pressure module to zero (ZERO). The function to reset the calibrator is found under the menu function "ZERO".



Connection for pressure measurement

MM/YYYY country code based on 10/2014 GB/CN

6. Commissioning, operation

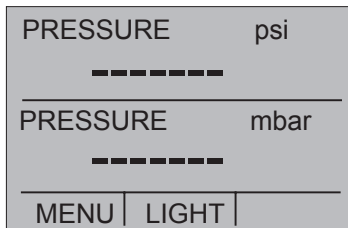
6.4.4.1 Zeroing of absolute pressure modules

To reset the calibrator to zero, set it so that it measures a known pressure, for example the barometric pressure.

To zero the calibrator, follow the steps below:

1. Call up the menu function "ZERO".
2. Select "ZERO". "SET REFERENCE ABOVE" will be displayed.
3. Enter the reference pressure via the keypad.

The calibrator saves the barometric reference value in permanent memory. The reference value will always be saved for an absolute pressure module. If a new absolute pressure module is connected, this procedure must be repeated.



GB

6.5 Using the output modes (lower display)

The calibrator can generate signals for testing and calibrating process instruments. It can simulate voltage, current, resistance, frequency, pulses and the electrical output signal of a resistance thermometer or a thermocouple.

6.5.1 Setting the output parameters 0 % and 100 %

To enter the 0 % and 100 % points, follow the steps below:

1. Select the lower display "LOWER" from the main menu and then select the required function.
2. Select the output "OUT" at the input/output setting and enter the desired value. (example: "VOLTS OUT").
3. On the keypad, enter (for example) 5 V and press the enter key.
4. Press one of the arrow keys in order to select the set point setting from the menu.
5. Hold down the function key for "0 %" [F1]. The value 0 % will flash for a short time and the set point (e.g. 5 V) will be saved.
6. Repeat these steps with (for example) 20 V and hold down the function key for "100 %" [F3].
7. With the function key for "25 %", it is now possible to move between 5 V and 20 V in steps of 25 %.

6. Commissioning, operation

6.5.1.1 Increasing the output current in steps

To use the 25 % function with an output signal in the milliampere range, follow the steps below:

- GB**
1. Select the option “mA” for the lower display from the main menu.
 2. With the key for “25 %”, it is possible to move between 4 mA and 20 mA in intervals of 25 %.

6.5.2 Using the automatic output functions

The step function and automatic ramp function are available as automatic output functions. The selected function can be switched on and off via the start menu (“STEP” or “RAMP”). The automatic output parameters can be set in the menu via “Automatic output function”.

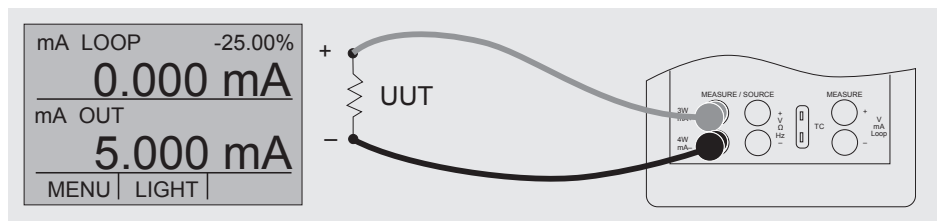
The parameters include:

- Which automatic output function is available (step function or ramp function).
- The time for the automatic output function defines the time between the individual steps or, in the ramp function, the time between the first and second limit value in the ramp.
- The limit values for the ramp mode and step function are set to 0 % and 100 %. For further information, see chapter 6.5.1 “Setting the output parameters 0 % and 100 %”. The step increase is made in 25 % steps from 0 % to 100 %.

6.5.3 Current output

To output a current, follow the steps below:

1. In the main menu, switch to the lower display “LOWER” and select “mA”.
2. The input/output setting must be set to “OUT”.
3. Connect the test cables to the terminals for current output (see following figure).
4. Enter the desired current value via the keypad.



Connection for use as a mA source

6. Commissioning, operation

GB

6.5.3.1 HART™ resistor selection

The CEP6000 can be configured so that the 250 Ω resistor for HART™ compatible instruments can be activated within the CEP6000. If the internal 250 Ω resistor within the CEP6000 is used, a serial resistance for the calibration of HART™ modules must not be activated.

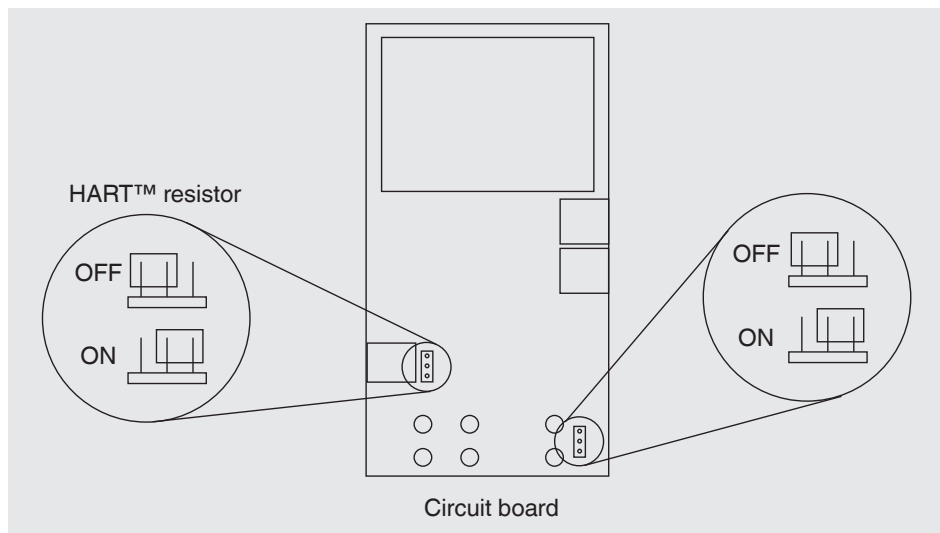


When using the internal 250 Ω resistor, the maximum load resistance is reduced from 1,000 Ω to 750 Ω , at a current of 20 mA.

6.5.3.2 HART™ resistor, activation/deactivation procedure

1. Remove the battery cover and loosen both of the screws on the upper part of the case.
2. Remove both of the screws on the lower part of the case.
3. Carefully remove the upper half of the case from the lower half.

The following picture indicates the position of the HART™ jumpers.



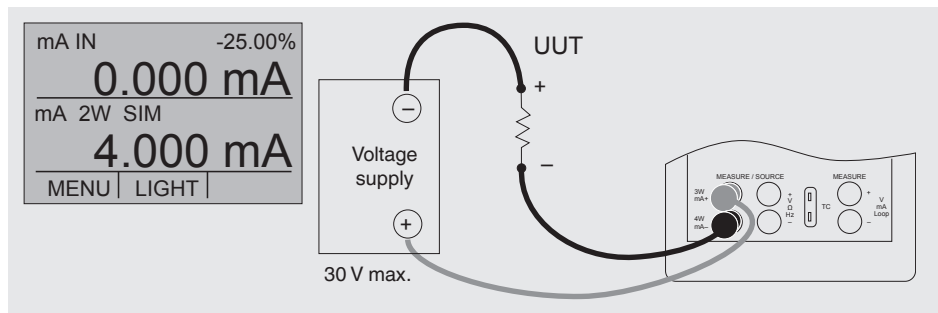
Position of the HART™ jumpers

6. Commissioning, operation

6.5.4 Simulating a transmitter

To use the calibrator to simulate a transmitter in a current loop, follow the steps below:

1. In the main menu, switch to the lower display “LOWER” and select “mA 2W SIM”.
2. Enter the desired current with the keypad.
3. Connect the test cables to the terminals for current input (see following figure).
3. Connect the external DC 24 V voltage supply (see following figure).

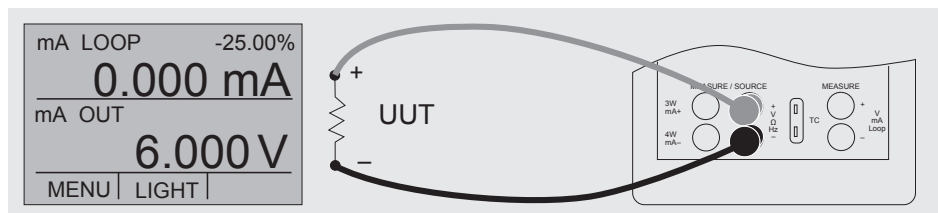


Connection for the transmitter simulation

6.5.5 Voltage output

To output a voltage, follow the steps below:

1. In the main menu, switch to the lower display “LOWER” and select “VOLTS”.
2. The input/output setting must be set to “OUT”.
3. Connect the test cables to the terminals for voltage output (see following figure).
4. Enter the desired voltage value via the keypad.



Connections for voltage, frequency and pulse outputs

6. Commissioning, operation

6.5.6 Frequency output

To output a frequency, follow the steps below:

1. In the main menu, switch to the lower display “LOWER” and select “FREQ”.
2. The input/output setting must be set to “OUT”.
3. Set the corresponding frequency unit.
4. Connect the test cables to the terminals for frequency output (see figure “Connections for voltage, frequency and pulse outputs”).
5. Enter the desired frequency value via the keypad.
6. To change the amplitude, select the option “FREQ LEVEL” in the menu function “Frequency or pulse output”.
7. Enter the desired amplitude value via the keypad.

mA IN	-25.00%
0.000	mA
FREQ OUT	5.0 Vpp
4.0	kHz
MENU	LIGHT

GB

6.5.7 Pulse output

The calibrator can generate a pulse train with an adjustable number of pulses at a desired frequency. As an example, if the frequency is set to 60 Hz and the number of pulses set to 60, the calibrator will generate 60 pulses in 1 second. For operation as a pulse generator, the same connections are used as for frequency “Output”.

mA LOOP	-25.00%	
0.000	mA	
PULSE	5.0 Vpp	
5.0	kHz	
MENU	TRIG	COUNTS

To output a pulse, follow the steps below:

1. In the main menu, switch to the lower display “LOWER” and select “PULSE”.
2. Set the corresponding pulse unit.
3. Connect the test cables to the terminals for pulse output (see figure “Connections for voltage, frequency and pulse outputs”).
4. With the function “COUNTS” in the start menu, the number of pulses is set. The signal is started and stopped using the “TRIG” key.
5. To change the amplitude, select the option “FREQ LEVEL” in the menu function “Frequency or pulse output”.

6.5.8 Simulating thermocouples

To simulate a thermocouple, follow the steps below:

1. Connect the wires of the thermocouple to the input/output of the calibrator using the thermocouple mini-connector (see following figure).
2. In the main menu, switch to the lower display “LOWER” and select “TC”.

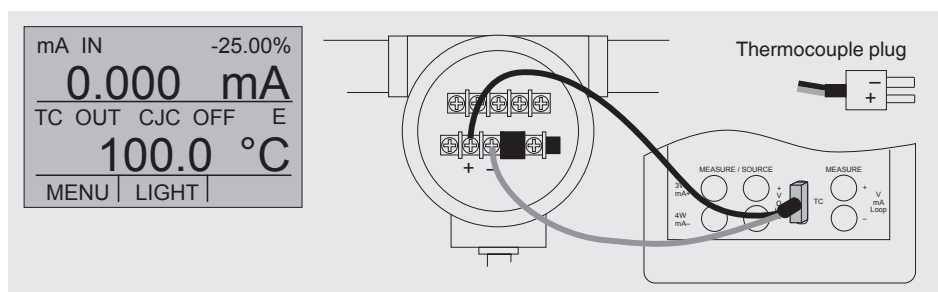
6. Commissioning, operation

3. The input/output setting must be set to “OUT”.
4. Select the corresponding thermocouple model in the menu.
5. Select temperature unit.
6. Enter the temperature value or voltage value, respectively, via the keypad.

GB



Used thermocouple wire must match the thermocouple type being calibrated.

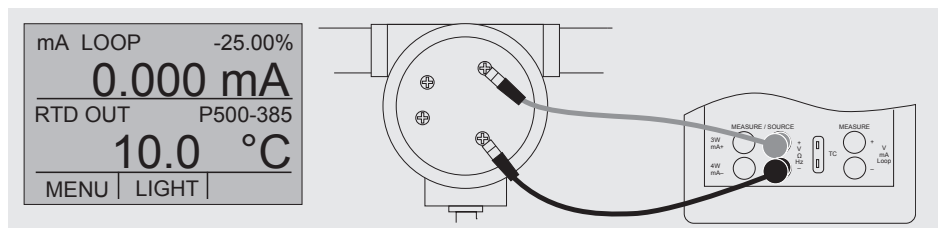


Simulating the temperature at the thermocouple terminal

6.5.9 Simulating resistance or resistance thermometers

To simulate a resistance/resistance thermometer, follow the steps below:

1. Connect the wires of the RTD type to the input/output of the calibrator (see following figure).
2. In the main menu, switch to the lower display “LOWER” and select “RTD”.
3. The input/output setting must be set to “OUT”.
4. Select the corresponding RTD type in the menu.
5. Select temperature unit.
6. Enter the temperature value or resistance value, respectively, via the keypad.



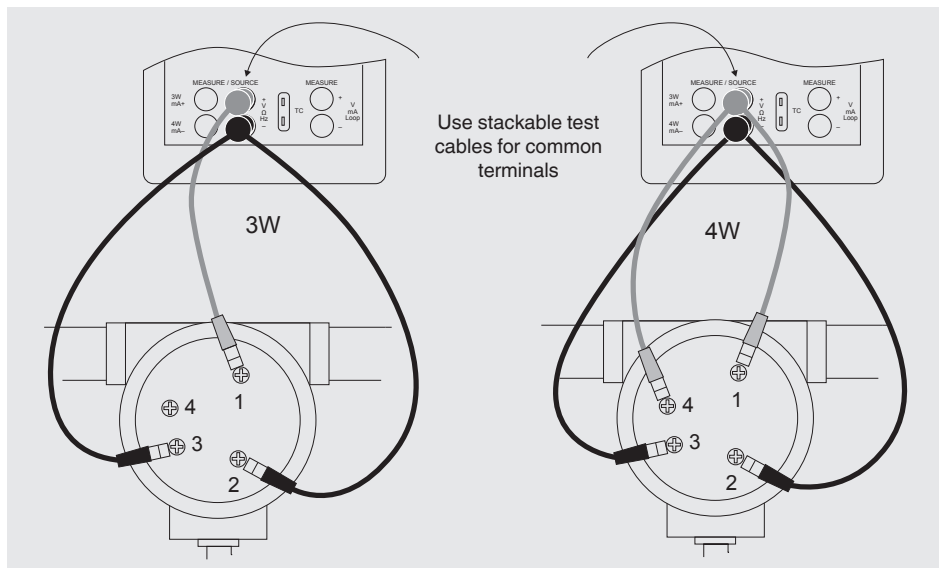
Simulating resistance or resistance thermometers

6. Commissioning, operation



The calibrator simulates an RTD probe with 2-wires. To connect a probe with 3- or 4-wires, use the stackable test cables (see following figure).

