

Pressure calibrator Standard version Model CPH6000

WIKA data sheet CT 15.01







for further approvals, see page 11

Applications

- Calibration service companies and service industry
- Maintenance facilities
- Measurement and control laboratories
- Quality assurance

Special features

- Digital indicator with easily interchangeable reference pressure sensors model CPT6000 (sensor can also be attached externally)
- Measuring ranges of sensor: from -1 ... 6,000 bar [-14.5 ... 87,000 psi]
- Accuracy: up to 0.025 % (incl. calibration certificate)
- Easy handling for calibration and pressure switch test function with calibration assistant
- Software compatible with WIKA-Cal



Pressure calibrator, model CPH6000 Above: With firmly mounted reference pressure sensor Below: Reference pressure sensor via sensor connection cable

Description

The model CPH6000 is operated with a calibration assistant that automatically ensures complete documentation of all measuring results. The pressure calibrator enables completely paperless calibration on-site via a pressure sensor. The hand-held recognises the various reference sensors and relieves the user from having to configure them via the menu.

The reference pressure sensor model CPT6000 is available for the respective suitable application solution. The CPT6000 features accuracy down to 0.025 % and measuring ranges up to 6,000 bar [87,000 psi]. It can be replaced on the CPH6000 quickly and without using any tools. In addition to being fixed to the instrument, the CPT6000 can, optionally, be used via an approx. 1.1 m [3.6 ft] long sensor connection cable.

The pressure calibrator can be a complete measuring chain consisting of the various individual components or a complete test and service case (see page 15). The matching test pump is optionally available, depending on the case set.

For the evaluation and documentation of the calibration data stored in the CPH6000, WIKA-Cal calibration software is available. Using this software, the data is automatically transferred into a printable calibration certificate. For data transfer, an RS-232 and a USB interface are available.

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Functionalities

In the setup menu there are 3 operating modes to choose from:

MEASURING, CALIBRATION and SWITCH TEST. In the CALIBRATION and SWITCH TEST modes, a menu assistant supports the user during each operation and records, for example, the calibration data from several calibrations or automatically calculates the switch hysteresis.

To power the test item and to read its measuring signals, there are electrical inputs and outputs which are protected from adverse conditions in the field by captive protective caps.

Operating mode: MEASURING

Features

- 15 pressure units + 1 programmable unit
- Programmable functions: Min./Max./Tare/Filter/Alarm/ Altitude correction
- The display of the test item measured value is also possible as an original electrical signal (mA/V)

Applications

- Measurement of operating/process pressures
- Comparative measurements with test items (power supply and display for the test item through the CPH6000)
- Min. and Max. memory (e.g. for leak testing)
- Alarm function for safety testing



Example: CPH6000 with firmly mounted reference pressure sensor, hand spindle pump and customer-specific test item

Operating mode: CALIBRATION

Features

- Calibration assistant
- Programmable altitude correction
- Recordable calibration temperature

Applications

- On-site calibration of pressure sensor and pressure measuring instruments (without PC)
- A calibration assistant guides you easily through the calibration (in line with DAkkS). With this, the data sets, including date and time, are recorded within the CPH6000. Prior to calibration, the calibration steps are entered directly on the instrument or downloaded via WIKA-Cal software.

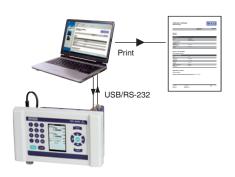
Available PC software

WIKA-Cal calibration software for creating calibration certificates





A) Record calibration data with customer-specific test item



B) Record calibration data on the PC and print the calibration certificate

Operating mode: SWITCH TEST

Features

- Switch test assistant
- Automatic calculation of the hysteresis

Applications

- Convenient checking of pressure switches
- A pressure switch test assistant conveniently guides the user through the checking and automatic calculation of the switch hysteresis.





