

# Hand-held pressure calibrator with integrated pump Model CPH6600

WIKA data sheet CT 16.01

## Applications

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

## Special features

- Measure and generate pressure with integrated pump, from -0.8 ... +20 bar
- Accuracy: 0.025 % (incl. calibration certificate)
- Generation/measurement of 4 ... 20 mA, and 24 V supply voltage to power transmitters
- Accurate temperature measurement with Pt100 resistance thermometer
- Robust and compact design



Hand-held pressure calibrator with integrated electrical pump model CPH6600

## Description

With the model CPH6600 hand-held pressure calibrator, WIKA introduces a revolution in pressure calibration technology for the process industries. With this new instrument, the technician has access to a small, lightweight calibrator which can generate pressures of up to 10 bar through an integrated, high-performance electrical pump. With the hand pump, up to 20 bar is possible.

The CPH6600 is only slightly larger than the model CPH6400 precision hand-held pressure indicator and weighs less than 1 kg. The housing is shaped and balanced so that it fits neatly in the operator's hand.

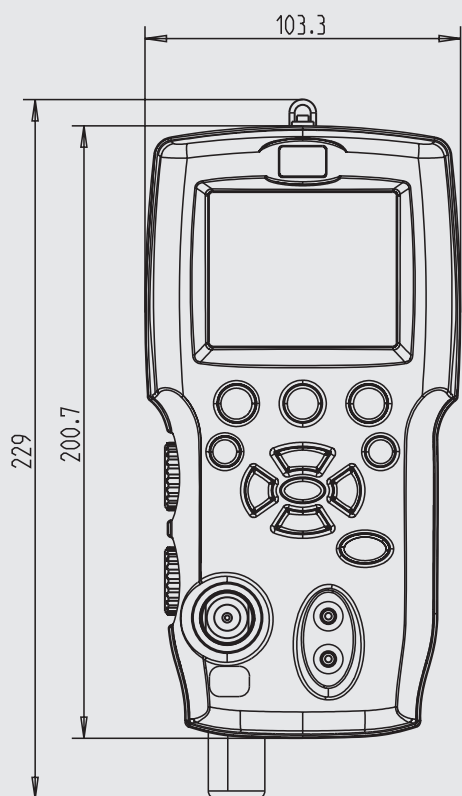
The pump is not the only key feature. The CPH6600 has a measurement uncertainty of  $\pm 0.025\%$  FS for the built-in, isolated pressure sensor. The temperature compensation of the built-in sensor safeguards the measurement uncertainty for applications in the field.

A connection for an external pressure module supports all WIKA pressure modules and thus enables larger measuring ranges.

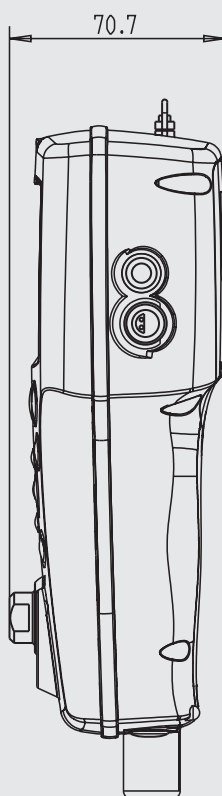
In addition, in combination with an external temperature sensor, simultaneous temperature measurement is also possible with the CPH6600. Additional functions, such as pressure switch tests and the display of the test items deviation in percent, increase the user-friendliness of the CPH6600.