GB



3- or 4-wire connection for RTDs

6.5.9.1 Customer-specific resistance thermometer (RTD)

To achieve the highest possible accuracy, it is possible to load probe-specific resistance thermometer coefficients into the calibrator.

To enter probe-specific coefficients, follow the steps below:

1. In the main menu, switch to the lower display "LOWER" and select "RTD".
2. Select RTD type "CUSTOM".
3. Select menu function "Probe-specific coefficients".
4. Enter the values requested by the calibrator using the keypad.
 - ▶ Minimum temperature
 - ▶ Maximum temperature
 - ▶ R_0
 - ▶ Temperature coefficients

The custom function uses the **Callendar–Van Dusen equation** for output and measurement of custom resistance thermometers. The coefficient C is used only for temperatures

6. Commissioning, operation

below 0 °C. For the range above 0 °C, only the coefficients A and B are required, so coefficient C is then set to 0. R_0 is the resistance of the probe at 0 °C.

GB

Coefficients for Pt385, Pt3926 and Pt3616

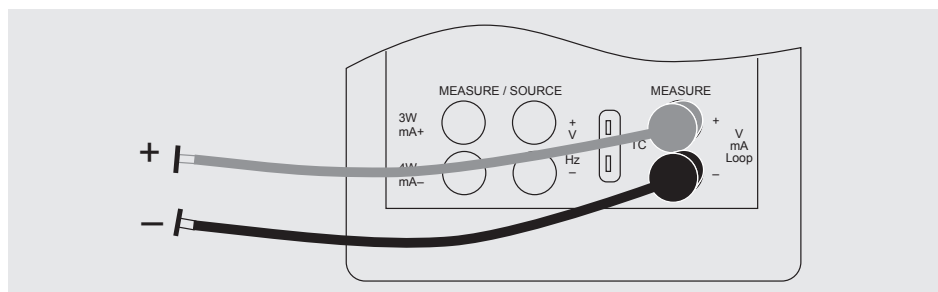
RTD	Range	R0	Coefficient A	Coefficient B	Coefficient C
Pt385	-260 ... 0 °C	100	3.9083×10^{-3}	-5.775×10^{-7}	-4.183×10^{-12}
Pt385	0 ... 630 °C	100	3.9083×10^{-3}	-5.775×10^{-7}	-
Pt3926	Under 0 °C	100	3.9848×10^{-3}	-5.87×10^{-7}	-4×10^{-12}
Pt3926	Above 0 °C	100	3.9848×10^{-3}	-5.87×10^{-7}	-
Pt3916	Under 0 °C	100	3.9692×10^{-3}	-5.8495×10^{-7}	-4.2325×10^{-12}
Pt3916	Above 0 °C	100	3.9692×10^{-3}	-5.8495×10^{-7}	-

6.6 Using the isolated measuring modes (upper display)

6.6.1 Measuring voltage (V) or current (mA)

To measure voltage or current on the isolated input channel, follow the steps below:

1. In the main menu, switch to the upper display "UPPER" and select "V" or "mA".
2. Connect the test cables to the calibrator's isolated inputs (see following figure).



Isolated input

6.6.2 Current measurement with DC 24 V voltage supply

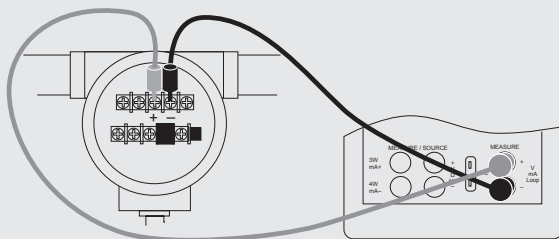
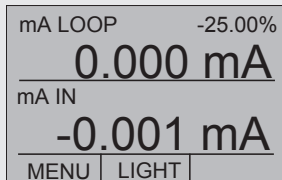
To test a 2-wire transmitter, which has an external power supply that is not connected, use the function for separate voltage supply. This function activates a DC 24 V voltage supply in series with the measuring current loop.

6. Commissioning, operation

To measure current with a DC 24 V voltage supply on the isolated input channel, follow the steps below:

1. In the main menu, switch to the upper display "UPPER" and select "mA LOOP".
2. Connect the test cables to the calibrator's isolated inputs (see following figure).

GB



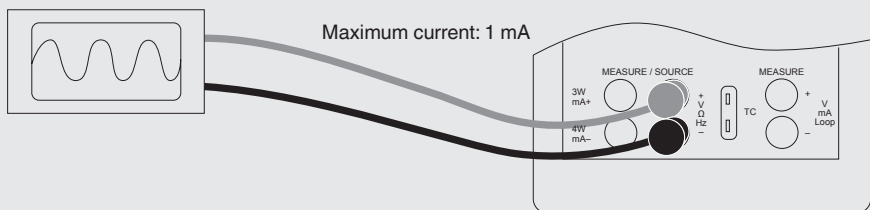
Isolated input

6.7 Using the upper and lower displays for test and calibration

6.7.1 Calibrating a display instrument

To calibrate recording and display instruments using the output functions, follow the steps below:

1. In the main menu, switch to the lower display "LOWER" and select the corresponding parameter.
2. The input/output setting must be set to "OUT".
3. Connect the test cables to the calibrator (see following figure).



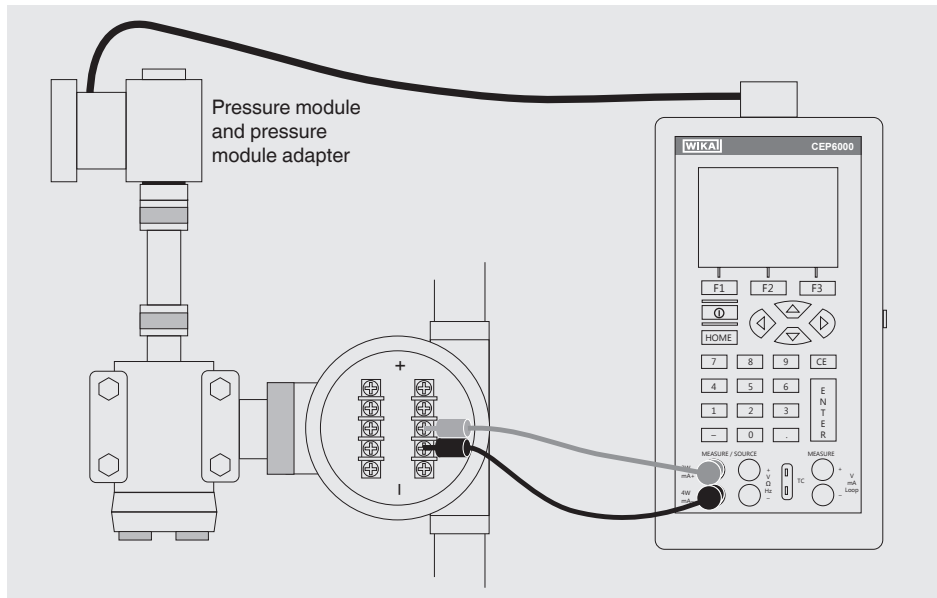
Connection of a display instrument

6. Commissioning, operation

6.7.2 Calibrating an I/P instrument

To calibrate pressure-controlling instruments, follow the steps below:

1. In the main menu, switch to the upper display "UPPER" and select "PRESSURE".
2. In the main menu, switch to the lower display "LOWER" and select "mA".
3. The input/output setting must be set to "OUT".
4. Connect the calibrator to the sensor using the mA output (see following figure).
5. Enter the current value via the keypad.



Calibrating an I/P instrument



The calibrator simulates the transmitter current and measures the output pressure with an external pressure module.

6.7.3 Calibrating a transmitter

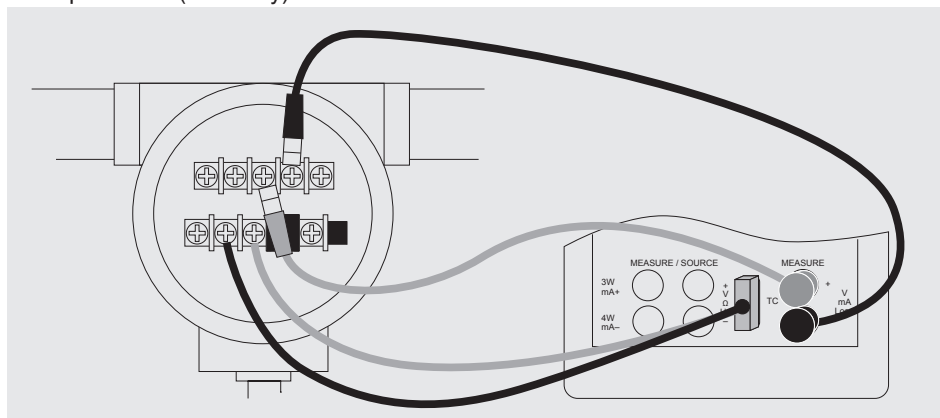
To calibrate a transmitter, both displays ("UPPER" and "LOWER") are used - the upper display for measurement and the lower for output/simulation. In this example, a thermocouple transmitter is calibrated.

6. Commissioning, operation

GB

To calibrate TC temperature transmitters, follow the steps below:

1. In the main menu, switch to the upper display "UPPER" and select "mA LOOP".
2. In the main menu, switch to the lower display "LOWER" and select "TC".
3. The input/output setting must be set to "OUT".
4. Set the end values 0 % and 100 % with the keypad and the [0 %] and [100 %] keys (also see chapter 6.5.1 "Setting the output parameters 0 % and 100 %").
5. Connect the calibrator with the TC output to the TC input of the transmitter. In addition, connect the calibrator, using its mA input, to the mA output of the transmitter (see following figure).
6. Output a temperature value using the keypad or test 0-25-50-75-100 % using the 25 % step function (25 % key).



Calibrating a TC temperature transmitter



To calibrate a different type transmitter, follow the steps above with the exception of the selection of the lower display. Set the thermocouple with the correct parameters for the transmitter.

6.7.4 Calibrating a pressure transmitter

To calibrate pressure transmitters, follow the steps below:

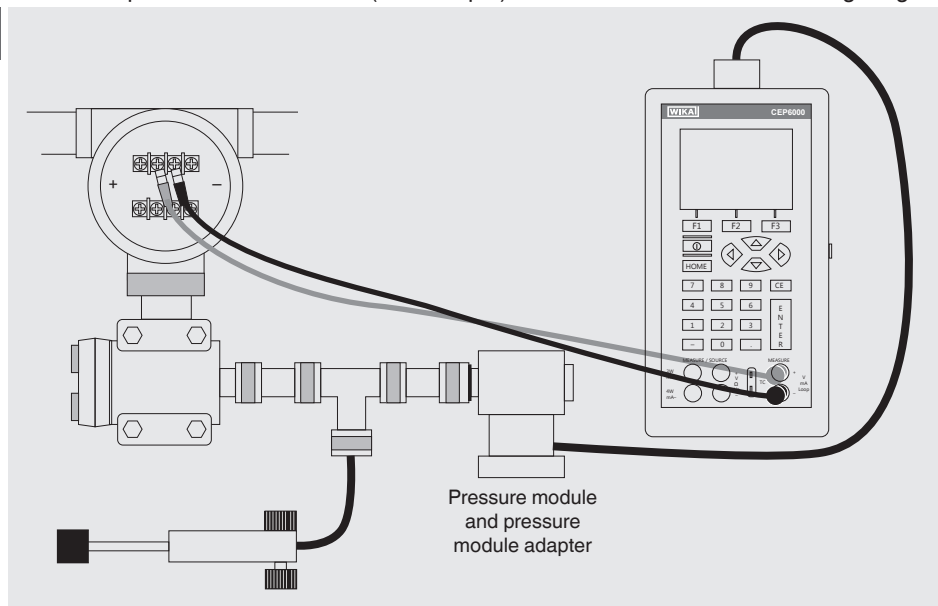
1. In the main menu, switch to the upper display "UPPER" and select "mA LOOP".
2. In the main menu, switch to the lower display "LOWER" and select "PRESSURE".
3. Connect the calibrator with the mA input to the mA output of the pressure transmitter. In addition, connect the external pressure module with the pressure connection of the

6. Commissioning, operation / 7. Faults

pressure transmitter (see following figure).

4. Zero the pressure module (see chapter 6.2.10 “Menu function “ZERO”).
5. Test the pressure transmitter at (for example) 0 % and 100 % of the measuring range.

GB



Calibrating a pressure transmitter

7. Faults

Personnel: Skilled personnel



CAUTION!

Physical injuries and damage to property and the environment

If faults cannot be eliminated by means of the listed measures, the model CEP6000 hand-held multi-function calibrator must be shut down immediately.


- ▶ Ensure that pressure or signal is no longer present and protect against accidental commissioning.
- ▶ Contact the manufacturer.
- ▶ If a return is needed, please follow the instructions given in chapter 9.2 “Return”.

7. Faults



For contact details, please see chapter 1 “General information” or the back page of the operating instructions.

GB

Faults	Cause	Measures
	Low battery power, functioning is only guaranteed for a short period of time	Insert new alkaline batteries or charged NiMH batteries
OL -OL	Reading is significantly above or below the measuring range	Check: are the parameters within the permissible measuring range of the calibrator --> Match pressure or signal to the permitted value
No display or undefinable characters, instrument is not responding to key press	Battery empty	Insert new alkaline batteries or charged NiMH batteries
	Mains operation without battery: incorrect voltage/polarity	Check/exchange power supply unit
	System error	Switch off the instrument, wait for a short period of time, switch on again
	Instrument faulty	Send instrument in for repair

8. Maintenance, cleaning and recalibration

8. Maintenance, cleaning and recalibration

Personnel: Skilled personnel

GB



For contact details, please see chapter 1 “General information” or the back page of the operating instructions.

8.1 Maintenance

This model CEP6000 multi-function calibrator is maintenance-free.

Repairs must only be carried out by the manufacturer.

This does not apply to the battery replacement.

Only use original parts (see chapter 11 “Accessories”).

Replacing the batteries

To eliminate measuring errors, change the batteries as soon as the battery symbol is displayed. If the battery capacity is too low, the CEP6000 will automatically switch off in order to prevent electrolyte escaping.

To replace the batteries or rechargeable batteries, follow the steps below:

1. Remove test cable and mains cable (for rechargeable battery power) from the CEP6000.
2. Remove the screw from the battery compartment cover on the back and remove the cover.
3. Remove batteries or rechargeable batteries, respectively.
4. Insert new batteries or charged rechargeable batteries.



Only alkaline batteries or size AA NiMH batteries, as an option, should be used.

5. Replace the battery cover and screw in and tighten the screw.

8.2 Cleaning

1. Prior to cleaning, switch off and disconnect the instrument from the mains.
2. Clean the instrument with a moist cloth (moist cloth with water or water with soap solution). Do not use any solvents.



CAUTION!

Damage to property

Improper cleaning may lead to damage to the instrument!

- ▶ Do not use aggressive cleaning agents.
- ▶ Do not use any pointed and hard objects for cleaning.
- ▶ Electrical connections must not come into contact with moisture.

8.3 Recalibration

DKD/DAkkS certificate - official certificates:

We recommend that the instrument is regularly recalibrated by the manufacturer, with time intervals of approx. 12 months. The basic settings will be corrected if necessary.