Example: Switch test assistant with customer-specific test item

Basic information - Complete measuring chain

| Complete measuring chain | | |
|---------------------------------------|--|---|
| Sensor technology | 1 reference pressure sensor CPT6000 (interchangeable without tools) External operation via 1.1 m [3.6 ft] sensor connection cable (plug-and-play) | |
| Version | Up to ten data sets or reference pressure sensors can be programmed per CPH6000. | |
| Accuracy of the measuring chain 1) 2) | | |
| Gauge pressure | 0.025 % FS | ≤ 1,000 bar [≤ 14,500 psi] |
| | 0.1 % FS | > 1,000 bar ≤ 6,000 bar [> 14,500 psi ≤ 87,000 psi] |
| Absolute pressure | 0.025 % FS | ≤ 25 bar abs. [≤ 360 psi abs.] |
| Pressure types | | |
| Gauge pressure | 0 6,000 bar [0 87,000 psi] | |
| Absolute pressure | 0 0.25 bar abs. to 0 25 bar abs. [0 4 psi abs. to 0 360 psi abs.] | |
| Vacuum and +/- measuring range | -600 +600 mbar to -1 39 bar [-10 +10 psi to -14,5 550 psi] | |

It is defined by the total measurement uncertainty, which is expressed with the coverage factor (k = 2) and includes the following factors: the intrinsic performance of the instrument, the
measurement uncertainty of the reference instrument, long-term stability, influence of ambient conditions, drift and temperature effects over the compensated range during a periodic
zero point adjustment.

Calibrated at 23 °C [74 °F] and in a vertical mounting position, pressure connection facing downwards.

Specifications for digital indicator model CPH6000

| Basic information | | |
|-----------------------|---|------------------------------|
| Functions | | |
| Operating mode | Measuring, calibration and switch | h test |
| Functions | Measuring, calibration and switch test Min./Max. memory Tare Min./Max. alarm (audible/visual) Filter (running averaging) Zero point adjustment PowerSave function | |
| Measuring rate | 2 values/s | |
| Calibration function | | |
| Memory capacity | Up to 10 test items | |
| Test points/test item | Up to 32 comparison test points | |
| Switch test function | | |
| Switch points | Determination of the switch points and automatic calculation of the hysteresis | |
| Voltage supply | | |
| Supply voltage | Internal lithium-ion rechargeable battery (charging time: < 6 h) | |
| Battery life | Approx. 20 hours of operation | |
| Case | | |
| Material | Impact-resistant ABS plastic Membrane keyboard Transparent screen | |
| Ingress protection | IP54 (with protective caps closed) | |
| Dimensions | See technical drawing | |
| Weight | Without sensor | approx. 850 g [1.87 lbs.] |
| | With sensor | approx. 1.080 kg [2.4 lbs.] |
| Sensor compatibility | Compatible with model CPT600 | 0 reference pressure sensors |

| Input signal | |
|--------------------------|---|
| Measuring input, voltage | |
| Measuring range | ■ DC 0 1 V ■ DC 0 2 V ■ DC 0 5 V ■ DC 0 10 V |
| Accuracy | 1.0 mV |
| Measuring input, current | |
| Measuring range | ■ 0 20 mA ■ 4 20 mA |
| Accuracy | 5.0 μΑ |

For drawings of connection methods, see page 6

| Digital indicator | | | |
|--------------------|---|---|---|
| Digital display | | | |
| Indication range | -19999 19999 digits (dependent upon connected reference pressure sensor) | | |
| Display resolution | Up to 6 digits; adjustable | Up to 6 digits; adjustable | |
| Backlighting | Adjustable via menu | Adjustable via menu | |
| Type of display | Large TFT colour screen for the display of reference, test signals and additional information | | |
| Menu languages | Adjustable via menu | | |
| | EnglishGermanSpanish | ■ French ■ Italian | |
| Units | | | |
| Pressure units | Adjustable via menu | | |
| | mbarbarpsiPahPakPa | MPa mmHg cmHg inHg mmH₂O cmH₂O | mH₂O inH₂O kg/cm² Customer-specific unit |

User interface



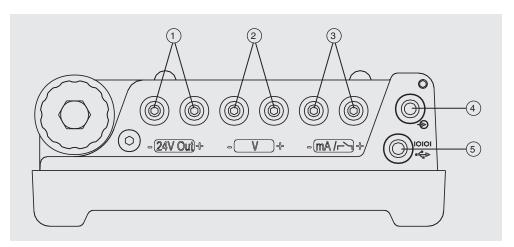
- 1 Setup menu
- 2 Selection and entry confirmation
- ③ One step back
- 4 Clear entry
- 5 Input confirmation
- 6 Numeric keypad