## Dimensions in mm

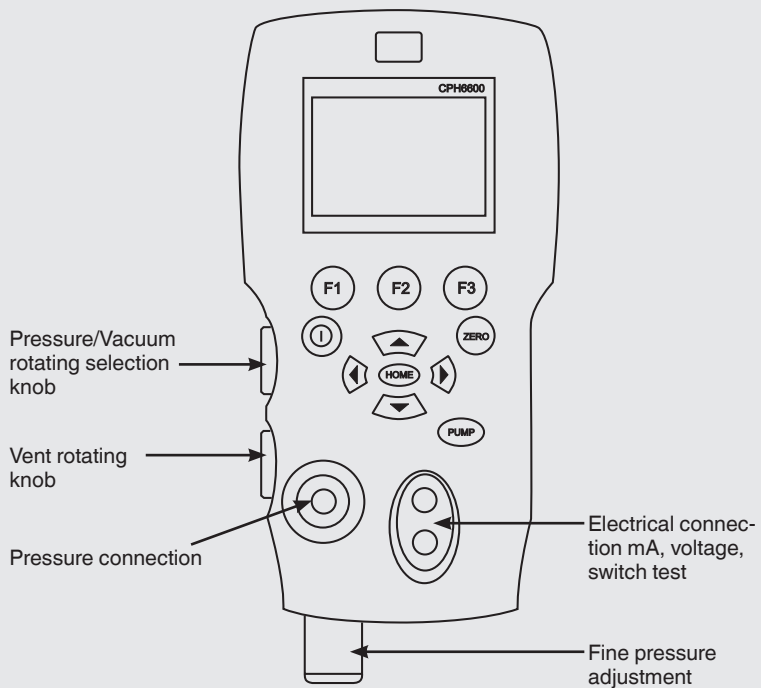
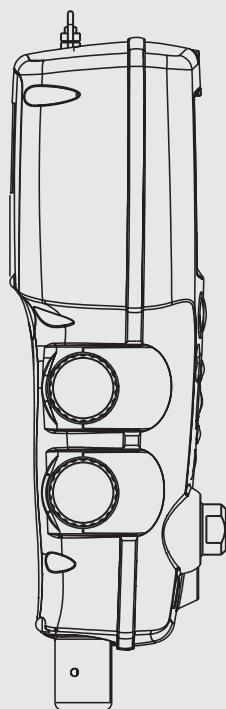
Front view



Side view, right



Side view, left



# Specifications

## Model CPH6600

### Measuring range

<b>Pressure</b>			
Relative pressure	-0.8 ... +2 bar <sup>1)</sup>	-0.8 ... +10 bar <sup>1)</sup>	-0.8 ... +20 bar <sup>2)</sup>
Overpressure safety	4 bar	13 bar	40 bar
Burst pressure	20 bar	20 bar	135 bar
<b>Absolute pressure</b>			
Absolute pressure	0 ... 2 bar abs. <sup>1)</sup>	0 ... 10 bar abs. <sup>1)</sup>	
Overpressure safety	4 bar abs.	13 bar abs.	
Burst pressure	20 bar abs.	20 bar abs.	
Accuracy	0.025 % FS		
Resolution	5-digit		
<b>Current</b>			
Measuring range	0 ... 24 mA (max. load 1000 Ω)		
Resolution	1 μA		
Accuracy	0.015 % of reading ± 2 μA (simulation and measurement)		
<b>Voltage</b>			
Measuring range	DC 0 ... 30 V		
Resolution	1 mV		
Accuracy	0.015 % of reading ± 2 mV (measurement)		
<b>Temperature</b>			
Measuring range	-40 ... +150 °C		
Resolution	0.01 °C		
Accuracy	0.015 % of reading ± 20 mΩ, or 0.2 °C for complete measuring chain (Pt100 resistance thermometer and CPH6600)		

1) electric pump

2) hand pump

### Basic Instrument

Pressure connection	1/8 NPT (female)
Permissible media	clean, dry, non-corrosive gases compatible with silicon, Pyrex, RTV, gold, ceramic, nickel and aluminium
Temperature compensation	15 ... 35 °C
Temperature coefficient	0.005 % of the span/°C outside of 15 ... 35 °C
Units	psi, bar, mbar, kPa, MPa, kg/cm <sup>2</sup> , mmH <sub>2</sub> O (4 °C), mmH <sub>2</sub> O (20 °C), cmH <sub>2</sub> O (4 °C), cmH <sub>2</sub> O (20 °C), inH <sub>2</sub> O (4 °C), inH <sub>2</sub> O (20 °C), inH <sub>2</sub> O (60 °F), mmHg (0 °C), inHg (0 °C)
<b>Output</b>	
Supply voltage	DC 24 V
<b>Power supply</b>	
Batteries	DC 12 V, eight AA batteries
Battery life	300 pump cycles to 10 bar (minimum) 1000 pump cycles to 2 bar
<b>Permissible ambient conditions</b>	
Operating temperature	-10 ... +50 °C
Storage temperature	-20 ... +60 °C
Relative humidity	35 ... 85 % relative humidity (no condensation)