9. Dismounting, return and disposal

Personnel: Skilled personnel

9.1 Dismounting



WARNING!

Physical injury

When dismantling the optional external pressure sensor, there is a danger from aggressive media and high pressures.

- ▶ Observe the information in the material safety data sheet for the corresponding medium.
- ▶ Disconnect the pressure sensor once the system has been depressurised.

9.2 Return

Strictly observe the following when shipping the instrument:

All instruments delivered to WIKA must be free from any kind of hazardous substances (acids, bases, solutions, etc.) and must therefore be cleaned before being returned.



WARNING!

Physical injuries and damage to property and the environment through residual media

Residual media on the model CEP6000 hand-held multi-function calibrator can result in a risk to persons, the environment and equipment.

- ▶ With hazardous substances, include the material safety data sheet for the corresponding medium.
- ▶ Clean the instrument, see chapter 8.2 "Cleaning".

9. Dismounting, return and disposal

When returning the instrument, use the original packaging or a suitable transport packaging.

GB

To avoid damage:

1. Wrap the instrument in an antistatic plastic film.
2. Place the instrument, along with the shock-absorbent material, in the packaging. Place shock-absorbent material evenly on all sides of the transport packaging.
3. If possible, place a bag containing a desiccant inside the packaging.
4. Label the shipment as carriage of a highly sensitive measuring instrument.



Information on returns can be found under the heading “Service” on our local website.

9.3 Disposal

Incorrect disposal can put the environment at risk.

Dispose of instrument components and packaging materials in an environmentally compatible way and in accordance with the country-specific waste disposal regulations.



This marking on the instruments indicates that they must not be disposed of in domestic waste. The disposal is carried out by return to the manufacturer or by the corresponding municipal authorities (see EU directive 2002/96/EC).

10. Specifications

10. Specifications

Basic instrument

GB

Indication

Display 2-part, each with 10 digits and 8 mm character size

Input and output

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

Resistor 0 ... 4,000 Ω

Frequency/Pulse 2 CPM ... 10 kHz

Pressure dependent on pressure module

Voltage supply DC 24 V

Special features

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

Resistor HART® resistor, 250 Ω (activatable)

Communication

Interface RS-232, USB with optional serial adapter

Voltage supply

Power supply 4 x 1.5 V AA batteries

Battery life 20 hours

Battery status indication Icon in display for low battery level

10. Specifications

Basic instrument

Permissible ambient conditions

Operating temperature	-10 ... +50 °C
Storage temperature	-20 ... +70 °C
Relative humidity	0 ... 90 % r. h. (non-condensing)
Temperature coefficient	0.003 % FS/°C, outside of 23 °C ±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)
---------------	---

Certificate

Calibration	Standard: 3.1 calibration certificate per DIN EN 10204 Option: DKD/DAkS calibration certificate
-------------	--

Approvals and certificates, see website

10. Specifications

GB

Input and output signals	Measuring range	Accuracy (of reading)	
Current signal			
Output	DC 0.000 ... 24.000 mA	0.015 % ±2 µA	
Input	DC 0.000 ... 24.000 mA (isolated)	0.015 % ±2 µA	
	DC 0.000 ... 24.000 mA (non-isolated)	0.015 % ±2 µA	
Voltage signal			
Output	DC 0.000 ... 20.000 V	0.015 % ±2 mV	
Input	DC 0.000 ... 30.000 V (isolated)	0.015 % ±2 mV	
	DC 0.000 ... 20.000 V (non-isolated)	0.015 % ±2 mV	
Resistance			Stimulus current
Output	5.0 ... 400.0 Ω	0.025 % ±0.1 Ω	0.1 ... 0.5 mA
	5.0 ... 400.0 Ω	0.025 % ±0.05 Ω	0.5 ... 3.0 mA
	401 ... 1,500 Ω	0.025 % ±0.5 Ω	0.05 ... 0.8 mA
	1,501 ... 4,000 Ω	0.025 % ±0.5 Ω	0.05 ... 0.4 mA
Input	0.00 ... 400.00 Ω	0.025 % ±0.05 Ω	
	400.1 ... 4,000.0 Ω	0.025 % ±0.5 Ω	
Frequency ¹⁾			
Output	2.0 ... 600.0 CPM ²⁾	0.05 %	
	1.0 ... 1,000.0 Hz	0.05 %	
	1.0 ... 10.0 kHz	0.25 %	
Input	2.0 ... 600.0 CPM ²⁾	0.05 % ±0.1 CPM ²⁾	
	1.0 ... 1,000.0 Hz	0.05 % ±0.1 Hz	
	1.00 ... 10.00 kHz	0.05 % ±0.01 kHz	
Pulse ¹⁾			
Output	1 ... 30,000 counts 2.0 CPM ²⁾ ... 10.0 kHz		
Pressure			
Input	dependent on pressure module		

1) Selectable amplitude of 1 ... 20 V based on a square wave

2) Counts per minute

10. Specifications

Input and output signals	Measuring range	Accuracy (all errors incl.)	
GB Thermocouple voltage signals	-10.000 ... +75.000 mV	0.02 % of reading ± 10 µV	
Thermocouples		Without cold junction compensation	With cold junction compensation ³⁾
Type J	-210.0 ... -150.0 °C -149.9 ... +1,200.0 °C	0.4 °C 0.2 °C	0.6 °C 0.4 °C
Type K	-200.0 ... -100.0 °C -99.9 ... +600.0 °C 600.1 ... 1,000.0 °C 1,000.1 ... 1,372.0 °C	0.5 °C 0.2 °C 0.3 °C 0.4 °C	0.7 °C 0.4 °C 0.5 °C 0.6 °C
Type T	-250.0 ... -200.0 °C -199.9 ... 0.0 °C 0.1 ... 400.0 °C	1.5 °C 0.5 °C 0.2 °C	1.7 °C 0.7 °C 0.4 °C
Type E	-250.0 ... -200.0 °C -199.9 ... -100.0 °C -99.9 ... +1,000.0 °C	1.0 °C 0.3 °C 0.2 °C	1.2 °C 0.5 °C 0.4 °C
Type R	0 ... 200 °C 201 ... 1,767 °C	1.7 °C 1.0 °C	1.9 °C 1.2 °C
Type S	0 ... 200 °C 201 ... 1,767 °C	1.7 °C 1.1 °C	1.9 °C 1.3 °C
Type B	600 ... 800 °C 801 ... 1,000 °C 1,001 ... 1,820 °C	1.5 °C 1.2 °C 1.0 °C	1.7 °C 1.4 °C 1.2 °C
Type C	0.0 ... 1,000.0 °C 1,000.1 ... 2,316.0 °C	0.5 °C 1.5 °C	0.7 °C 1.7 °C
Type XK	-200.0 ... +800.0 °C	0.2 °C	0.4 °C
Type BP	0.0 ... 800.0 °C 800.1 ... 2,500.0 °C	1.9 °C 0.6 °C	2.1 °C 0.8 °C
Type L	-200.0 ... +900.0 °C	0.2 °C	0.4 °C
Type U	-200.0 ... 0.0 °C 0.1 ... 600.0 °C	0.4 °C 0.2 °C	0.6 °C 0.4 °C
Type N	-200.0 ... -100.0 °C -99.9 ... +1,300.0 °C	0.8 °C 0.3 °C	1.0 °C 0.5 °C

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

10. Specifications

Input and output signals	Measuring range	Accuracy (all errors incl.)
Resistance thermometer ⁴⁾		
Pt100 (385)	-200.0 ... -80.0 °C	0.1 °C
	-79.9 ... +300.0 °C	0.2 °C
	300.1 ... 630.0 °C	0.3 °C
	630.1 ... 800.0 °C	0.4 °C
Pt100 (3926)	-200.0 ... -80.0 °C	0.1 °C
	-79.9 ... +300.0 °C	0.2 °C
	300.1 ... 630.0 °C	0.3 °C
Pt100 (3916)	-200.0 ... -80.0 °C	0.1 °C
	-79.9 ... +260.0 °C	0.2 °C
	260.1 ... 630.0 °C	0.3 °C
Pt200	-200.0 ... -80.0 °C	0.6 °C
	-79.9 ... +300.0 °C	0.7 °C
	300.1 ... 630.0 °C	0.9 °C
Pt500	-200.0 ... -80.0 °C	0.2 °C
	-79.9 ... +100.0 °C	0.3 °C
	100.1 ... 400.0 °C	0.4 °C
	400.1 ... 630.0 °C	0.5 °C
Pt1000	-200.0 ... +260.0 °C	0.2 °C
	260.1 ... 400.0 °C	0.3 °C
	400.1 ... 630.0 °C	0.4 °C
Pt10	-200.0 ... 0.0 °C	1.3 °C
	0.1 ... 100.0 °C	1.4 °C
	100.1 ... 300.0 °C	1.5 °C
	300.1 ... 400.0 °C	1.6 °C
	400.1 ... 630.0 °C	1.8 °C
	630.1 ... 800.0 °C	1.9 °C
Pt50	-200.0 ... -80.0 °C	0.3 °C
	-79.9 ... +300.0 °C	0.4 °C
	300.1 ... 630.0 °C	0.5 °C
	630.1 ... 800.0 °C	0.6 °C
Ni120	-80.0 ... +260.0 °C	0.1 °C
Cu10	-100.0 ... +260.0 °C	1.3 °C
Cu50	-180.0 ... +200.0 °C	0.3 °C
Cu100	-180.0 ... +200.0 °C	0.1 °C
YSI400	15.0 ... 50.0 °C	0.1 °C

4) Accuracy based on 4-wire connection

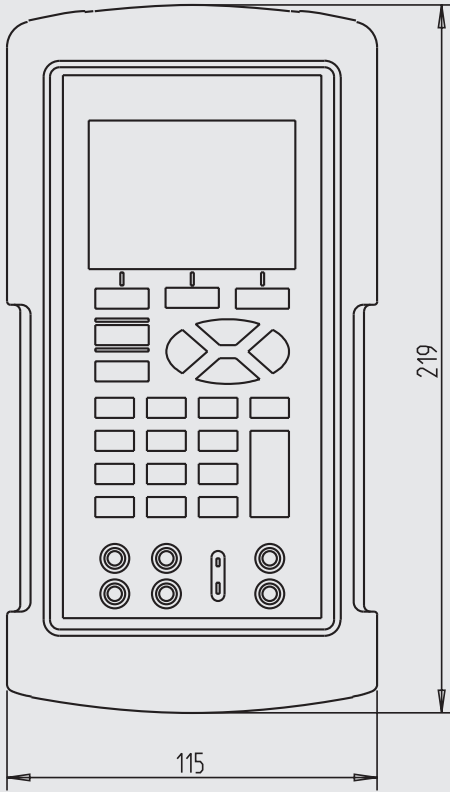
For further specifications see WIKA data sheet CT 83.01 and the order documentation.

10. Specifications

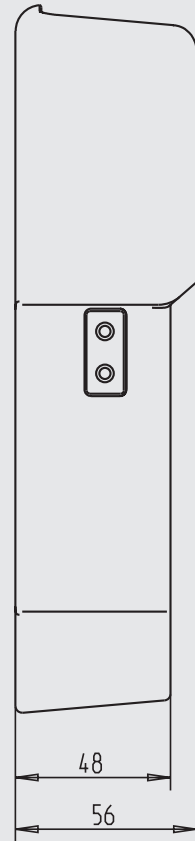
Dimensions in mm

GB

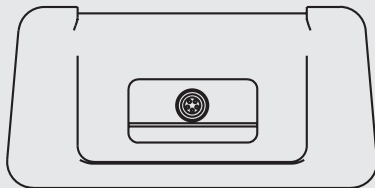
Front view



Side view



Top view



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11. Accessories

11. Accessories

GB

Calibration

- DKD/DAkkS calibration certificate

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

Other

- Service case



GB

EG-Konformitätserklärung

EC Declaration of Conformity

Dokument Nr.:

11563347.01

Document No.:

11563347.01

Wir erklären in alleiniger Verantwortung, dass die mit CE gekennzeichneten Produkte

We declare under our sole responsibility that the CE marked products

Typ:

CEP 6000

Model:

CEP 6000

Beschreibung:

Portabler Multifunktionskalibrator

Description:

Portable Multi-Function Calibrator

gemäß gültigem Datenblatt:

CT 83.01

according to the valid data sheet:

CT 83.01

die grundlegenden Schutzanforderungen der folgenden Richtlinie(n) erfüllen:

2004/108/EG (EMV)

are in conformity with the essential protection requirements of the directive(s)

2004/108/EC (EMC)

Die Geräte wurden entsprechend den folgenden Normen geprüft:

EN 61326-1:2006

The devices had been tested according to the following standards:

EN 61326-1:2006

Unterschriftet für und im Namen von / Signed for and on behalf of

WIKAL Alexander Wiegand SE & Co. KG

Klingenberg, 2010-04-06

Geschäftsbereich / Company division: MP-CT

Qualitätsmanagement / Quality management : MP-CT


 Alfred Häfner


 Harald Hartl

Unterschrift, autorisiert durch das Unternehmen / Signature authorized by the company

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Kommanditgesellschaft: Sitz Klingenberg –
 Amtsgericht Aschaffenburg HRA 1819
 Komplementärin: WIKAL Verwaltungs SE & Co. KG –
 Sitz Klingenberg – Amtsgericht Aschaffenburg
 HRA 4685

Komplementärin:
 WIKAL International SE - Sitz Klingenberg -
 Amtsgericht Aschaffenburg HRB 10505
 Vorstand: Alexander Wiegand
 Vorsitzender des Aufsichtsrats: Dr. Max Egli

MM/YYYY country code based on 10/2014 GB/CN

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符合性声明请见 www.wika.com。

1. 一般信息

1. 一般信息

- 本操作说明书所述的 CEP6000 型手持多功能校准仪采用一流的技术制造而成。所有元件在生产过程中都恪守严格的质量和标准。我们的管理体系通过了 ISO 9001 和 ISO 14001 认证。
- 本操作说明书包含重要的仪器处理信息。工作安全法规要求遵守所有的安全指令和工作指令。
- 请遵守适用于本仪器使用范围的当地事故预防条例和一般安全法规。
- 操作说明书是产品的一部分，必须与仪器一起放置，便于熟练的操作人员随时取用。如果更换仪器的操作人员或所有者，必须一同移交本操作说明书。
- 熟练的操作人员在开始任何工作之前，必须仔细阅读并理解本操作说明书。
- 销售文档中包含的一般条款和条件适用本仪器。
- 将来可能进行技术修改。
- 已根据国际标准执行工厂校准 / DKD/DAkkS 校准。
- 更多信息：
 - 网址：www.wika.com.cn / www.wika.com
 - 相关数据表：[CT 83.01](#)
 - 应用顾问：[电话：+49 9372 132-5049](tel:+4993721325049)
[传真：+49 9372 132-8005049](tel:+4993721328005049)
CTServiceTeam@wika.com