Switch on via pressing any button. Switch off via menu item in main menu.

| Output signal | |
|------------------------|---|
| Analogue output | |
| Voltage supply | DC 24 V (can be activated via menu) |
| Load | Min. 20 mA Max. 50 mA |
| Communication | |
| Interface | RS-232 USB |
| Interface cable | ■ Without ■ For RS-232 ■ For USB ■ For RS-232 and USB |
| Configuration software | WIKA-Cal |
| Baud rate | 9600 |
| Measuring rate | 2 value/s |

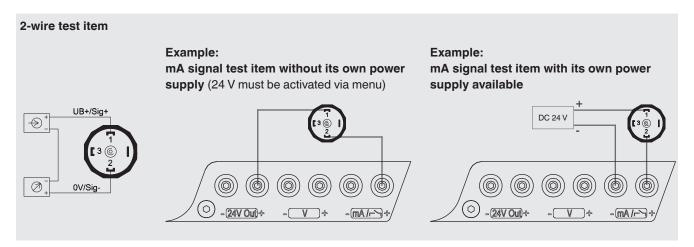
| Electrical connection | |
|-------------------------|--|
| Connection type | Via banana plugs |
| Ingress protection | IP65 (with cable connected) |
| Sensor connection cable | WithoutLength 1.1 m [3.61 ft] |

Electrical connections to the digital indicator



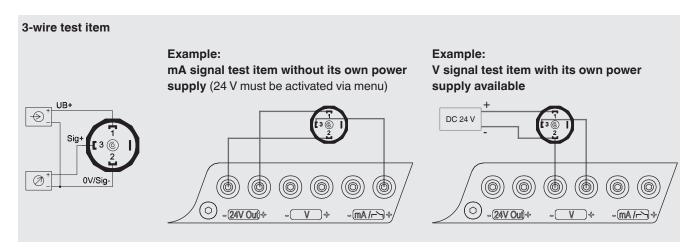
- ① Voltage supply DC 24 V 1) (can be activated via menu)
- (2) Measuring input 1); voltage
- (3) Measuring input 1); current or switch test
- Power connection/charging socket (rechargeable battery will be charged automatically)
- 5 USB/RS-232 interface

Electrical connection for: CALIBRATION



¹⁾ Connections: 4-mm test sockets

Electrical connection for: CALIBRATION (continued)



Legend

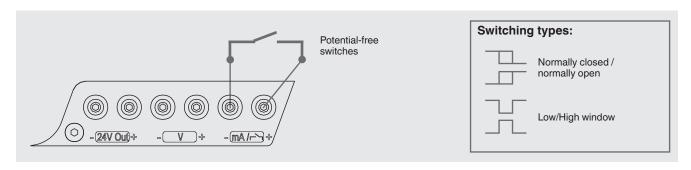
UB+ Positive power supply terminal

OV Negative power supply terminal

Sig+ Positive analogue output

Sig- Negative analogue output

Electrical connection for: SWITCH TEST



| Operating conditions | |
|---------------------------|---------------------------------------|
| Operating temperature | 0 50 °C [32 122 °F] |
| Ambient temperature range | 0 50 °C [32 122 °F] |
| Storage temperature range | -20 +70 °C [-4 +158 °F] |
| Relative humidity | 0 85 % r. h. (non-condensing) |
| Ingress protection | ■ IP20 ■ IP53 (front), IP54 (rear) |

Specifications for reference pressure sensor model CPT6000

| Accuracy specifications | | |
|---|--|--|
| Accuracy | ≤ 0.025 % FS (only in combination with CPH6000) | |
| Compensated range | 0 50 °C [32 122 °F] | |
| Reference conditions per IEC 61298-1 1) | | |
| Ambient temperature | 15 25 °C [59 77 °F] | |
| Atmospheric pressure | 860 1,060 mbar [12.5 15.4 psig] | |
| Air humidity | 45 75 % r. h. | |
| Mounting position | Vertical mounting position, process connection facing downwards. | |

¹⁾ Calibrated at 23 $^{\circ}$ C [74 $^{\circ}$ F] and in a vertical mounting position, pressure connection facing downwards.

