Precision high-pressure controller
Model CPC8000-H

for further approvals
see page 4

Precision high-pressure controller, model CPC8000-H

Applications

- Transmitter and pressure gauge manufacturers
- Calibration and service companies
- Industry (laboratory, workshop and production)
- Research and development laboratories

Special features

- Pressure ranges: 5 ... 700 bar up to 20 ... 1,600 bar (75 ... 10,000 psi up to 290 ... 23,000 psi)
- Pressure medium: Hydraulic oil or water
- Control stability: Up to 0.005 % of FS
- Accuracy: Up to 0.01 % of FS
- Interchangeable reference pressure sensors

Description

Application

The model CPC8000-H precision hydraulic high-pressure controller is especially suited as a factory/working standard for the automatic testing or calibration of all types of high-pressure measuring instruments, due to its high accuracy and control stability. Thanks to its robust design and reliability, autofrettage applications or cyclic pressure-load tests are also ideal application areas.
For the supply to the controller, other than the voltage supply, only clean dry compressed air for the pneumatic control circuit is needed. As a pressure medium on the output side, hydraulic oil or water (or other media on request) can be used.

Design

The CPC8000-H consists of two components, the model CPC8000-HC hydraulic pressure controller and the model CPC8000-HM hydraulic module with the reference pressure sensors. The hydraulic module is available in two versions, as low pressure version with a control range of 5 ... 700 bar (75 ... 10,000 psi) bar and high pressure version with a control range of 20 ... 1,600 bar (290 ... 23,000 psi) with each suitable reference pressure sensors.
The complete system is available as a 19" plug-in case or built into a 19" rack. The sensors can be changed via the front of the hydraulic module, without having to dismantle the complete controller (e.g. out of a calibration rig)

Functionality

Through specialized technology, the controller regulates the desired pressure value precisely and with great stability. Maximum simplicity is achieved through the large touchscreen and the simple and intuitive menu navigation. In addition, its easy operability is further supported by the availability of numerous menu languages.
On the large touchscreen, all necessary information such as current measured value and set point can be found on a single screen. Additionally, the measured values can be displayed in 39 unique pressure units. The hydraulic pressure controller can be remotely controlled via several different remote interfaces. A wide range of emulation command sets for other pressure controllers are available.

Interface

For communication and data transfer with a PC, the instrument has an IEEE-488.2, RS-232, USB and Ethernet interface. The digital interfaces enable the software-controlled operation of the controller - such as fully-automated calibration processes or the running of specific test programs generated from LabVIEW® etc..

Complete test and calibration systems

On request, complete mobile or stationary test systems can be manufactured.

Specifications

Reference pressure sensors		
Model CPR8000		
Accuracy [1]	0.01 % FS up to 0.01% IS-50	
Pressure ranges	0...100 bar (0...1,500 psi) up to 0...400 bar (0...6,015 psi)	
Precision [2]	0.004 % FS	
Model CPR8050		
Accuracy [1]	0.01 % FS	
Pressure ranges	0...400 bar (0...6,000 psi) to 0 … 700 bar (0 … 10,015 psi)	
Precision [2]	0.005% FS	
Model CPR8850	**Standard**	**Advanced**
Accuracy [1]	0.01 % FS	0.014 % FS
Pressure ranges	0 … 480 bar to 0 … ≤ 1,030 bar (0 … 7,000 psi to 0 … ≤ 15,000 psi)	0 … 1,030 bar to 0 … 1,600 bar (0 … 15,000 psi to 0 … 23,000 psi)
Precision [2]	0.005 % FS	0.007 % FS

1) The accuracy 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 measuring 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.
2) The precision is the maximum deviation between two measurements at one point under laboratory conditions which contains linearity, hysteresis and repeatability of the measuring instrument.