CN

1. 一般信息 / 2. 简介

缩写、定义

RTD	电阻温度计
TC	热电偶
2W	2 线测量 两条测试线缆用于电源。 测量信号也提供电流。
3W	3 线测量 两条测试线缆用于电源。 一条测试线缆用于测量信号。
4W	4 线测量 两条测试线缆用于电源。 两条测试线缆用于测量信号。
CJC	冷端温度补偿

CN

2. 简介

2.1 概述



- ① 显示屏
- ② 键盘
- ③ 连接

2.简介

2.2 说明

CEP6000 型手持多功能校准仪是电池供电的手持仪器，可以测量或模拟电气参数。

CEP6000 型号支持各种不同的热电偶和电阻温度计。

超高准确度和各项特殊功能使本仪器成为一款简便易用、高度灵活的校准仪。

CN

2.3 交付产品

- CEP6000 型手持多功能校准仪
- 操作说明书
- 三套测试线缆（红色/黑色）
- 符合 DIN EN 10204 的 3.1 校准证书
- 四节 AA 电池
- 保护橡胶套
- 快速入门指南

按照装箱单交叉检查交付产品。

3.安全性

3. 安全性

3.1 符号说明

CN



警告！

...表示潜在的危險情况，如不可避免，可导致严重人身伤害或死亡。



小心！

...表示潜在的危險情况，如不可避免，可导致轻微人身伤害或设备损坏，或可能造成环境破坏。



危险！

...表示电源造成的危险。如果不遵守安全说明，可能导致严重或致命伤害。



提示

...表示有帮助的提示、建议和信息，以供高效无故障运行之需。

3.2 预期用途

CEP6000 型手持多功能校准仪是电池供电的手持仪器，可以测量并输出和/或模拟电流、电压、电阻、RTD、TC、频率和脉冲。

此外，还可以连接外部压力传感器/压力模块，通过本校准仪来测量压力。WIKA 型号 CPT6600 压力模块和 Mensor 型号 CPT6100/CPT6180 精密压力传感器都兼容。

本仪器不允许在危险区域使用！

本仪器专为此处所述的预期用途设计和制造，不得另作他用。

必须严格遵守本操作说明书所载的技术规格。如因仪器操作或处理不当而导致超出其技术规格，必须立即停止使用仪器，并交由授权的 WIKA 服务工程师进行检查。

必须以要求的谨慎程度对待本精密电子仪器（防止潮湿、碰撞、强磁场、静电和极端温度，切勿将任何物体插入本仪器或其开口中）。必须防止插头和插座遭到污染。

对于因非预期用途操作而产生的任何索赔，制造商概不负责。

月/年国家/地区代码基于 10/2014 GB/CN

3.安全性

3.3 使用不当



警告！

使用不当会导致伤害

仪器使用不当可能导致危险的情况和伤害。

- ▶ 不得擅自修改仪器。
- ▶ 切勿在危险区域使用仪器。
- ▶ 只能使用 WIKA 提供的附件。

CN

任何不符合预期用途或超出其范围的使用都视为使用不当。

切勿将本仪器用于安全或紧急停止设备。

3.4 操作人员的责任

本仪器用于工业领域。因此，操作人员负责有关工作安全的法律责任。

必须遵守本操作说明书中的安全说明，以及安全、事故预防和环境保护法规。

3. 安全性

3.5 人员资质

CN



警告！

操作人员不符合资质可能导致人身伤害

处理不当可能导致严重人身伤害和设备损坏。

- ▶ 本操作说明书所述的操作只可由具有下列资格的熟练操作人员进行。

熟练的操作人员

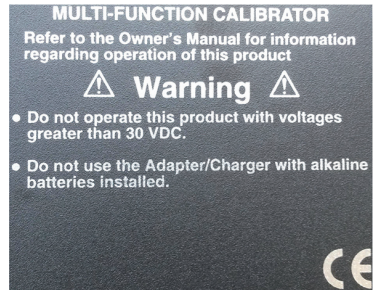
熟练的操作人员（获得操作人员的授权）是指基于其技术培训、测量和控制技术知识，及其对国家特定法规、当前标准和指令的了解与经验，有能力执行所述工作，并能独立辨识潜在危险的人员。

特殊操作条件要求更多相关的知识，例如腐蚀性介质。

3.6 标签、安全标志

产品标签

产品标签位于仪器侧面的保护橡胶套下方。



- ① 二进制代码
- ② 序列号

符号



在调试仪器之前，确保先阅读本操作说明书！



具有此标记的仪器符合相关的欧盟指令。



仪器上的此标记表示不能作为家庭垃圾处理。可以返还给制造商或相应的市政机关（请参见欧盟指令 2002/96/EC）。

CN

4. 设计和功能

CEP6000 型手持多功能校准仪是电池供电的手持仪器，可以测量并输出和/或模拟电流、电压、电阻、RTD、TC、频率和脉冲。

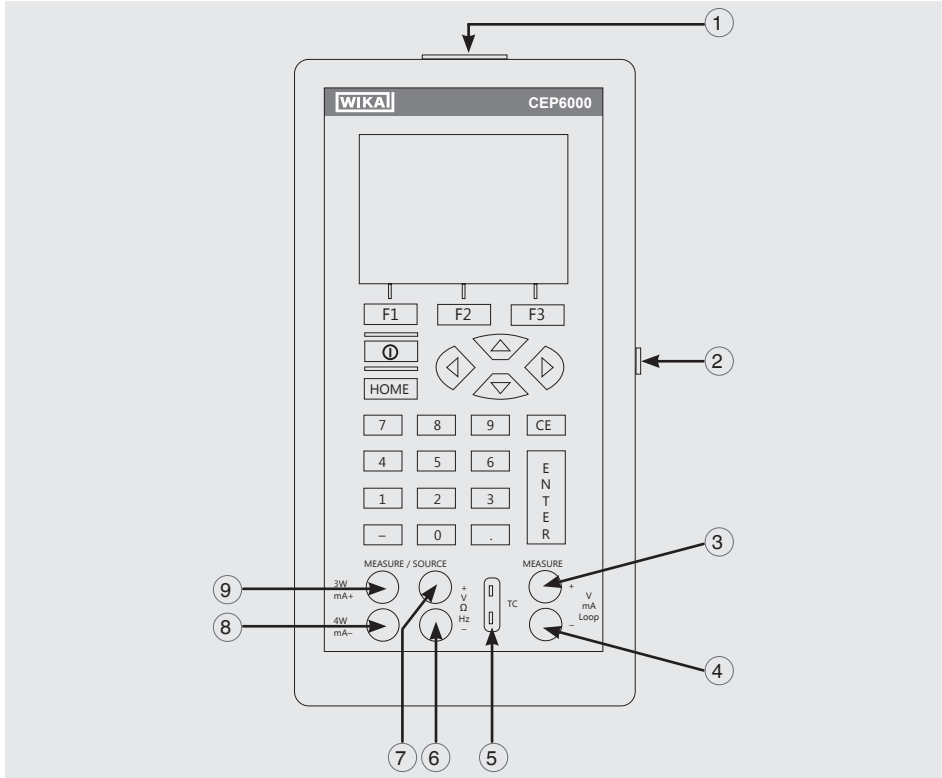
此外，还可以连接外部压力传感器/压力模块，通过本校准仪来测量压力。WIKA 型号 CPT6600 压力模块和 Mensor 型号 CPT6100/CPT6180 精密压力传感器都兼容。

4.1 前箔

下图显示输入和输出端子的位置，以及校准仪上按钮的位置。

4.设计和功能

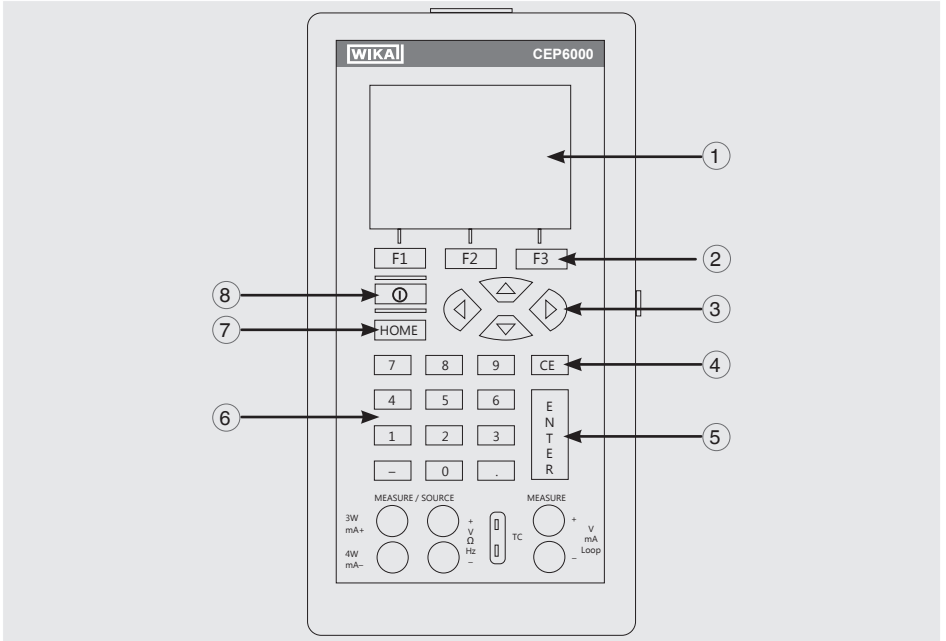
4.1.1 连接



- ① **外部压力模块的连接**
校准仪在连接压力模块后可测量压力。
- ② **串行接口**
校准仪连接 PC 后可进行远程操作。
- ③ + ④ **(单独) 电流和电压输入以及 24 V 直流电压的输出**
电流、电压和单独电流环路电源的测量端子。
- ⑤ **热电偶输入/输出**
热电偶的测量或模拟端子。适用于热电偶的极化微型连接器。
- ⑥ + ⑦ **电压、电阻温度计 (2 线)、频率、脉冲、输入/输出**
电压、频率、脉冲序列和电阻温度计 (RTD) 的模拟和测量端子。
- ⑧ + ⑨ **电流、电阻温度计 (3 线、4 线)、输入/输出**
电流的模拟和测量端子，还适用于 3 线和 4 线连接的电阻温度计测量。

4.设计和功能

4.1.2 按键功能



- ① **显示屏**
- ② **校准仪显示屏底部用于操作菜单栏的功能键**
[F1] 键用于选择左侧框中的选项, [F2] 键用于选择中间框中的功能, [F3] 键用于选择右侧框中的功能。
- ③ **修改输出值的个别数字: 增大、减小或坡道输出值**
使用左右箭头键选择要更改输出值中的哪个数字。使用上下箭头键可以增大、减小输出值或切换到坡道形式。
- ④ **清除输入值**
将删除输入的最后数值。
- ⑤ **ENTER**
确认数值输入。
- ⑥ **数字键**
用于输入数值。
- ⑦ **HOME - 返回主菜单**
返回到菜单栏上的开始菜单。
- ⑧ **开启/关闭**
开启和关闭校准仪。

4.设计和功能

4.2 电池

4.2.1 选择电池或充电式电池

CEP6000 型号支持四节碱性电池 (AA) 或四节 NiMH 充电式电池 (AA)。

CN

4.2.2 使用电源设备



小心！

身体伤害以及财产和环境损害

如果 CEP6000 型手持多功能校准仪中装有碱性电池，同时又使用电源设备，可能发生过热、严重损坏和泄漏。电池电解液泄漏可能严重损害健康。

- ▶ 本仪器只能在未装电池时使用电源设备，或者使用 NiMH 充电式电池。
- ▶ 只能使用未损坏、无故障的电源设备。
- ▶ 请使用 WIKA 附件。

使用电源设备：

1. 从 CEP6000 型手持多功能校准仪中取出电池，或者在校准仪的电池盒中装入充电式电池。
2. 将电源设备连接到校准仪。
3. 将电源线插入电源连接器。



执行此操作时确保电源正确。

仪器中的 NiMH 充电式电池会慢慢充电。
充电完成需要大约 10 到 12 个小时。

4. 使用后，从电源和校准仪拔下电源线。

5. 运输、包装和存放

5. 运输、包装和存放

CN

5.1 运输

检查 CEP6000 型手持多功能校准仪是否在运输过程中造成任何损坏。必须及时报告明显的损坏。



小心！

运输不当会造成损坏

运输不当可能严重损害财产。

- ▶ 交货时卸下包装的货物以及内部搬运期间，请小心处理并遵循包装上的符号。
- ▶ 在内部搬运时，遵守第 5.2 章“包装和存放”中的说明。

如果仪器从寒冷的地方搬运到温暖的环境，冷凝可能导致仪器故障。在运行之前，先让仪器温度达到室温。

5.2 包装和存放

只有在使用时才能拆下包装。

请保留包装材料，以便在下次运输过程中提供最佳保护（例如使用地变更、送修等）。

存放地点的允许条件：

- 存放温度：-20 ...+70 °C
- 湿度：0 ...90 % 相对湿度（无凝结）

避免置于以下状况中：

- 阳光直射或靠近高温物体
- 机械振动、机械冲击（用力放下）
- 油烟、蒸汽、粉尘及腐蚀性气体
- 危险环境、易燃气体

5.运输、包装和存放 / 6.调试...