Pressure ranges, gauge pressure

| bar | |
|---------|---------------------|
| 0 0.25 | 0 60 |
| 0 0.4 | 0 100 |
| 0 0.6 | 0 160 |
| 0 1 | 0 250 |
| 0 1.6 | 0 400 |
| 0 2.5 | 0 600 |
| 0 4 | 0 700 ¹⁾ |
| 06 | 0 1,000 |
| 0 10 | 0 1,600 |
| 0 16 | 0 2,500 |
| 0 20 1) | 0 4,000 |
| 0 25 | 0 5,000 |
| 0 40 | 0 6,000 |

| psi | |
|--------|----------|
| 0 4 | 0 1,450 |
| 06 | 0 2,320 |
| 0 10 | 0 3,630 |
| 0 14.5 | 0 5,800 |
| 0 25 | 0 8,700 |
| 0 40 | 0 10,000 |
| 0 60 | 0 14,500 |
| 0 90 | 0 23,200 |
| 0 145 | 0 36,200 |
| 0 250 | 0 58,000 |
| 0 360 | 0 72,500 |
| 0 580 | 0 87,000 |
| 0 870 | |

Pressure ranges, absolute pressure

| bar abs. | |
|----------|---------|
| -0.8 1.2 | 0 4 |
| 0 0.25 | 06 |
| 0 0.4 | 0 10 |
| 0 0.6 | 0 16 |
| 0 1 | 0 20 1) |
| 0 1.6 | 0 25 |
| 0 2.5 | |

Also available as oxygen version.

| psi abs. | |
|------------|-------|
| -11.6 17.4 | 0 36 |
| 0 4 | 0 60 |
| 06 | 0 90 |
| 08 | 0 145 |
| 0 14.5 | 0 230 |
| 0 23 | 0 360 |

Also available as oxygen version.

Pressure ranges, vacuum and +/- measuring range

| bar | |
|-------------|---------------------|
| -0.25 +0.25 | -1 5 |
| -0.4 +0.4 | -1 9 |
| -0.6 +0.6 | -1 15 |
| -1 0 | -1 20 ¹⁾ |
| -1 1.5 | -1 24 |
| -1 2.5 | -1 39 |
| -1 3 | |

| psi | |
|----------|-----------|
| -4 +4 | -14.5 44 |
| -6 +6 | -14.5 73 |
| -10 +10 | -14.5 130 |
| -14.5 0 | -14.5 220 |
| -14.5 22 | -14.5 350 |
| -14.5 36 | -14.5 565 |
| | |

Other measuring ranges on request.

| Further details on: Measuring range | | | | |
|-------------------------------------|-------------------|----------------------|--|--|
| Overpressure limit | | | | |
| 3 times | < 25 bar | < 360 psi | | |
| 2 times | > 25 ≤ 600 bar | > 360 ≤ 8,700 psi | | |
| 1.5 times | > 600 ≤ 2,500 bar | > 8,700 ≤ 36,260 psi | | |
| 1.2 times | > 2,500 bar | > 36,260 psi | | |
| Vacuum resistance | Yes | | | |

| Process connection | | |
|---------------------------------------|---|---|
| Standard | EN 837 | |
| Size | G ½ B | ≤ 1,000 bar [≤ 14,500 psi] |
| | M16 x 1.5 female, with sealing cone | ≥ 1,000 bar [≥ 14,500 psi] |
| | G 1 B flush | ≤ 1.6 bar [≤ 23 psi] |
| | G ½ B flush | ≤ 600 bar [≤ 8,700 psi] |
| Pressure adapters 1) | ■ Without ■ G ½ to ¼ NPT ■ G ½ to ½ NPT | |
| Sealing | ■ NBR ■ EPDM | |
| Further versions | Oil- and grease-freeFor oxygen, oil- and grease-free | |
| Material | | |
| Case | Stainless steel | |
| Wetted parts | Stainless steel | Standard |
| | Elgiloy® | Additionally for measuring ranges ≥ 25 bar ≤ 1,000 bar [≥ 360 ≤ 14,500 psi] |
| Internal pressure transmission medium | Synthetic oil | With measuring ranges up to ≤ 25 bar [≤ 360 psi] |
| | Halocarbon oil | For oxygen version |

¹⁾ Only possible for thread size G $\frac{1}{2}$ B.