### Case

Material	Blend of polycarbonate and ABS
Dimensions	103.3 x 229.0 x 70.7 mm
Weight	950 g

### CE conformity / Certification

EMC directive	2004/108/EC, EN 61326 Emission (Group 1, Class B) and Immunity (portable measurement equipment)
Calibration	Factory calibration certificate (optional: DKD/DAkkS calibration certificate)

## Features

### Temperature, current and voltage

A Pt100 resistance thermometer (RTD) is available as an option for measuring temperatures, with a measurement uncertainty of  $\pm 0.2$  °C. In addition the CPH6600 measures and simulates a 4 ... 20 mA loop current signal, can measure up to DC 30 V and comes with an internal DC 24 V power supply to power the transmitter being calibrated.

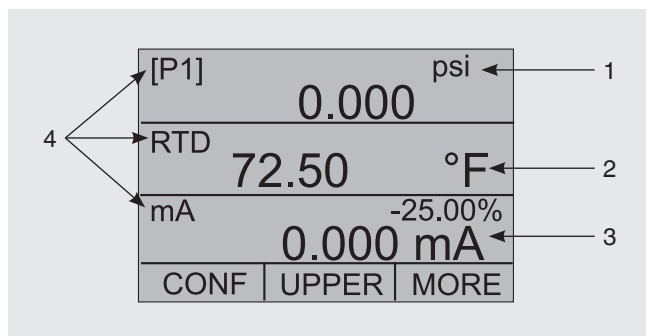
### Display

The CPH6600 displays up to three calibration values. This means that the internal pressure sensor, an external pressure sensor, the temperature (from an optional temperature sensor) or electrical values (mA or DC V) can be displayed simultaneously. The display is a large graphical backlit LCD screen.

### Pressure ranges

The CPH6600 can be delivered in different ranges of 2 bar, 10 bar and 20 bar relative as well as 2 bar and 10 bar absolute. The 20 bar versions come with a manual handpump.

## Display layout



## Features

The new CPH6600 pressure calibrator has a whole range of useful functions. Switch tests can be performed via the internal or external pressure input. The test item error can be calculated from the CPH6600. A damping function is available. Up to five frequently used device settings can be stored and then retrieved at the touch of a button.

### Compact and robust

The CPH6600, with its compact and rugged design, is powered by eight standard AA batteries. Through the Power Save function in the CPH6600, the battery pack has a life of about 300 pump cycles to 10 bar.

- 1) Pressure units  
Indication of the pressure unit (selectable from 15 pressure units)
- 2) Units  
Indication of the measurement unit
- 3) Display of the span  
Indication of the 4 ... 20 mA span (only for the functions mA and mA current loop)
- 4) Primary parameter  
Indication of the current measured parameter