在满足上述条件的地点将 CEP6000 型手持多功能校准仪置于原包装中存放。如果原包装不可用，按以下方式包装和存放仪器：

1. 将仪器包装在防静电塑料薄膜中。
2. 将仪器连同吸振材料放入包装中。
3. 如果长时间存放（超过 30 天），在包装中放置一个干燥剂包。

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6. 调试、操作



注意！

电击会导致损坏

电压高于额定值可能会损坏多功能校准仪。外壳或测试线缆如有损坏，任何接触都可能导致电击。

- ▶ 采用正确的额定电压，请参见第 10 章“规格”。
- ▶ 请勿使用已损坏的校准仪。使用之前，请检查校准仪的外壳。注意是否缺少塑料组件或是否有裂纹，特别是接口周围的绝缘层。
- ▶ 请勿使用有故障的校准仪。仪器保护可能受损。如有疑问，请专人检查校准仪。
- ▶ 电池盒必须关闭并密封。
- ▶ 显示电池符号时，立即更换电池。
- ▶ 测量或模拟时务必使用正确的连接器插座、功能和量程。
- ▶ 仅当所有线缆都已从校准仪断开连接后才能开启电池盒。
- ▶ 请检查测试线缆有无绝缘损坏或金属组件裸露。检查测试线缆的连续性。使用校准仪之前更换所有损坏的测试线缆。
- ▶ 切勿触碰测试线缆上的金属部分。

只要通过按下 **ON/OFF** 键开启了 CEP6000 型手持多功能校准仪，校准仪就会进行一次例行的短暂自检。在自检期间，显示屏将显示当前的固件版本和自动关机状态。校准仪至少需要预热 5 分钟才会达到其指定的准确度。环境温度变化大时，可能需要更长的预热时间。

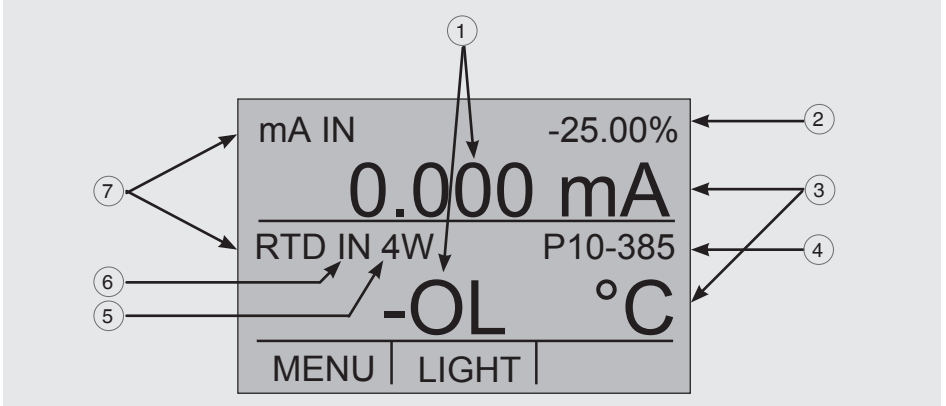
6. 调试、操作

6.1 主显示屏

多功能校准仪的显示屏分为 3 个主要区域：上部显示区、下部显示区和菜单栏。

- 上部显示区用于显示直流电压、直流电流（有或没有环路电压）和压力测量结果。
- 下部显示区可用于测量和模拟。
- 菜单栏（位于显示屏底部）用于配置上部 and 下部显示区（根据所需的功能）。

下图显示各个显示字段的位置，具体如表格所述。



① 数字显示

显示测量信号或模拟信号的数值。

“OL”或“-OL”测量值表示超出量程。

② 量程的显示

仅适用于“mA”和“mA LOOP”显示。

显示关于 4 mA = 0% 和 20 mA = 100% 的电流测量值。

③ 单位

显示测量或输出/模拟的相应单位。

对于“RTD”（电阻温度计）和“TC”（热电偶），提供 °C 或 °F；对于“FREQ”（频率）和“PULSE”（脉冲），提供 CPM、Hz 或 kHz。

6.调试、操作

4 传感器类型

适用于各种电阻温度计 (RTD) 和热电偶 (TC) 的测量和模拟。

所有可能的传感器类型在规格中加以说明 (请参见第 10 章“规格”)。该选项还显示脉冲幅度或频率模拟和压力单位。

5 其他设定

只适用于选项“TC 测量”(热电偶)和“RTD 测量”(电阻温度计)。

选择“TC”时,此设定用于开启或关闭冷端温度补偿(CJC)。

进行 RTD 测量时,此设定定义用于测量的线数(2W = 2 线测量,3W = 3 线测量,4W = 4 线测量)。

6 输入/输出显示

切换下部显示输入模式(测量)或输出模式(输出/模拟)。

7 主要参数

定义要测量或输出/模拟的参数。

上部显示区可用的选项包括:“VOLTS IN”(输入电压)、“PRESSURE”(压力)、“mA IN”(输入电流,以 mA 表示)和“mA LOOP”(24 V 直流电压时的 mA)。

下部显示区可用的选项包括:“VOLTS”(电压)、“TC”(热电偶)、“RTD”(电阻温度计)、“FREQ”(频率)、“PULSE”(脉冲)、“PRESSURE”(压力)和“mA”(电流)或“mA 2W SIM”(电流模拟)。

6.2 菜单栏

显示参数通过位于 LCD 显示屏底部的菜单栏管理。功能键 [F1]、[F2] 和 [F3] 用于导航菜单栏的所有层级和选项。最上层菜单是开始菜单。

可随时按 [HOME] 键返回此菜单。开始菜单有三种形式:输入开始菜单、输出开始菜单和脉冲开始菜单。

6.2.1 菜单功能“测量”

在功能“测量”的开始菜单中,只启用选项“MENU”和“LIGHT”。选项“MENU”用于将下一级菜单调用到菜单栏,即调用主菜单。按下相应的功能键 [F1] 可调用主菜单。

选项“LIGHT”用于开启 LCD 显示屏的背光。按下相应的功能键 [F2] 可开启背光。



6.调试、操作

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6.2.2 菜单功能“输出”

功能“输出”的开始菜单中有三个可用的选项：“MENU”、“LIGHT”和“STEP”或“RAMP”。

前两个选项的功能与开始菜单中一样。第三个选项可通过自动输出功能菜单选项选择，用于开启或关闭选择的自动功能。有关详细信息，请参见第 6.5.2 章“使用自动输出功能”。只要退出该菜单或按下 [HOME] 键，自动输出功能就会停止。



6.2.3 菜单功能“脉冲输出”

脉冲开始菜单也有三个可用的选项：“MENU”、“TRIG”和“COUNTS”。

选项“TRIG”和“COUNTS”用于脉冲模拟。这些选项的功能说明请参见第 6.5.7 章“脉冲输出”。



6.2.4 菜单功能“UPPER”、“LOWER”和“MORE”

菜单栏的下一级是主菜单本身。主菜单下哪些层级可用取决于所选的校准仪操作模式。选项包括“UPPER”、“LOWER”和“MORE”。

选择“UPPER”时，将会调用上部显示区参数的选择菜单。选择“LOWER”时，则会调用下部显示区参数的选择菜单。“MORE”将切换至下一级菜单。



6.2.5 菜单功能“自动输出功能”

“自动输出功能”是“输出”模式下的菜单功能，通过按“MORE”调用。选项包括“AUTO FUNC”、“NEXT”和“DONE”。

选择“AUTO FUNC”时，可以设定自动输出功能的参数。“NEXT”用于切换至下一个菜单功能，“DONE”用于返回开始菜单。有关详细信息，请参见第 6.5.2 章“使用自动输出功能”。



6.调试、操作

6.2.6 菜单功能“对比度”

下一级菜单是对比度菜单。选项包括“CONTRAST”、“NEXT”和“DONE”。

“CONTRAST”用于设定对比度。“NEXT”用于切换至下一个菜单功能，“DONE”用于返回开始菜单。选择“CONTRAST”后会显示箭头键 [F1, F2]，用以设定对比度。

在特定情况下，对比度变化大可能导致显示屏在正常条件下难以显示。如果显示屏对于要显示的值太亮或太暗，应采取以下步骤将对比度设定重置为默认值。

1. 按住 [HOME] 键，同时开启仪器。
2. 按住此按钮 10 秒钟即可将对比度重置为工厂设定。如果显示屏太亮以至于无法看清仪器是开启还是关闭，可使用背光对应的按钮确认。



CONTRAST | NEXT | DONE

6.2.7 菜单功能“自动关闭”

自动关闭的主菜单包含选项“AUTO OFF”、“NEXT”和“DONE”。

选项“AUTO OFF”用于开启和关闭自动关闭功能，以及指定仪器在关闭之前保持待机状态的时长。“NEXT”用于切换至下一个菜单功能，“DONE”用于返回开始菜单。



AUTO OFF | NEXT | DONE

6.2.8 菜单功能“频率或脉冲输出”

当下部显示区用于频率和脉冲输出时，在主菜单后还会显示频率子菜单。选项包括“FREQ LEVEL”、“NEXT”和“DONE”。

“FREQ LEVEL”用于设定振荡幅度。“NEXT”用于切换至下一个菜单功能，“DONE”用于返回开始菜单。



FREQ LEVEL | NEXT | DONE

6. 调试、操作

6.2.9 菜单功能“探头特定系数”

如果校准仪处于“RTD CUSTOM”模式，在主菜单显示后，将为用户定义的配置显示 RTD 菜单。选项包括“SET CUSTOM”、“NEXT”和“DONE”。

选项“SET CUSTOM”用于在校准仪中为用户定义的“PRT”（铂电阻温度计）输入系数。“NEXT”用于切换至下一个菜单功能，“DONE”用于返回开始菜单。



SET CUSTOM	NEXT	DONE
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6.2.10 菜单功能“归零”

将压力重置为零是在主菜单中选择“MORE”时的最后一个选项，仅在连接了外部压力传感器时才会显示。选项包括“ZERO”、“NEXT”和“DONE”。

“ZERO”用于将压力重置为零。“NEXT”用于切换至下一个菜单功能，“DONE”用于返回开始菜单。有关重置为 0 的更多信息，请参见第 6.4.4 章“测量压力”。



ZERO ♀	NEXT	DONE
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6.2.11 菜单功能“参数选择”

参数选择菜单通过主菜单使用“UPPER”或“LOWER”调用。选项包括“SELECT”、“NEXT”和“DONE”。选择后，一个参数会在显示屏中闪烁。

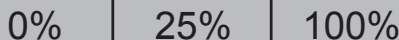
使用选项“SELECT”可更改参数。选择“NEXT”可切换至另一个变量。“DONE”用于切换回开始菜单并接受选择。



SELECT	NEXT	DONE
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6.3 光标控制/设定点控制

可使用键盘上的四个箭头键更改输出值。如果按下箭头键，光标会出现在输出值的最后一位数下面。使用左右箭头键选择要更改输出值中的哪个数字。使用上下箭头键可以增大或减小输出值。按下四个箭头键中的任何一个，菜单栏都将切换到设定点菜单。



0%	25%	100%
----	-----	------

三个功能键分别赋值“0%”、“25%”和“100%”。同时按下相应的功能键时，0 和 100 % 可通过输入值来保存。“25 %”对应的按键然后会将相应的值切换至 25 %。

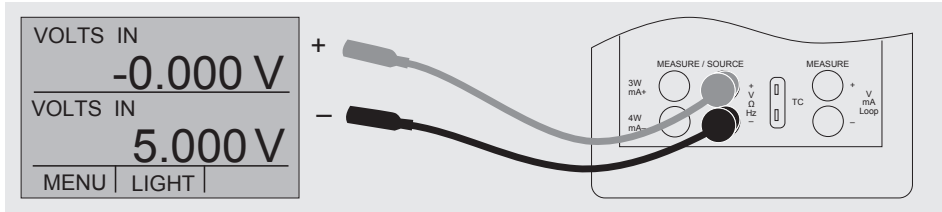
6. 调试、操作

6.4 使用测量代码（下部显示区）

6.4.1 测量电压和频率

要测量电压或频率，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择“V”或“FREQ”。
2. 输入/输出设定必须设为“IN”。
3. 连接测试线缆（请参见下图）。

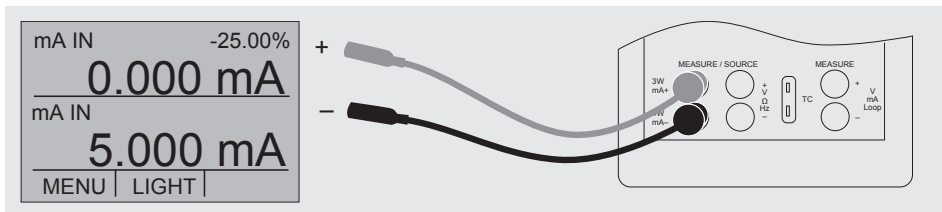


测量输入和输出端子的电压和频率

6.4.2 测量电流 (mA)

要测量电流 (mA)，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择“mA”。
2. 输入/输出设定必须设为“IN”。
3. 连接测试线缆（请参见下图）。



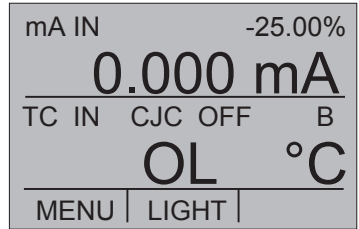
测量输入和输出端子的电流 (mA)

6. 调试、操作

6.4.3 测量温度

6.4.3.1 使用热电偶

校准仪支持以下类型的热电偶：B、C、E、J、K、L、N、R、S、T、U、BP 和 XK。所有这些类型的典型特性请参见第 10 章“规格”。校准仪还有“CJC”（冷端温度补偿）功能。在正常运行中，该功能将会激活，测量热电偶的有效温度。如果选项“CJC”禁用，校准仪将测量连接点热电偶与热电偶输入端子之间的温差。



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CJC 选项应仅在通过外部冰槽进行校准时才予以禁用。

要使用热电偶测量温度，请执行以下步骤：

1. 使用迷你连接器将热电偶的线缆连接到校准仪的输入/输出端（请参见下图）。



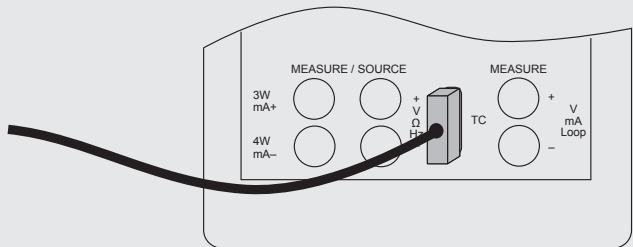
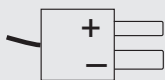
热电偶的连接线必须与校准的热电偶类型匹配。

2. 在主菜单中，切换到下部显示区“LOWER”并选择“TC”。
3. 输入/输出设定必须设为“IN”。
4. 在菜单中选择相应的热电偶型号。
5. 选择温度单位。



为获取最佳准确度，请等待 2 到 5 分钟，让迷你连接器与校准仪之间的温度稳定。然后再执行测量。

热电偶插头



测量热电偶端子处的温度

6. 调试、操作

校准仪可以测量热电偶的电压 (mV)，因此如果校准仪不支持相应的热电偶类型，可以借助表格来确定温度。如果是上述情况，请选择“mV”为类型。

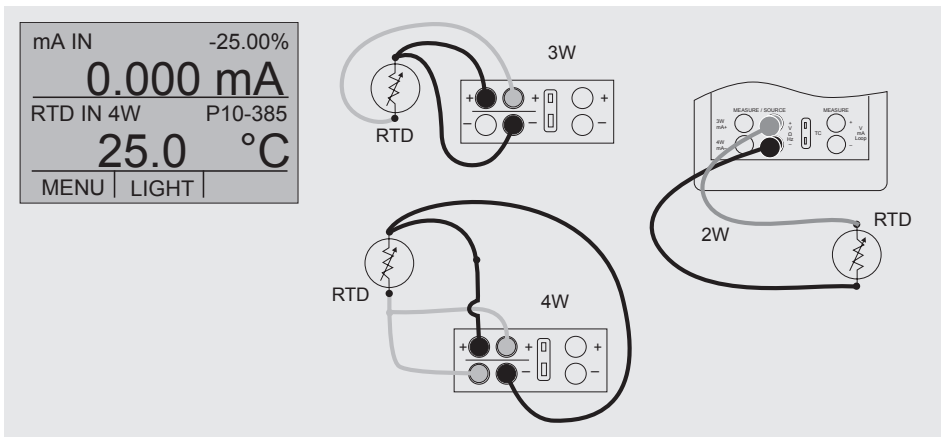
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6.4.3.2 使用电阻温度计 (RTD)

支持的电阻温度计在第 10 章“规格”中有详细说明。RTD 的特定特性是其温度相关的电阻 (R0)。校准仪支持 2 线、3 线或 4 线输入信号，其中使用 4 线连接的输入测量最精确。

要使用电阻温度计测量温度，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择“RTD”。
2. 输入/输出设定必须设为“IN”。
3. 选择 2 线、3 线或 4 线连接“2W、3W、4W”。
4. 在菜单中选择相应的 RTD 类型。
5. 选择温度单位。
6. 连接 RTD 线缆（请参见下图）。