¹⁾ Also available as oxygen version.

 $[\]rightarrow$ For drawings of process connections, see page 13

| Output signal | |
|-------------------|---|
| Signal type | |
| Current | ■ 4 20 mA ■ 0 20 mA |
| Voltage | ■ DC 0 1 V ■ DC 0 2 V ■ DC 0 5 V ■ DC 0 10 V |
| Connection method | 2-wire3-wire |

| Operating conditions model CPT6000 | | |
|------------------------------------|---|--|
| Medium temperature range | -20 +80 °C [-4 +176 °F] | |
| | -20 +60 °C [-4 +140 °F] only for oxygen version | |
| Ambient temperature range | -20 +80 °C [-4 +176 °F] | |
| Storage temperature range | -40 +85 °C [-40 +185 °F] | |
| | -20 +60 °C [-4 +140 °F] only for oxygen version | |
| Relative humidity | 0 95 % r. h. (non-condensing) | |
| Ingress protection | ■ IP54 ■ IP65 (with cable connected) | |

Plug-in charger

| Plug-in charger | |
|--------------------------------|-------------------------------|
| Permissible ambient conditions | |
| Operating temperature range | 0 45 °C [32 +113 °F] |
| Storage temperature range | -40 +85 °C [-40 +185 °F] |
| Relative humidity | 5 95 % r. h. (non-condensing) |

Test cables

| Test cable set (red and black) | | |
|--------------------------------|---|------|
| Scope | 2 pairs of measuring lines 2 pairs of clamp connectors 2 pairs of crocodile clips | |
| Operating temperature | -15 +70 °C [-30 +158 °F] | |
| Dimensions | 4 x 500 mm [0.16 x 19.69 in] 4 x 300 mm [0.16 x 11.8 in] | |
| Nominal voltage | ■ DC 60 V ■ AC 30 V | |
| Nominal current | Measuring lines | 32 A |
| | Crocodile clips | 5 A |

Approvals

| Logo | Description | Region |
|------|---|----------------|
| CE | EU declaration of conformity for model CPH6000 | European Union |
| | EMC directive EN 61326 emission (group 1, class B) and immunity (portable measuring equipment) | |
| | RoHS directive | |
| CE | EU declaration of conformity for model CPT6000 | European Union |
| | EMC directive EN 61326 emission (group 1, class B) and immunity (industrial environments) | |
| | Pressure equipment directive PS > 200 bar; module A, pressure accessory | |
| | RoHS directive | |

Optional approvals

| Logo | Description | Region |
|----------|---|-------------------|
| EAC | EAC | Eurasian Economic |
| CUL | EMC directive | Community |
| | Pressure equipment directive | |
| | Low voltage directive | |
| © | PAC Russia Metrology, measurement technology | Russia |
| - | MChS Permission for commissioning | Kazakhstan |
| (| PAC Belarus Metrology, measurement technology | Belarus |
| - | PAC China Metrology, measurement technology | China |
| - | CRN Safety (e.g. electr. safety, overpressure,) | Canada |

Certificates

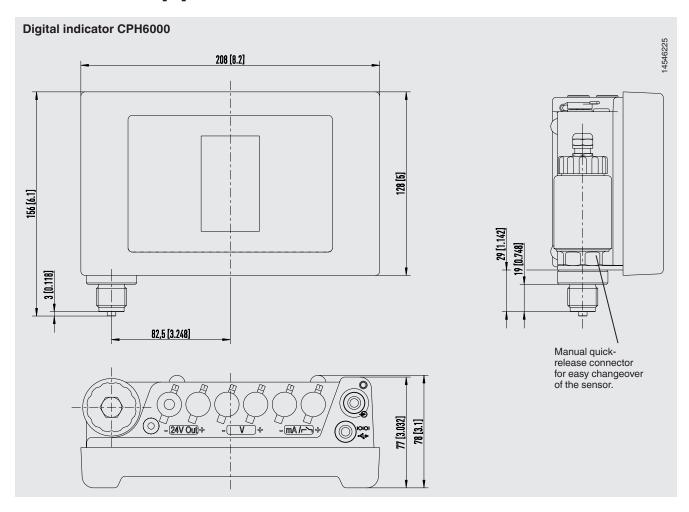
| Certificates | |
|----------------------------------|--|
| Calibration | |
| CPT6000 | 3.1 inspection certificate per EN 10204 (factory calibration) DAkkS calibration certificate (traceable and accredited in accordance with ISO/IEC 17025) |
| CPH6000, electrical module | 3.1 inspection certificate per EN 10204 (factory calibration) DAkkS calibration certificate (traceable and accredited in accordance with ISO/IEC 17025) |
| Recommended calibration interval | 1 year (dependent on conditions of use) |