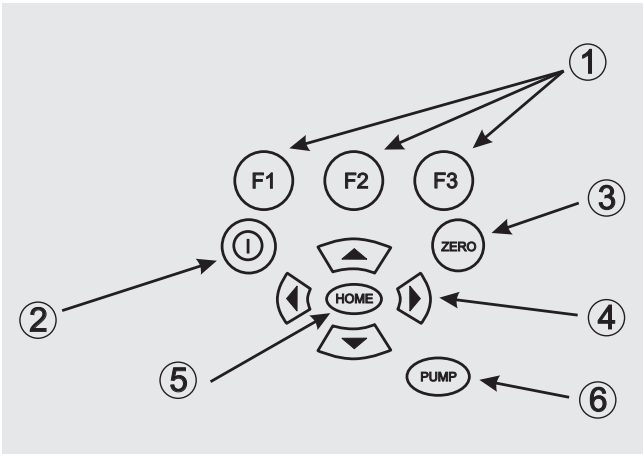
## Available ranges and resolution

Pressure range and factor				
	Relative pressure	-0.8 ... +2 bar <sup>1)</sup>	-0.8 ... +10 bar <sup>1)</sup>	-0.8 ... +20 bar <sup>2)</sup>
	Overpressure safety	4 bar	13 bar	40 bar
	Burst pressure	20 bar	20 bar	135 bar
Unit	conversion factor			
psi	1	30.000	150.00	300.00
bar	0.06894757	2.0684	10.3421	20.684
mbar	68.94757	2068.4	10342.1	20684
kPa	6.894757	206.84	1034.21	2068.4
MPa	0.00689476	0.2068	1.03421	2.0684
kg/cm <sup>2</sup>	0.07030697	2.1092	10.5460	21.092
cmH <sub>2</sub> O (4 °C)	70.3089	2109.3	10546.3	21093
cmH <sub>2</sub> O (20 °C)	70.4336	2113.0	10565.0	21130
mmH <sub>2</sub> O (4 °C)	703.089	21093	-	-
mmH <sub>2</sub> O (20 °C)	704.336	21130	-	-
inH <sub>2</sub> O (4 °C)	27.68067	830.42	4152.1	8304.2
inH <sub>2</sub> O (20 °C)	27.72977	831.89	4159.5	8318.9
inH <sub>2</sub> O (60 °F)	27.70759	831.23	4156.1	8312.3
mmHg (0 °C)	51.71508	1551.5	7757.3	15515
inHg (0 °C)	2.03602	61.081	305.40	610.81

1) electric pump  
2) hand pump

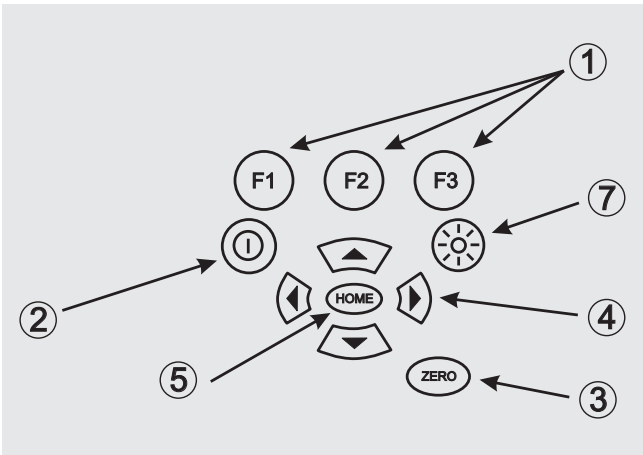
# CPH6600 hand-held pressure calibrator, keypad

## Keypad (electrical pump version)



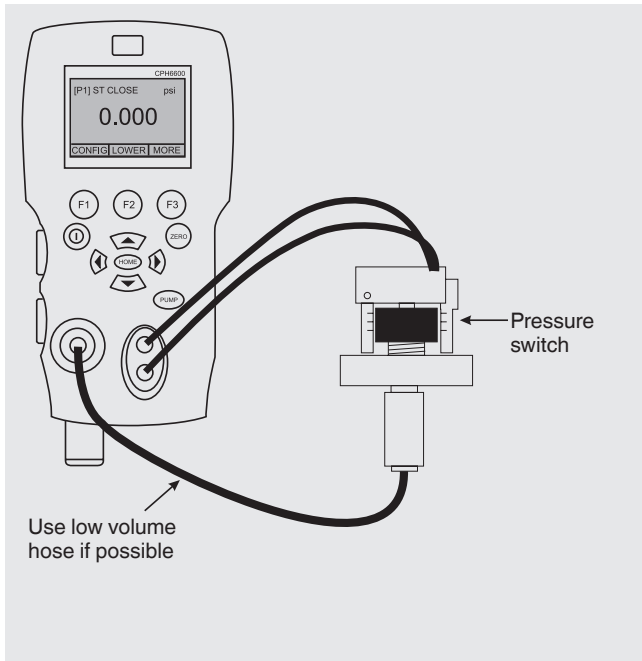
- 1) Function keys  
Configuration of the calibrator via these soft keys
- 2) ON/OFF key  
Turning the calibrator on and off
- 3) ZERO key  
Zeroing of the pressure measurement
- 4) Arrow keys  
Control of the current source/current simulation and adjustment of the pump limit and the %-error limit
- 5) HOME key  
Return to main menu
- 6) Pump key  
Start-up of the pump operation (electrical pump version)
- 7) Backlight  
Turn on backlight (hand pump version)