连接 RTD 探头时测量温度

也可使用此功能测量电阻。为此，请执行上述步骤，若为 RTD 类型，请选择“OHMS”。通过此选项和测量表，未编程到校准仪的 RTD 探头也可用于测量。

6.4.4 测量压力



小心！

增压

压力系统中阀门开启会造成损坏。

1. 关闭阀门。
2. 慢慢释放压力。
3. 将压力模块连接到压力管线。



注意！

损坏螺纹连接

螺纹连接过紧可能会损坏压力模块。

- ▶ 使用合适的工具。
- ▶ 使用最大 13.6 Nm 的扭矩（扭力扳手）紧固压力连接。
- ▶ 切勿超过允许的最大压力。
- ▶ 只使用具有相容介质的压力模块。请参见压力模块的规格。

要使用外部压力模块测量压力，请执行以下步骤：

1. 使用压力模块适配器将压力模块连接到校准仪（请参见下图）。



将压力模块连接到校准仪时，必须使用 WIKA 压力模块适配器。

2. 按需要从主菜单切换到上部或下部显示区。校准仪将在上部及下部显示区中测量压力。这样可同时在两部不同的设备上测量压力。
3. 作为主要参数，选择“PRESSURE”。
4. 选择所需的测量单位。

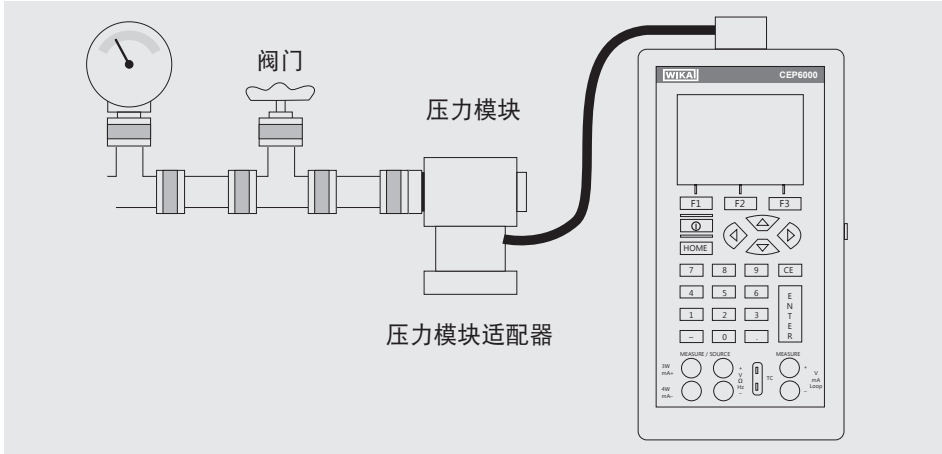


■ 使用高压模块时，只适用于低压范围的技术测量单位（例如 inH₂O、cmH₂O 等）是无效的选择。如果在连接了高压模块时选择低压单位，显示屏上将显示“----”。

5. 将压力模块设定为零 (ZERO)。重置校准仪的功能在菜单功能“ZERO”下。

6. 调试、操作

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压力测量接头

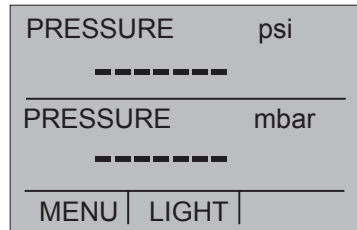
6.4.4.1 绝压模块归零

要将校准仪重置为零，先将其设定为测量已知的压力，例如大气压。

要将校准仪归零，请执行以下步骤：

1. 调出菜单功能“ZERO”。
2. 选择“ZERO”。将显示“SET REFERENCE ABOVE”。
3. 通过键盘输入参考压力。

校准仪会将大气压参考值保存到永久内存中。该参考值会始终为绝压模块保存。如果连接新的绝压模块，必须重复此程序。



6.5 使用输出模式（下部显示区）

校准仪可以生成用于测试和校准过程仪器的信号。它可以模拟电阻温度计或热电偶的电压、电流、电阻、频率、脉冲和电气输出信号。

6.5.1 将输出参数设定为 0 % 和 100 %

要输入 0 % 和 100 % 值，请执行以下步骤：

1. 从主菜单中选择下部显示区“LOWER”，然后选择所需的功能。
2. 在输入/输出设定中选择输出“OUT”，并且输入所需的值。（例如：“VOLTS OUT”）。
3. 用键盘输入（例如）5 V 并按 Enter 键。
4. 按下其中一个箭头键，从菜单中选择设定点设定。
5. 按下“0 %”对应的功能键 [F1]。值 0 % 将短时间闪烁，设定点（例如 5 V）将会保存。
6. 对（例如）20 V 重复这些步骤，然后按下“100 %”对应的功能键 [F3]。
7. 现在可以使用“25 %”对应的功能键，以 25 % 的步进在 5 V 到 20 V 范围内增减。

6.5.1.1 逐步增大输出电流

要在毫安范围内将 25 % 功能用于输出信号，请执行以下步骤：

1. 从主菜单中为下部显示区选择选项“mA”。
2. 现在可以使用“25 %”对应的按键，以 25 % 的间隔在 4 mA 到 20 mA 范围内增减。

6.5.2 使用自动输出功能

步进功能和自动坡道功能用作自动输出功能。所选功能可通过开始菜单开启和关闭（“STEP”或“RAMP”）。自动输出参数可通过“自动输出功能”在菜单中设定。

参数包括：

- 哪个自动输出功能可用（步进功能或坡道功能）。
- 自动输出功能的时间决定步进的间隔时间，或在坡道功能中决定坡道第一个与第二个限值的间隔时间。
- 坡道模式和步进功能的限值设定为 0 % 和 100 %。更多信息请参见第 6.5.1 章“设定输出参数 0 % 和 100 %”。步进增量为 25 %，范围从 0 % 到 100 %。

6. 调试、操作

6.5.3 电流输出

要输出电流，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择“mA”。
2. 输入/输出设定必须设为“OUT”。
3. 将测试线缆连接到电流输出端子（请参见下图）。
4. 通过键盘输入所需的电流值。



用作 mA 来源的接头

6.5.3.1 HART™ 电阻器选择

可对 CEP6000 进行配置，以便在其中激活 HART™ 兼容仪器的 250 Ω 电阻。如果使用 CEP6000 的内部 250 Ω 电阻器，则不得激活用于 HART™ 模块校准的序列电阻。



使用内部 250 Ω 电阻器时，在 20 mA 电流下，最大负荷电阻将从 1,000 Ω 减至 750 Ω。

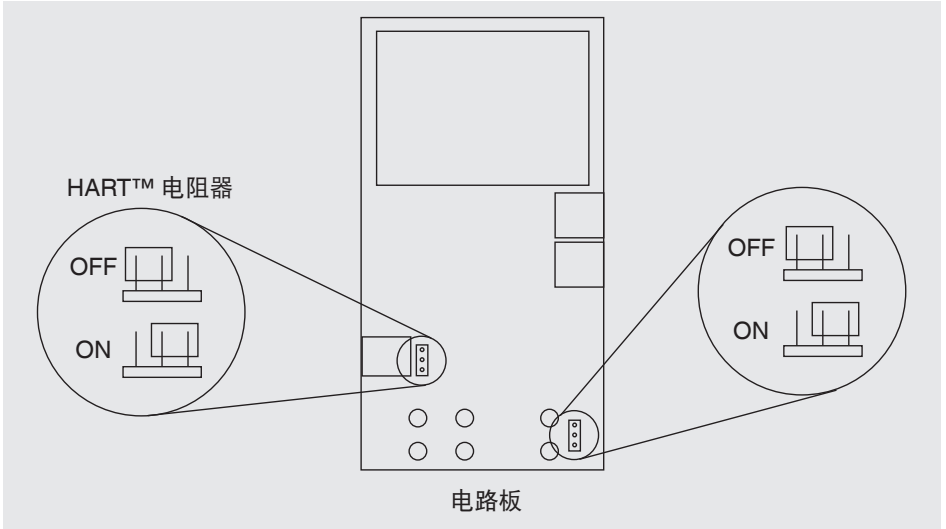
6.5.3.2 HART™ 电阻器激活/禁用程序

1. 取下电池盖，松开外壳上部的两颗螺钉。
2. 卸下外壳下部的两颗螺钉。
3. 从外壳的下半部小心地取下上半部。

下图所示为 HART™ 跳线的位置。

6. 调试、操作

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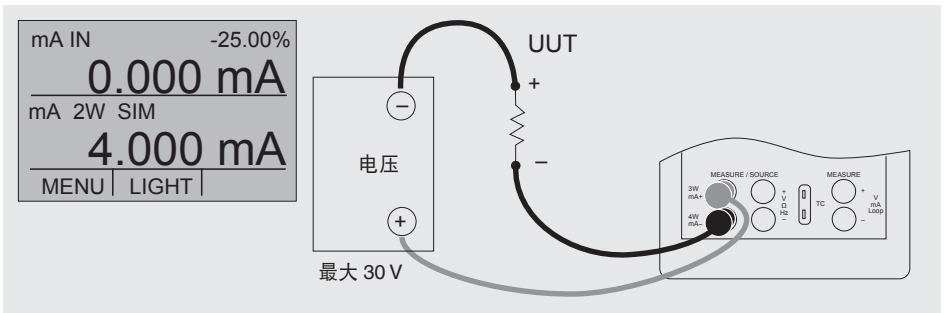


HART™ 跳线的位置

6.5.4 模拟发射器

要使用校准仪模拟电流环路中的发射器，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择“mA 2W SIM”。
2. 通过键盘输入所需的电流。
3. 将测试线缆连接到电流输入端子（请参见下图）。
3. 连接外部 24 V 直流电源（请参见下图）。



发射器模拟连接

6. 调试、操作

6.5.5 电压输出

要输出电压，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择“VOLTS”。
2. 输入/输出设定必须设为“OUT”。
3. 将测试线缆连接到电压输出端子（请参见下图）。
4. 通过键盘输入所需的电压值。

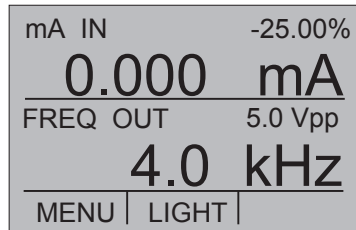


电压、频率和脉冲输出连接

6.5.6 频率输出

要输出频率，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择“FREQ”。
2. 输入/输出设定必须设为“OUT”。
3. 设定相应的频率单位。
4. 将测试线缆连接到频率输出端子（请参见图“电压、频率和脉冲输出连接”）。
5. 通过键盘输入所需的频率值。
6. 要更改幅度，在菜单功能“频率或脉冲输出”中选择选项“FREQ LEVEL”。
7. 通过键盘输入所需的幅度值。

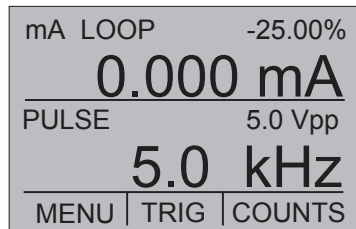


6.5.7 脉冲输出

校准仪可以生成脉冲序列，可以按所需频率调整脉冲数。

举例来说，如果频率设定为 60 Hz，脉冲数设定为 60，校准仪在 1 秒钟内将生成 60 次脉冲。

作为脉冲发生器运行时，连接与频率“输出”相同。



6. 调试、操作

要输出脉冲，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择“PULSE”。
2. 设定相应的脉冲单位。
3. 将测试线缆连接到脉冲输出端子（请参见图“电压、频率和脉冲输出连接”）。
4. 使用开始菜单中的功能“COUNTS”设定脉冲数。信号使用“TRIG”键启动和停止。
5. 要更改幅度，在菜单功能“频率或脉冲输出”中选择选项“FREQ LEVEL”。

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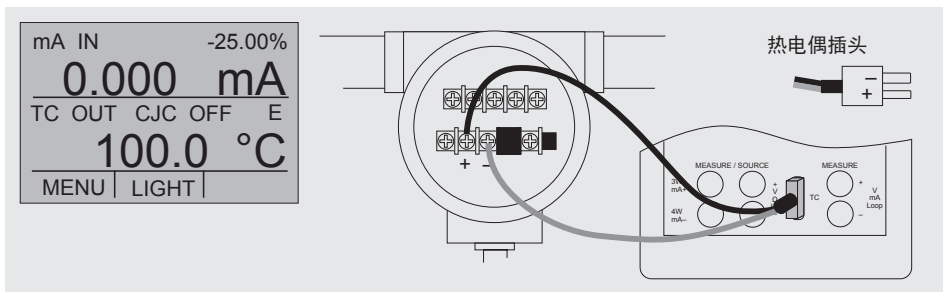
6.5.8 模拟热电偶

要模拟热电偶，请执行以下步骤：

1. 使用迷你连接器将热电偶的线缆连接到校准仪的输入/输出端（请参见下图）。
2. 在主菜单中，切换到下部显示区“LOWER”并选择“TC”。
3. 输入/输出设定必须设为“OUT”。
4. 在菜单中选择相应的热电偶型号。
5. 选择温度单位。
6. 通过键盘分别输入温度值或电压值。



使用的热电偶线缆必须与校准的热电偶类型匹配。



模拟热电偶端子处的温度

6.5.9 模拟电阻或电阻温度计

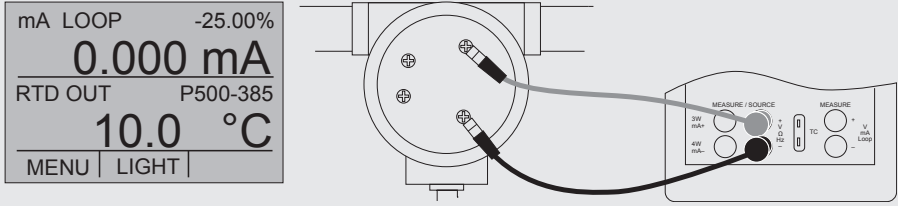
要模拟电阻/电阻温度计，请执行以下步骤：

1. 将 RTD 类型的线缆连接到校准仪的输入/输出端（请参见下图）。
2. 在主菜单中，切换到下部显示区“LOWER”并选择“RTD”。
3. 输入/输出设定必须设为“OUT”。