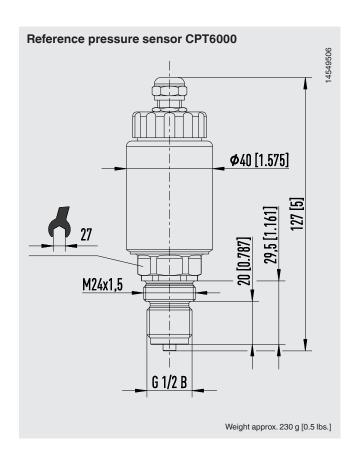
Certified accuracy

For each reference pressure sensor, the accuracy is certified by a factory calibration certificate which accompanies the instrument.

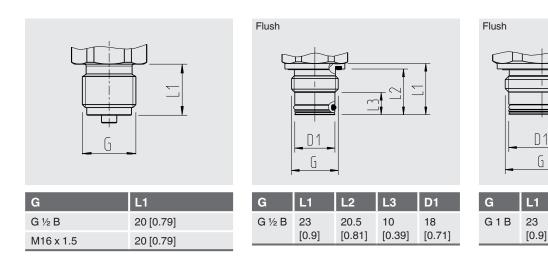
 \rightarrow For approvals and certificates, see website

Dimensions in mm [in]





Process connections





 \bigcirc 41

D1

30

[1.18]

L3

10

[0.39]

20.5

[0.81]

WIKA-Cal calibration software

Easy and fast creation of a high-quality calibration certificate

The WIKA-Cal calibration software is used for generating calibration certificates or logger protocols for pressure measuring instruments and is available as a demo version for a cost-free download.

To switch from the demo version to a licenced version, a USB dongle with a valid licence must be purchased.

The preinstalled demo version changes automatically to the selected version when plugging in the USB dongle and remains available as long as the USB dongle is connected to the PC.

- The user is guided through the calibration or logger process
- Management of calibration data and instrument data
- Intelligent preselection via SQL database
- Menu languages: German, English, Italian, French, Dutch, Polish, Portuguese, Romanian, Spanish, Swedish, Russian, Greek, Japanese, Chinese More languages are due with software updates
- Customer-specific complete solutions possible

The supported instruments are continuously expanded and even customer-specific adaptations are possible.

For further information, see data sheet CT 95.10



Two WIKA-Cal licences are available together with one hand-held

The WIKA-Cal calibration software is available both for reading the logger data stored in the hand-held as well as for online calibrations together with a PC. The scope of software functions depends on the selected licence.

Several licences can be combined on one USB dongle.

| Cal-Template (demo version) | Cal-Template (light version) | Log-Template (full version) | |
|---|------------------------------|---|--|
| Fully automatic calibration | Semi-automatic calibration | Live measured value recording for a | |
| Limitation to two measuring points No limitation of the measuring points approached | | certain period of time with selectable interval, duration and start time Readout of the integrated data logger of | |
| Creation of 3.1 inspection certificates per DIN EN 10204 Calibration reports can be exported to Excel® template or XML file Calibration of pressure measuring instruments | | the hand-held Creation of logger protocols with graphic and/or tabular representation of the measuring results in PDF format Possibility of exporting measuring results as CSV file | |
| Ordering information for your enquiry: | | | |
| Is available for a cost-free download | WIKA-CAL-LZ-Z-Z | WIKA-CAL-ZZ-L-Z | |
| | WIKA-C | AL-LZ-L-Z | |

Complete test and service cases

The available test and service cases are individually equipped according to your needs.