Hydraulic module		
Version	**Low pressure version CPC8000-HM-L**	**High pressure version CPC8000-HM-M**
Instrument version	Standard: 19" rack-mounting with side panels incl. rack-mounting kit Optional: built into a 19" rack with CPC8000-HC pressure controller	
Dimensions in mm	see technical drawings	
Weight	approx. 78 kg (172 lb.)	approx. 87.5 kg (193 lbs.)
Connections		
Pressure connections	Drive-Air port: 6 mm FITOK®/SWAGELOK® tube connection Supply port: 6 mm FITOK®/SWAGELOK® tube connection Measure/Control port: ¼" SNOTRIK SWAGELOK® high pressure tube connection	Drive-Air port: 6 mm FITOK®/SWAGELOK® tube connection Supply port: 6 mm FITOK®/SWAGELOK® tube connection Measure/Control port: ¼" SNOTRIK SWAGELOK® high pressure tube connection
Permissible pressure media	Drive-Air port: clean and dry air or nitrogen Supply port: clean and dry air or nitrogen Measure/Control port: non-corrosive liquids	
Permissible reference sensors	CPR8050 and CPR8000	CPR8850 and CPR8050
Permissible pressure		
Drive-Air port (from CPC8000-HC)	8 … 35 bar (116 … 507 psi)	
Supply port	35 ... 38 bar (500 ... 550 psi)	
Measure/Control port	max. 105 % FS	
Control parameters		
Control stability	< 0.005 % FS	
Control range	5 ... 700 bar (75 ... 10,000 psi)	20 ... 1,600 bar (290 ... 23,000 psi)
Permissible ambient conditions		
Operating temperature	15 … 40 °C (59 … 104 °F)	
Storage temperature	5 ... 70 °C (41 … 158 °F)	
Relative humidity	0 ... 95 % r. h. (non-condensing)	
Compensated temperature range	15 ... 40 °C (59 … 104 °F)	
Mounting position	Horizontal	

Pressure controller model CPC8000-HC	
Instrument	
Instrument version	Standard: 19" rack-mounting with side panels incl. rack-mounting kit Optional: built into a 19" rack with CPC8000-HM hydraulic module
Warm-up time	approx. 60 minutes
Dimensions in mm	see technical drawings
Weight	approx. 16.7 kg (37 lbs.)
Display	
Screen	9.0" colour TFT with touchscreen
Resolution	4 ... 7 digits
Input methods	capacitive touchscreen
Connections	
Pressure connections	7/16"-20 F SAE
Pressure adapters	6 mm FITOK® threaded pipe connection; others on request
Filter elements	all pressure ports have 40-micron filters
Permissible pressure media	Dry, clean air or nitrogen
Overpressure protection	Safety relief valve
Permissible pressure	
Supply port	35 ... 38 bar (500 ... 550 psi)
Measure/Control port	max. 105 % FS
Voltage supply	
Power supply	AC 100 ... 120 V / 200 … 240 V, 50/60 Hz
Power consumption	160 VA max
Permissible ambient conditions	
Operating temperature	15 … 45 °C (59 … 113 °F)
Storage temperature	5 ... 70 °C (41 … 158 °F)
Relative humidity	0 ... 95 % r. h. (non-condensing)
Compensated temperature range	15 ... 45 °C (59 … 113 °F)
Mounting position	Horizontal
Comunication	
Interface	IEEE-488.2, Ethernet, USB, RS-232
Command sets	Mensor, WIKA SCPI
Response time	< 100 ms

Approvals

Logo	Description	Country
CE	**EC declaration of conformity** ■ EMC directive 2004/108/EG [3] 2004/108/EC, EN 61326-1 emission (group 1, class A) and interference immunity (industrial application) ■ Low voltage directive 2006/95/EG, EN 61010-1:2010	European Community
EAC	**EAC** ■ Electromagnetic compatibility ■ Low voltage directive	Eurasian Economic Community
	GOST Metrology/measurement technology	Russia
	KazInMetr Metrology/measurement technology	Kazakhstan
	MTSCHS Commissioning approval	Kazakhstan
	BelGIM Metrology/measurement technology	Belarus
	UkrSEPRO Metrology/measurement technology	Ukraine
	Uzstandard Metrology/measurement technology	Uzbekistan

3) **Warning!** This is class A equipment for emissions and is intended for use in industrial environments. In other environments, e.g. residential or commercial installations, it can interfere with other equipment under certain conditions. In such circumstances the operator is expected to take the appropriate measures.