6. 调试、操作

4. 在菜单中选择相应的 RTD 类型。
5. 选择温度单位。
6. 通过键盘分别输入温度值或电阻值。

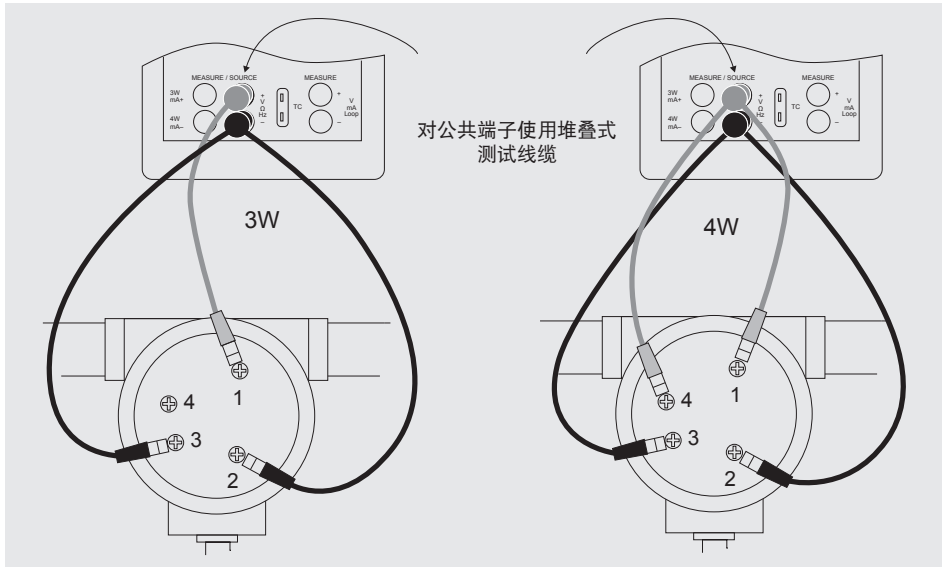
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模拟电阻或电阻温度计



校准仪模拟 2 线 RTD 探头。要连接 3 线或 4 线探头，请使用可堆叠的测试线缆（请参见下图）。



RTD 的 3 线或 4 线连接

6. 调试、操作

6.5.9.1 客户特定的电阻温度计 (RTD)

为实现最高准确度，可以将探头特定的电阻温度计系数加载到校准仪。

要输入探头特定的系数，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择“RTD”。
2. 选择 RTD 类型“CUSTOM”。
3. 选择菜单功能“探头特定系数”。
4. 用键盘输入校准仪要求的值。
 - ▶ 最低温度
 - ▶ 最高温度
 - ▶ R_0
 - ▶ 温度系数

自定义功能针对自定义电阻温度计的输出和测量使用 **Callendar–Van Dusen 等式**。系数 C 仅适用于 0 °C 以下的温度。对于 0 °C 以上的范围，只需要系数 A 和 B，而系数 C 设定为 0。 R_0 是探头在 0 °C 时的电阻。

Pt385、Pt3926 和 Pt3616 的系数

RTD	范围	R_0	系数 A	系数 B	系数 C
Pt385	$-260 \dots 0\text{ °C}$	100	3.9083×10^{-3}	-5.775×10^{-7}	-4.183×10^{-12}
Pt385	$0 \dots 630\text{ °C}$	100	3.9083×10^{-3}	-5.775×10^{-7}	-
Pt3926	0 °C 以下	100	3.9848×10^{-3}	-5.87×10^{-7}	-4×10^{-12}
Pt3926	0 °C 以上	100	3.9848×10^{-3}	-5.87×10^{-7}	-
Pt3916	0 °C 以下	100	3.9692×10^{-3}	-5.8495×10^{-7}	-4.2325×10^{-12}
Pt3916	0 °C 以上	100	3.9692×10^{-3}	-5.8495×10^{-7}	-

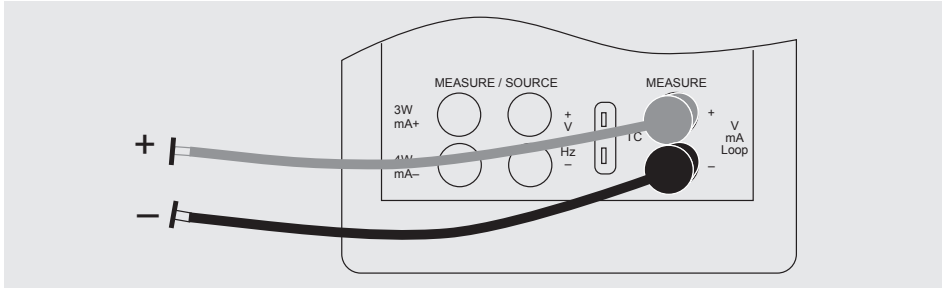
6. 调试、操作

6.6 使用独立测量模式（上部显示区）

6.6.1 测量电压 (V) 或电流 (mA)

要测量独立输入通道的电压或电流，请执行以下步骤：

1. 在主菜单中，切换到上部显示区“UPPER”并选择“V”或“mA”。
2. 将测试线缆连接到校准仪的独立输入端子（请参见下图）。



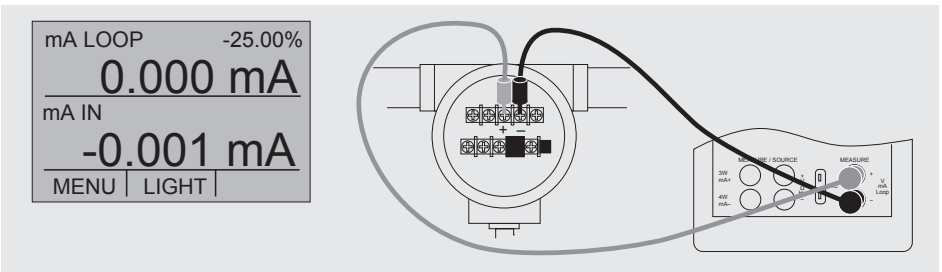
隔离输入

6.6.2 使用 24 V 直流电压时的电流测量

要测试未连接外部电源的 2 线发射器，请对独立电源使用此功能。此功能将激活具有测量电流环路的 24 V 串联直流电源。

要测量独立输入通道上 24 V 直流电压的电流，请执行以下步骤：

1. 在主菜单中，切换到上部显示区“UPPER”并选择“mA LOOP”。
2. 将测试线缆连接到校准仪的独立输入端子（请参见下图）。



隔离输入

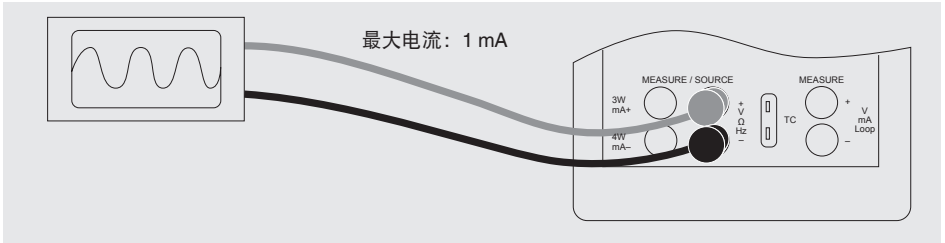
6. 调试、操作

6.7 对测试和校准使用上部和下部显示区

6.7.1 校准显示仪器

要使用输出功率校准记录并显示仪器，请执行以下步骤：

1. 在主菜单中，切换到下部显示区“LOWER”并选择相应的参数。
2. 输入/输出设定必须设为“OUT”。
3. 将测试线缆连接到校准仪（请参见下图）。

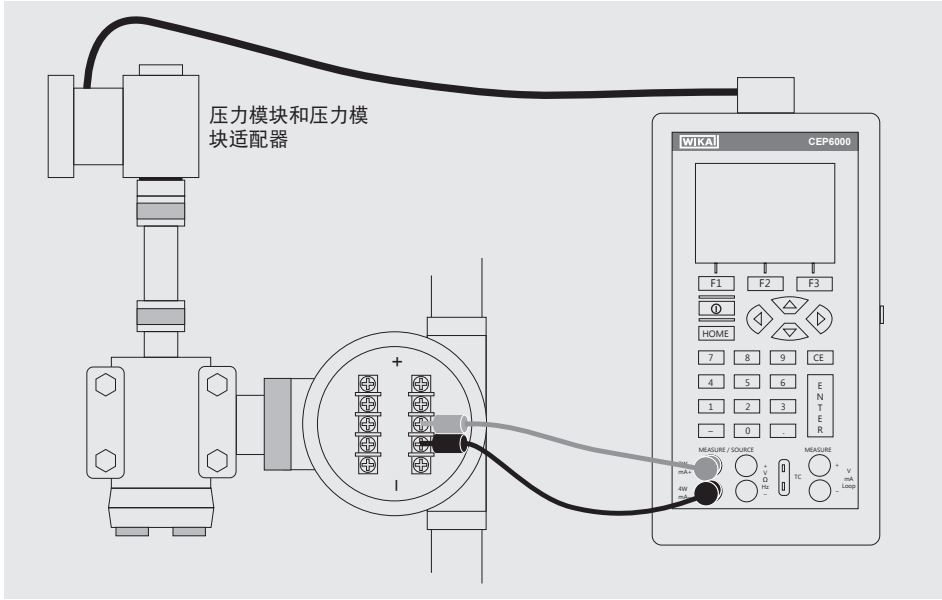


显示仪器的连接

6.7.2 校准 I/P 仪器

要校准压力控制仪器，请执行以下步骤：

1. 在主菜单中，切换到上部显示区“UPPER”并选择“PRESSURE”。
2. 在主菜单中，切换到下部显示区“LOWER”并选择“mA”。
3. 输入/输出设定必须设为“OUT”。
4. 使用 mA 输出将校准仪连接到传感器（请参见下图）。
5. 通过键盘输入电流值。



校准 I/P 仪器



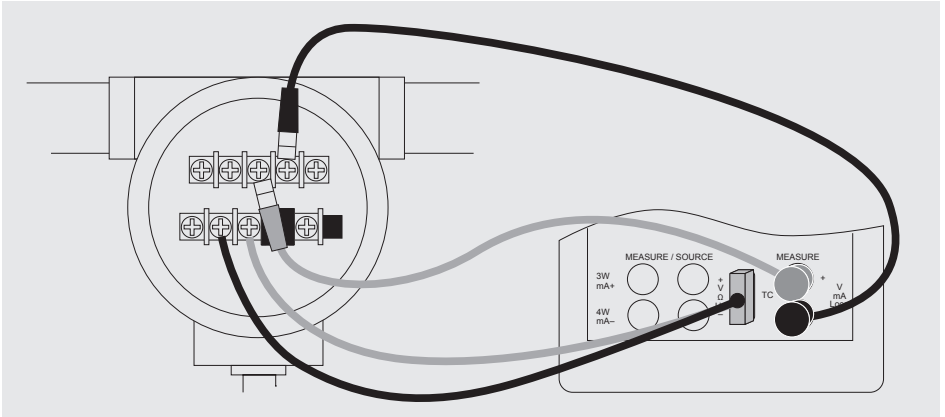
校准仪模拟发射器电流，并且使用外部压力模块测量输出压力。

6.7.3 校准发射器

要校准发射器，需要同时使用“UPPER”显示区和“LOWER”显示区 - 上部显示区用于测量，下部用于输出/模拟。在此示例中，校准热电偶发射器。

要校准 TC 温度发射器，请执行以下步骤：

1. 在主菜单中，切换到上部显示区“UPPER”并选择“mA LOOP”。
2. 在主菜单中，切换到下部显示区“LOWER”并选择“TC”。
3. 输入/输出设定必须设为“OUT”。
4. 使用键盘以及 [0 %] 和 [100 %] 键设定端值 0 % 和 100 %（另请参见第 6.5.1 章“设定输出参数 0 % 和 100 %”）。
5. 将校准仪的 TC 输出端连接到发射器的 TC 输入端。此外，将校准仪的 mA 输入端连接到发射器的 mA 输出端（请参见下图）。
6. 使用键盘输出温度值，或者使用 25 % 步进功能（25 % 键）测试 0-25-50-75-100 %。



校准 TC 温度发射器

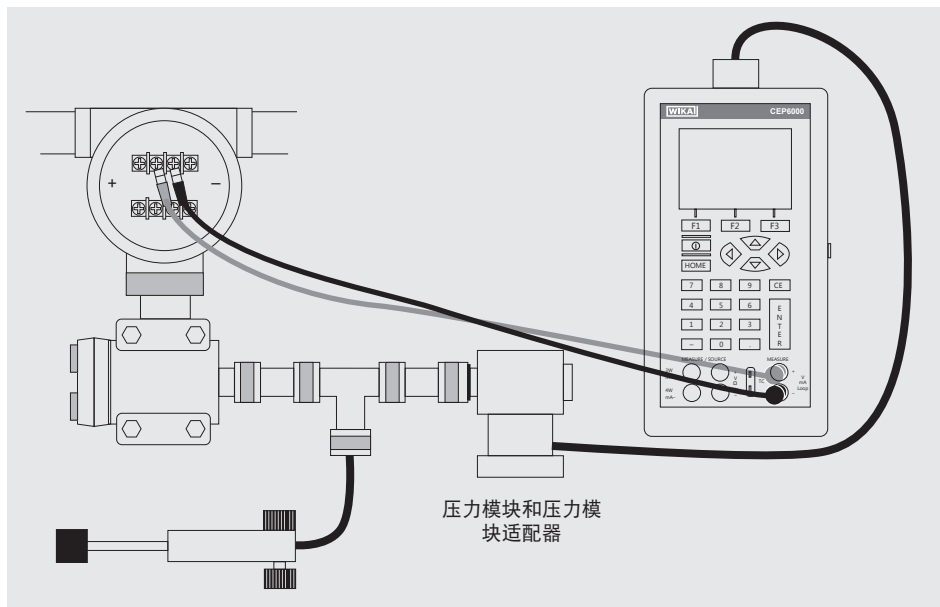


要校准不同类型的发射器，请执行上述步骤，但不要选择下部显示区。使用正确的参数为发射器设定热电偶。

6.7.4 校准压力发射器

要校准压力发射器，请执行以下步骤：

1. 在主菜单中，切换到上部显示区“UPPER”并选择“mA LOOP”。
2. 在主菜单中，切换到下部显示区“LOWER”并选择“PRESSURE”。
3. 将校准仪的 mA 输入端连接到压力发射器的 mA 输出端。此外，将外部压力模块连接到压力发射器的压力接头（请参见下图）。
4. 将压力模块归零（请参见第 6.2.10 章“菜单功能“归零””）。
5. 测试（例如）0 % 和 100 % 测试范围时的压力发射器。



校准压力发射器

7. 故障

人员：熟练的操作人员



小心！

身体伤害以及财产和环境损害


如果列出的措施无法解决故障，必须立即关闭 CEP6000 型手持多功能校准仪。

- ▶ 确保压力或信号不再存在，并且防止意外运转。
- ▶ 请联系制造商。
- ▶ 如果需要返还给制造商，请遵循第 9.2 章“返还”中的说明。



有关联系信息，请参见第 1 章“一般信息”或操作说明书的封底。

7.故障

故障	原因	解决方法
	电池电量低，只能保证短时间运行	插入新的碱性电池或充好电的NiMH 电池
OL -OL	读数严重高于或低于量程	检查：参数是否在校准仪允许的 量程内 --> 使压力或信号与允许的值 匹配
没有显示或无法定义的字符，按下按键时仪器不响应	电池电量用尽	插入新的碱性电池或充好电的NiMH 电池
	未装电池时使用电源：电压/极性不正确	检查/更换电源设备
	系统错误	关闭仪器，等待较短时间后重新开启
	仪器故障	送修仪器