A distinction is made between 4 different variants, which differ in the case size and the number or size of the recesses.

| Case variants and existing recesses | 1 ¹⁾ | 2 | 3 | 4 |
|---|-----------------|---|---|---|
| Recesses for standard components | | | | |
| Pressure calibrator model CPH6000 | | х | х | х |
| Number of freely selectable reference pressure sensors, model CPT6000 | | 5 | 5 | 5 |
| Sensor connection cable 1.1 m [3.3 ft] | х | х | х | х |
| Sealing set | х | х | х | х |
| Test cable set with connection terminals | х | х | х | х |
| Plug-in charger | х | х | х | х |
| Interface cable | х | х | х | х |
| USB dongle for WIKA-Cal calibration software | | х | х | х |
| Pneumatic hand test pump, either model CPP30 or CPP7-H | | х | | |
| Hydraulic hand test pump, either model CPP700-H or CPP1000-H | | | х | |
| Hydraulic hand spindle pump model CPP1000-L | | | | х |

¹⁾ Due to its size, this case model may not provide enough space for all available accessories. We will be happy to help you choose the best equipment for your case set.



Variant 1: Calibration case with max. 5 pressure sensors



Variant 2 or 3: Calibration case with max. 5 pressure sensors and incl. hand test pump



Variant 4: Calibration case with max. 5 pressure sensors and incl. hand spindle pump

Accessories

| | | Order code |
|-------------|--|------------|
| Description | | CPH-A-60 |
| | Plug-in charger Meets the requirements of Euro standards, UK standards and US standards | -4- |
| 000 | Sealing set Consisting of: ■ 4 x G ½ USIT seals ■ 2 x G ¼ USIT seals ■ Plastic box | -D- |
| | Test cable set (red and black) Consisting of: 2 pairs of measuring lines 2 pairs of clamp connectors 2 pairs of crocodile clips | -T- |
| | Sensor connection cable For model CPT6000 reference pressure sensor Length 1.1 m [3.61 ft] | -S- |
| | RS-232 interface cable | -R- |
| | USB interface cable | -U- |
| - | IP54 version (protective caps) Retrofitting of the caps only at WIKA | -l- |
| - | Manual quick-release connector for pressure sensor | -H- |
| - | Carrying system To hang the CPH6000 around your neck | -C- |
| | Plastic case Variant 1 For 1 x hand-held, max. 5 x pressure sensors, accessories Dimensions: 340 x 275 x 83 mm (13.39 x 10.83 x 3.27 in) | -K- |

| - |
|---------|
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| | | Order code | | |
|--|--|------------|--|--|
| Description | | CPH-A-60 | | |
| | Transport case from aluminium Variant 2 For 1 x hand-held, max. 5 x pressure sensors, 1 x pneumatic hand test pump CPP7-H or CPP30, accessories Dimensions: 450 x 360 x 123 mm (17.72 x 13.78 x 4.84 in) | 4- | | |
| | Variant 3 For 1 x hand-held, max. 5 x pressure sensors, 1 x hydraulic hand test pump CPP700-H/CPP1000-H, accessories Dimensions: 450 x 360 x 140 mm (17.72 x 13.78 x 5.51 in) | -N- | | |
| | Variant 4 For 1 x hand-held, max. 5 x pressure sensors, 1 x hydraulic hand spindle pump CPP1000-L, accessories Dimensions: 375 x 425 x 170 mm (14.76 x 16.73 x 6.69 in) | -M- | | |
| Ordering information for your enquiry: | | | | |
| | 1. Order code: CPH-A-60 2. Option: | [] | | |

Ordering information

CPH6000 / Ingress protection / Additional cable for reference pressure sensor / Software / Interface cable / Test pump / Transport case / Calibration of electrical output module / Further approvals / Additional ordering information

CPT6000 / Unit / Measuring range / Process connection / Special design features / Type of certificate / Pressure adapter / Further approvals / Additional ordering information

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ICS Schneider Messtechnik GmbH

Briesestrasse 59

D-16562 Hohen Neuendorf / OT Bergfelde

Tel.: +49 3303 5040-66 Fax: +49 3303 5040-68 E-Mail: info@ics-schneider.de



WIKA Alexander Wiegand SE & Co. KG

Alexander-Wiegand-Straße 30 63911 Klingenberg/Germany Tel. +49 9372 132-0 Fax +49 9372 132-406

info@wika.de www.wika.de