## Keypad (hand pump version)



# Special operating modes

## Operating mode: pressure switch test



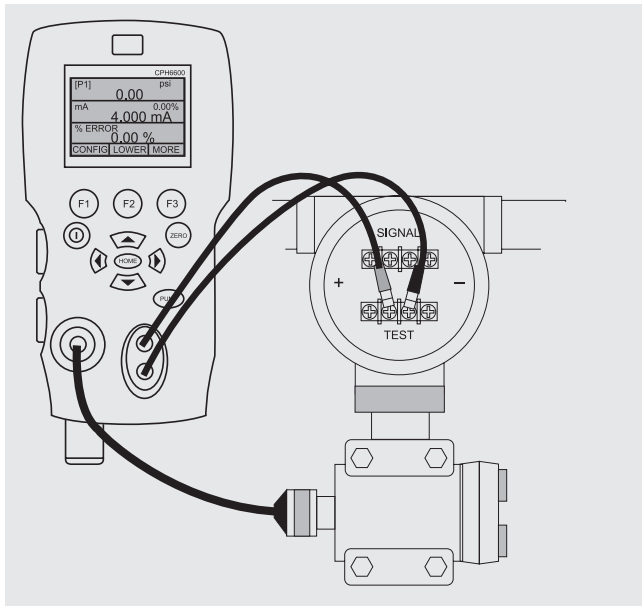
### Pressure switch test:

With the pressure switch function, the CPH6600 can indicate the pressures at which the switch closes or opens. In addition, the hysteresis can be calculated.

In the switch test mode the display update rate is increased to capture changing pressure inputs quickly.

If required, the ambient or medium temperature can be measured with an external Pt100 resistance thermometer simultaneously.

## Operating mode: calibrating transmitters and percentage error function



### Calibrating transmitters:

With the mA measurement function, the 4 ... 20 mA output of the instrument which is currently being calibrated can be read. This can be done in two ways.

- 1) **Passively** – the device under test generates 4 ... 20 mA directly. This can be read on the calibrator.
- 2) **Actively** – the calibrator supplies a loop power of DC 24 V to the device under test to power the device while reading the resulting 4 ... 20 mA signal.

The calibrator features a special function which can calculate the error in the pressure value from the mA value as a percentage of the 4 ... 20 mA loop span. The %-ERROR mode uses all three screens and has a special menu structure. It is possible to display pressure, mA and %-error simultaneously.

### Example:

A pressure transmitter, that is to be tested, has a measuring range of 2 bar and outputs a corresponding 4 ... 20 mA signal. The user can programme in a 0 ... 2 bar pressure span into the calibrator and the calibrator will then calculate and display the deviation or the error value from the 4 ... 20 mA output. This is achieved without any manual calculation, which is also an advantage when a specific pressure can only be set with difficulty using an external pump.

## CPH6600 dirt trap

The CPH6600 should only be used with dry and clean test items. Soiling of the integrated pump, for example, through contaminated test items, can cause a defect or require the pump to be cleaned.

By using the dirt trap specifically developed for the CPH6600, contamination of the integrated pump can be prevented.

## Using the dirt trap

The dirt trap is attached, hand-tight, to the calibrator's pressure connection. The seal is made by the O-Ring incorporated into the dirt trap's 1/8 NPT male thread. The maximum working pressure is limited to 35 bar.

The test item is mounted on the top of the dirt trap, using a suitable sealing method. The connection to the test item is usable universally as 1/8 NPT or 1/8" BSP. Use a  $\frac{7}{8}$ " or 23 mm spanner on the hex of the upper pressure port to connect the test item with the dirt trap.