Certificates

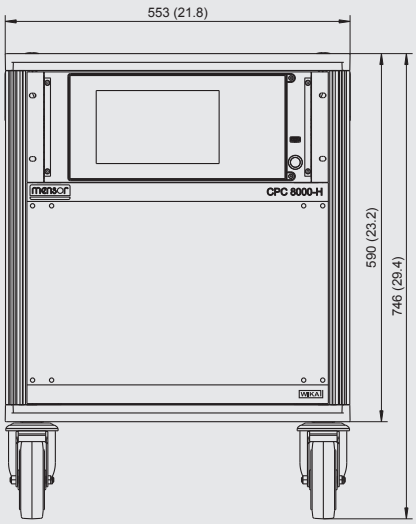
Certificate	
Calibration [4]	Standard: A2LA calibration certificate 3.1 calibration certificate per DIN EN 10204 Option: DKD/DAkkS calibration certificate
Recommended recalibration interval	1 year (dependent on conditions of use)

4) Calibration in a horizontal position/operating position.

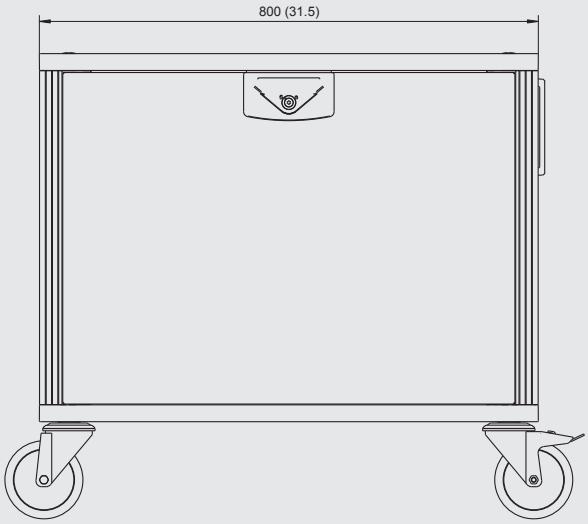
Approvals and certificates, see website

Dimensions in mm (in)

Front view



Side view (left)



Modular design of the CPC8000-H

Due to the modular sensor design, the large pressure range and the ability to exchange the sensors from the front, the CPC8000 precision high-pressure controller offers a maximum degree of flexibility in terms of hardware design or a subsequent sensor expansion.

Up to two precision pressure sensors possible
The controller offers at least one precision pressure sensor (optionally two), whose calibration data is stored in the sensor (for available ranges, see specifications).

Extremely easy to maintain
The instrument offers the maximum ease-of-service and the highest possible adaptability in the shortest time, since sensors of different pressure ranges can be exchanged in just 15 minutes (plug-and-play) plus warmup time.

Precision high-pressure controller, model CPC8000-HC

Special features of the CPC8000-H

Outstanding control performance
The model CPC8000-H high-pressure controller is especially notable for its outstanding control performance. The control unit guarantees simple control of pressure values with precision and high control stability.

Particularly adaptable to any application
The controller has a short warm-up time of approx. 25 minutes. In addition, it can be used on a variety of test volumes with no need for recharacterization.

Simple operation
The lean and unambiguous menu structure ensures a particularly high user-friendliness.

Bleed priming function
The bleed priming function ensures automatic filling (5...12 bar) of the control circuit, so that larger test volumes also do not present any problem.

Long-term stability and low maintenance
As a result of the high-quality precision pressure sensor technology, the instrument offers an excellent measuring accuracy and long-term stability. Furthermore, special patented needle valve technology ensures a low-noise and low-wear control of pressure.