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8. 维护、清洁和重新校准

8. 维护、清洁和重新校准

人员：熟练的操作人员

CN



有关联系信息，请参见第 1 章“一般信息”或操作说明书的封底。

8.1 维护

CEP6000 型多功能校准仪免维护。

修理只能由制造商进行。

电池更换除外。

只能使用原装部件（请参见第 11 章“附件”）。

更换电池

要消除测量错误，在显示电池符号时尽快更换电池。如果电池电量过低，CEP6000 将自动关闭以防止电解液泄漏。

要更换电池或充电式电池，请执行以下步骤：

1. 从 CEP6000 上拔下测试线缆和电源线（对于充电式电池供电）。
2. 卸下背面电池盒盖上的螺钉，并取下电池盖。
3. 取出电池或充电式电池。
4. 插入新电池或充好电的 NiMH 电池。



只能选用碱性电池或 AA 规格的 NiMH 电池。

5. 重新装上电池盖和螺钉，并旋紧螺钉。

8.2 清洁

1. 在清洁之前，关闭电源并拔下仪器的电源插头。
2. 使用湿布（蘸有清水或肥皂水的湿布）清洁仪器。切勿使用任何溶剂。



小心！ 损害财产

清洁不当可能会损坏仪器！

- ▶ 切勿使用腐蚀性清洁剂。
- ▶ 切勿使用任何尖硬物品进行清洁。
- ▶ 电气连接不得接触湿气。

8.3 重新校准

DKD/DAkkS 证书 - 官方认证：

我们建议由制造商每隔约 12 个月定期对仪器进行一次重新校准。如有必要，还会更正基本设定。

9. 拆卸、返还和处置

人员：熟练的操作人员

9.1 拆卸



警告！ 身体伤害

拆卸可选的外部压力传感器时，腐蚀性介质和高压存在一定的危险。

- ▶ 遵守相应介质物料安全数据表中的信息。
- ▶ 在系统消压后断开压力传感器。

9.2 返厂

运输仪器时，请严格遵循以下事项：

所有交付给 WIKA 的仪器必须不含任何有害物质（酸、碱、溶液等），并且在返厂之前必须清洁。



警告！ 残余介质伤害身体并且损害财产和环境

CEP6000 型手持多功能校准仪上残留的介质可能危害人员、环境和设备。

- ▶ 请遵守关于危险物质的相关规定，包括相应介质的物料安全数据表。
- ▶ 清洁仪器，请参见第 8.2 章“清洁”。

仪器返厂时，请使用原包装或合适的运输包装。

9. 拆卸、返还和处置

为避免损坏，请：

1. 将仪器包装在防静电塑料薄膜中。
2. 仪器连同吸振材料放入包装中。在运输包装的四壁均匀放置吸振材料。
3. 尽可能在包装内放入干燥剂包。
4. 在货件上贴上指示高灵敏测量仪器的运输标签。

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有关返厂的信息请参见我们本地网站中标题“服务”下的内容。

9.3 处置

处理不当可能危害环境。

请采取环保的方式处理仪器元件和包装材料，并遵守国家特定的废物处理法规。



仪器上的此标记表示不能作为家庭垃圾处理。可以返还给制造商或相应的市政机关（请参见欧盟指令 2002/96/EC）。

10.规格

10.规格

基本仪器

指示

显示屏 2 部分，每部分 10 位数，8 mm 字符大小

输入和输出

号码和类型 6 个用于电气参数、电阻温度计和热电偶的香蕉型插头

电阻温度计 (RTD) Pt100 (385、3926、3916)、Pt200、Pt500、Pt1000、Ni120、Cu10、Cu50、Cu100、YSI400、Pt10、Pt50

电偶 类型 J、K、T、E、R、S、B、L、U、N、C、XK、BP

电压信号 输入：直流 30 V
输出：直流 20 V

电流信号 输入：直流 24 mA
输出：直流 24 mA

电阻器 0 ...4,000 Ω

频率/脉冲 2 CPM ...10 kHz

压力 取决于压力模块

电压 直流 24 V

特点

电阻温度计频率响应 5 ms；支持所有脉冲式发射器

客户特定的电阻温度计 客户特定电阻温度计系数条目

功能 自动步进功能

电阻器 HART® 电阻器，250 Ω (可激活)

通信

接口 RS-232，带串行配接器的 USB

电压

电源 4 节 1.5 V AA 电池

电池使用时间 20 小时

电池状态指示 显示屏中表示电池电量低的图标

CN

10.规格

基本仪器

容许环境条件

工作温度	-10 ...+50 °C
存放温度	-20 ...+70 °C
相对湿度	0 ...90 % RH (无凝结)
温度系数	0.003 % FS/°C, 超过 23 °C ±5 °C

外壳

材料	塑料 (包含坚固耐用的橡胶套)
防护等级	IP 52
尺寸	请参见技术图纸
重量	约 860 g

CE 符合性和证书

CE 符合性

电磁兼容指令	2004/108/EC, EN 61326 发射 (1 组 B 类) 和抗干扰性 (便携测试和测量设备)
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证书

校准	标准: 符合 DIN EN 10204 的 3.1 校准证书 选项: DKD/DAkkS 校准证书
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有关认证和证书, 请参见网站

10.规格

输入和输出信号	量程	准确度 (读数)	
电流信号			
输出	直流 0.000 ...24.000 mA	0.015 % \pm 2 μ A	
输入	直流 0.000 ...24.000 mA (独立)	0.015 % \pm 2 μ A	
	直流 0.000 ...24.000 mA (非独立)	0.015 % \pm 2 μ A	
电压信号			
输出	直流 0.000 ...20.000 V	0.015 % \pm 2 mV	
输入	直流 0.000 ...30.000 V (独立)	0.015 % \pm 2 mV	
	直流 0.000 ...20.000 V (非独立)	0.015 % \pm 2 mV	
电阻		激励电流	
输出	5.0 ...400.0 Ω	0.025 % \pm 0.1 Ω	0.1 ...0.5 mA
	5.0 ...400.0 Ω	0.025 % \pm 0.05 Ω	0.5 ...3.0 mA
	401 ...1,500 Ω	0.025 % \pm 0.5 Ω	0.05 ...0.8 mA
	1,501 ...4,000 Ω	0.025 % \pm 0.5 Ω	0.05 ...0.4 mA
输入	0.00 ...400.00 Ω	0.025 % \pm 0.05 Ω	
	400.1 ...4,000.0 Ω	0.025 % \pm 0.5 Ω	
频率¹⁾			
输出	2.0 ...600.0 CPM ²⁾	0.05 %	
	1.0 ...1,000.0 Hz	0.05 %	
	1.0 ...10.0 kHz	0.25 %	
输入	2.0 ...600.0 CPM ²⁾	0.05 % \pm 0.1 CPM ²⁾	
	1.0 ...1,000.0 Hz	0.05 % \pm 0.1 Hz	
	1.00 ...10.00 kHz	0.05 % \pm 0.01 kHz	
脉冲¹⁾			
输出	1 ...30,000 次 2.0 CPM ²⁾ ...10.0 kHz		
压力			
输入	取决于压力模块		

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- 1) 可选择的幅度为 1 ...20 V, 具体取决于方形波
2) 每分钟次数

10.规格

输入和输出信号	量程	准确度 (包含所有误差)	
热电偶电压信号	-10.000 ...+75.000 mV	读数的 0.02 % ± 10 μV	
电偶		不含冷端温度补偿	含冷端温度补偿 ³⁾
	类型 J	-210.0 ...-150.0 °C -149.9 ...+1,200.0 °C	0.4 °C 0.2 °C
类型 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
类型 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
类型 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
类型 R	0 ...200 °C	1.7 °C	1.9 °C
	201 ...1,767 °C	1.0 °C	1.2 °C
类型 S	0 ...200 °C	1.7 °C	1.9 °C
	201 ...1,767 °C	1.1 °C	1.3 °C
类型 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
类型 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
类型 XK	-200.0 ...+800.0 °C	0.2 °C	0.4 °C
类型 BP	0.0 ...800.0 °C	1.9 °C	2.1 °C
	800.1 ...2,500.0 °C	0.6 °C	0.8 °C
类型 L	-200.0 ...+900.0 °C	0.2 °C	0.4 °C
类型 U	-200.0 ...0.0 °C	0.4 °C	0.6 °C
	0.1 ...600.0 °C	0.2 °C	0.4 °C
类型 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) 超出 23 ± 5 °C 的冷端温度补偿误差为 0.05 °C/°C。

10.规格

输入和输出信号	量程	准确度 (包含所有误差)
电阻温度计 ⁴⁾		
Pt100 (385)	-200.0 ...-80.0 °C	0.1 °C
	-79.9 ...+300.0 °C	0.2 °C
	300.1 ...630.0 °C	0.3 °C
	630.1 ...800.0 °C	0.4 °C
Pt100 (3926)	-200.0 ...-80.0 °C	0.1 °C
	-79.9 ...+300.0 °C	0.2 °C
	300.1 ...630.0 °C	0.3 °C
Pt100 (3916)	-200.0 ...-80.0 °C	0.1 °C
	-79.9 ...+260.0 °C	0.2 °C
	260.1 ...630.0 °C	0.3 °C
Pt200	-200.0 ...-80.0 °C	0.6 °C
	-79.9 ...+300.0 °C	0.7 °C
	300.1 ...630.0 °C	0.9 °C
Pt500	-200.0 ...-80.0 °C	0.2 °C
	-79.9 ...+100.0 °C	0.3 °C
	100.1 ...400.0 °C	0.4 °C
	400.1 ...630.0 °C	0.5 °C
Pt1000	-200.0 ...+260.0 °C	0.2 °C
	260.1 ...400.0 °C	0.3 °C
	400.1 ...630.0 °C	0.4 °C
Pt10	-200.0 ...0.0 °C	1.3 °C
	0.1 ...100.0 °C	1.4 °C
	100.1 ...300.0 °C	1.5 °C
	300.1 ...400.0 °C	1.6 °C
	400.1 ...630.0 °C	1.8 °C
	630.1 ...800.0 °C	1.9 °C
Pt50	-200.0 ...-80.0 °C	0.3 °C
	-79.9 ...+300.0 °C	0.4 °C
	300.1 ...630.0 °C	0.5 °C
	630.1 ...800.0 °C	0.6 °C
Ni120	-80.0 ...+260.0 °C	0.1 °C
Cu10	-100.0 ...+260.0 °C	1.3 °C
Cu50	-180.0 ...+200.0 °C	0.3 °C
Cu100	-180.0 ...+200.0 °C	0.1 °C
YSI400	15.0 ...50.0 °C	0.1 °C

4) 基于 4 线连接的准确度

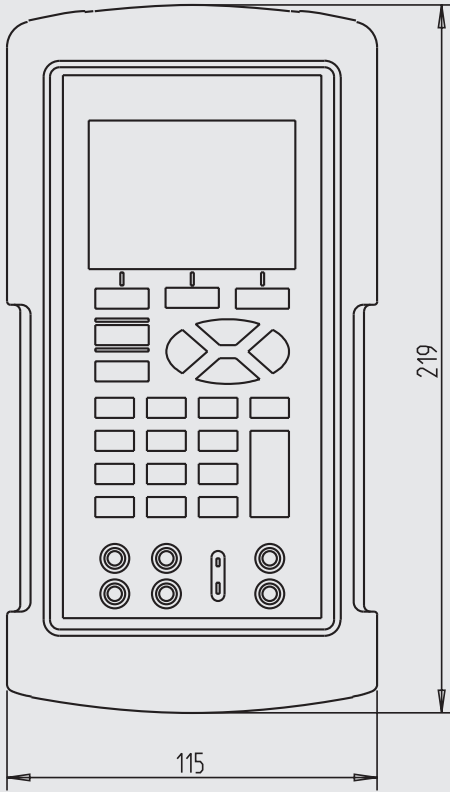
有关详细规格, 请参见 WIKA 数据表 CT 83.01 和订单文档。

10.规格

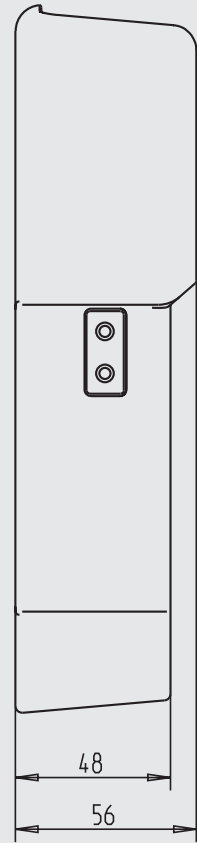
尺寸 (mm)

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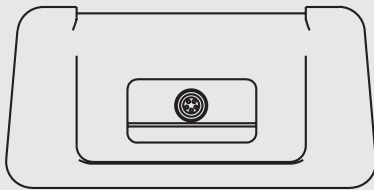
前视图



侧视图



顶视图



11.附件

11.附件

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校准

- DKD/DAkkS 校准证书

电压

- 电池充电座，包括四节充电式 AA 电池、快速充电器、电源线、适配器
- 电池座，包括四节充电式 AA 电池
- 交流电源适配器/充电器

接口

- RS-232 接口线缆
- USB 串口适配器

测试线缆

- 热电偶成套线缆 J、K、T、E，带插头
- 热电偶成套线缆 R/S、N、B，带插头
- 热电偶电压低的铍铜线（红色）
- 热电偶电压低的铍铜线（黑色）
- 测试线缆，一对线缆（红色/黑色）

其他

- 维修包



CN

EG-Konformitätserklärung

EC Declaration of Conformity

Dokument Nr.:

Document No.:

11563347.01

11563347.01

Wir erklären in alleiniger Verantwortung, dass die mit CE gekennzeichneten Produkte

We declare under our sole responsibility that the CE marked products

Typ:

Model:

CEP 6000

CEP 6000

Beschreibung:

Description:

Portabler Multifunktionskalibrator

Portable Multi-Function Calibrator

gemäß gültigem Datenblatt:

according to the valid data sheet:

CT 83.01

CT 83.01

die grundlegenden Schutzanforderungen der folgenden Richtlinie(n) erfüllen:

are in conformity with the essential protection requirements of the directive(s)

2004/108/EG (EMV)

2004/108/EC (EMC)

Die Geräte wurden entsprechend den folgenden Normen geprüft:

The devices had been tested according to the following standards:

EN 61326-1:2006

EN 61326-1:2006

Unterzeichnet für und im Namen von / Signed for and on behalf of

WIKAI Alexander Wiegand SE & Co. KG

Klingenberg, 2010-04-06

Geschäftsbereich / Company division: MP-CT

Qualitätsmanagement / Quality management: MP-CT



 Alfred Hafner



 Harald Hartl

Unterschrift, autorisiert durch das Unternehmen / Signature authorized by the company

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 Komplementärin: WIKAI Verwaltungs SE & Co. KG –
 Sitz Klingenberg – Amtsgericht Aschaffenburg
 HRA 4685

Komplementärin:
 WIKAI International SE - Sitz Klingenberg -
 Amtsgericht Aschaffenburg HRB 10505
 Vorstand: Alexander Wiegand
 Vorsitzender des Aufsichtsrats: Dr. Max Egli

月/年国家/地区代码基于 10/2014 GB/CN

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WIKA 全球子公司请见 www.wika.com。



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