As soon as either moisture or dirt can be seen in the transparent chamber, the dirt trap should be removed and cleaned.

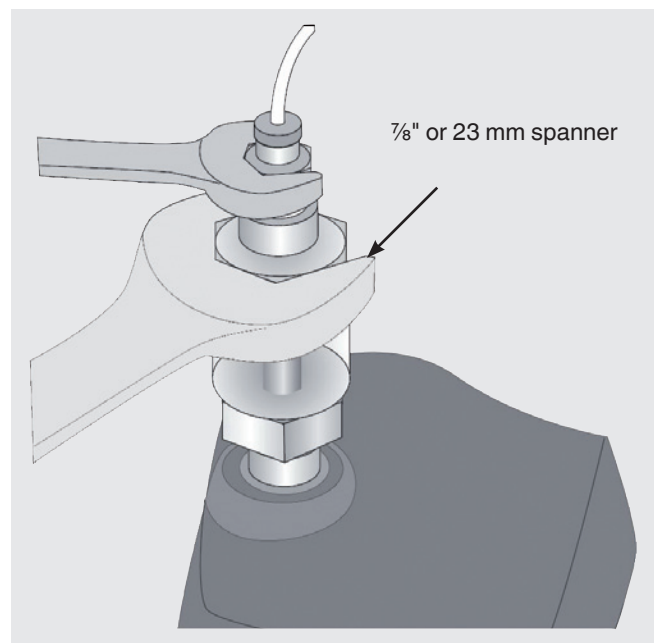
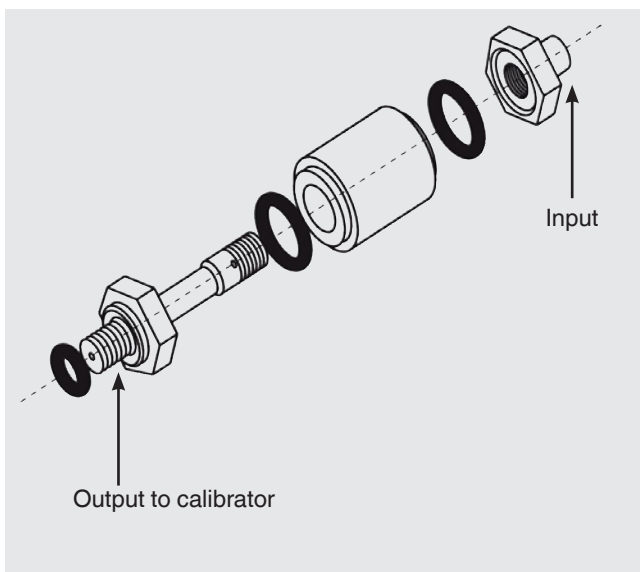
Once the upper dirt trap connection has been unscrewed, the transparent acrylic chamber and the O-ring can be removed and cleaned with a clean cloth.



Hand-held pressure indicator with mounted dirt trap



Dirt trap



## Scope of delivery

- Model CPH6600 hand-held pressure calibrator with integrated pump
- Operating instructions
- Test leads
- Calibration hose with 1/8 NPT male thread connections
- Adapter set 1/8 NPT female to 1/4 NPT female, 1/8 NPT female to 1/4 BSP female, 1/8 NPT female to G 1/2 female
- PTFE thread seal tape
- 8 type AA batteries
- 3.1 calibration certificate per DIN EN 10204



Hand-held pressure calibrator with integrated hand pump

## Accessories

- Dirt trap
- Pt100 resistance thermometer
- Battery set, consisting of four rechargeable AA batteries
- Battery charger set, including four rechargeable AA batteries, quick charger, cable, adapters
- Service case

## Option

- DKD/DAkkS certified accuracy



Hand-held pressure calibrator with service case

## Ordering information

Model / Unit / Pressure range / Type of certificate / Temperature probe / Temperature calibration / Dirt trap / Transport case / Additional ordering information

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