Touchscreen and intuitive operator interface

The CPC8000-H high-pressure controller has a high-resolution colour touchscreen with an intuitive menu structure. The instrument features a precision pressure controller whose interface, including optional functions, can be easily configured via touchscreen.

Standard desktop/main screen

1. Settings
2. Selection: Settings, numeric keypad, and favorites
3. Input menu field
   (Numeric/Step Funct./Jog Funct./Percent step menu)
4. Display: integrated optional barometer, head heigh correction indicator, remote communication status, touchscreen lockout, and warnings.
5. **VENT**
   The system controls gently to a non-critical value and then vents the system, including the test assembly connected to the test port, to atmosphere.
6. **CONTROL**
   In control mode the instrument provides a very precise pressure at the test port in accordance with the desired set point parameter.
7. **MEASURE**
   In Measure mode, the pressure present at the test port is measured with high accuracy (if you switch directly from **CONTROL** to **MEASURE** mode, the last controlled pressure in the connected test assembly will be maintained/locked).
8. Operating modes
9. Secondary auxiliary display
10. Adjustable control limits
11. Current unit
12. Current measured value
13. Entered set point
14. Pressure range of the sensor
15. Selection of the active sensor

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.
A template helps the user and guides him through the creation process of a document.
In order to switch from the demo version to a full version of the respective template, a USB key with the template has to be purchased.
The pre-installed demo version automatically changes to the selected full version when the USB key is inserted and is available as long as the USB key is connected to the computer.

- Creation of calibration certificates for mechanical and electronic pressure measuring instruments
- Fully automatic calibration with pressure controllers
- Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa
- A calibration assistant guides you through the calibration
- Automatic generation of the calibration steps
- Generation of 3.1 certificates per DIN EN 10204
- Creation of logger protocols
- User-friendly interface
- Languages: German, English, Italian and more due with software updates

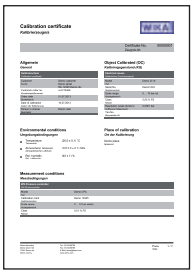
For further information see data sheet CT 95.10

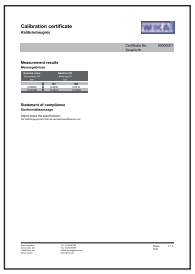
Calibration certificates can be created with the Cal-Template and logger protocols can be created with the Log-Template.

Cal Demo
Generation of calibration certificates limited to 2 measuring points, with automatic initiation of pressures via a pressure controller.

Cal Light
Generation of calibration certificates with no limitations on measuring points, without automatic initiation of pressures via a pressure controller.

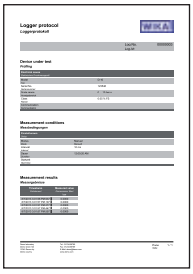
Cal
Generation of calibration certificates with no limitations on measuring points, with automatic initiation of pressures via a pressure controller.





Log Demo
Creation of data logger test reports, limited to 5 measured values.

Log
Creation of data logger test reports without limiting the measured values.



Scope of delivery

- Pressure controller model CPC8000-HC, 19" built-in version
- Hydraulic module model CPC8000-HM-L (low pressure version) or CPC8000-HM-H (high pressue version), 19" mounting version
- Power cord 2 m (6.5 ft)
- Operating instructions
- A2LA calibration certificate

Options

- DKD/DAkkS calibration certificate
- System built into a 19" rack with rollers
- Additional reference pressure sensors
- Customer-specific system

Accessories

- Interface cable
- Reference pressure calibration sleds
- Operating fluid
- Measure/control port adapter

Ordering information

Model / Case type / pressure range basic instrument / Instrument version / Reference pressure sensor 1 / Reference pressure sensor 2 / Type of certificate for the barometric reference / Medium / Additional order information

Mensor
201 Barnes Drive
San Marcos, Texas 78666
Tel. (512) 396-4200
Fax (512) 396-1820
sales@mensor.com
www.mensor.com

07/2020 UM based on 01/2016 EN