ICS SCHNEIDER MESSTECHNIK

Pneumatic high-pressure controller Model CPC7000

mensor

EAC

for further approvals
see page 3

Applications

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

Special features

- Pressure ranges: 0 ... 700 bar (0 ... 10,000 psi)
- Control speed 30 s
- Control stability 0.008 % FS
- Accuracy down to 0.01 % IS (IntelliScale)

Pneumatic high-pressure controller, model CPC7000

Description

Version
The CPC7000 pneumatic high-pressure controller always provides a suitable calibration solution on account of its accuracy class. Its outstanding control performance is particularly impressive thanks to special valve technology and the high-accuracy pressure sensor as a measuring unit. With this the controller is suitable as a factory or working standard for the testing or calibration of any type of pressure measuring instrument.

Design
The CPC7000 is available as a desktop instrument or as a 19" rack-mounting kit. The sensors can be changed via the front, without having to take out the complete controller, e.g. out of a calibration rig (plug-and-play).

Functionality
The touchscreen, through its intuitive user interface, delivers ease of use. The large number of menu languages adds to its user friendliness. In addition to specifying a specific pressure set point, either by entering it via touchscreen or sending it via remote interface, the pressure can be changed in defined, programmable steps by using the STEP buttons. Moreover, the user can also easily create extensive test programs using the instrument menu. Depending on the application, the control rate can be set as a user-defined variable rate.

WIKA
Part of your business

Software

The WIKA-Cal calibration software enables the convenient calibration of pressure measuring instruments and the generation of test certificates. Additionally, the instrument can also be remotely controlled using the serial command formats, the Mensor standard, SCPI or further optional command sets are available.

Complete test and calibration systems

On request, complete mobile or stationary test systems can be manufactured. There is an IEEE-488.2, RS-232, USB and an Ethernet interface for communication with other instruments, and thus the instrument can be integrated into existing systems.

Specifications
Model CPC7000

Reference pressure sensors		
Pressure range	**CPR8000**	**CPR8050**
Accuracy [1]	Standard: 0.01 % FS [2] Optional: 0.01 % IS-50 [3]	0.01 % FS [2]
Gauge pressure	100 ... 400 bar [4] 1,500 ... 6,000 psi [4]	400 ... 700 bar 6,000 ... 10,000 psi
Absolute pressure	101 ... 401 bar [4] 1,515 ... 6,015 psi [4]	401 ... 701 bar 6,015 ... 10,015 psi
Calibration interval	365 days	365 days
Optional barometric reference		
Function	The barometric reference can be used to switch pressure types [5], absolute <=> gauge. With gauge pressure sensors, the measuring range of the sensors must begin with -1 bar (-15 psi) in order to carry out an absolute pressure emulation.	
Measuring range	552 ... 1,172 mbar abs. (8 ... 17 psi abs.)	
Accuracy [1]	0.01 % of reading	
Pressure units	38 and two freely programmable	

1) 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 every 30 days.
2) FS = Full span = end of measuring range - start of measuring range
3) 0.01 % IS-50 accuracy: Between 0 ... 50 % of the full scale, the accuracy is 0.01 % of half of the full scale and between 50 ... 100 % of the full scale, the accuracy is 0.01 % of reading.
4) For pressure ranges from ≥ 100 ... ≤ 138 bar [≥ 1,500 ... ≤ 2,000 psi] gauge will be sealed gauge sensor.
5) For a pressure type emulation, we recommend a native absolute pressure sensor, since the zero point drift can be eliminated through a zero point adjustment.

Basic instrument	
Instrument	
Instrument version	Standard: desktop case Option: 19" rack-mounting kit
Dimensions	see technical drawings
Weight	approx. 40 kg (88.2 lbs) incl. all internal options
Warm-up time	approx. 15 min
Display	
Screen	8.9" colour LC display with resistive touchscreen
Resolution	4 ... 6 digits depending on range and units
Connections	
Pressure connection	Standard: 5 ports with M16 x 1.5 female with sealing cone Optional: 2 ports with 9/16-18 UNF female Optional barometer: M12 x 1 female
Filter elements	All pressure ports have 20-µm filters.
Permissible pressure media	Nitrogen class 2.8 or better
Overpressure protection	Burst disc up to 1,000 bar (14,500 psi)

Basic instrument	
Permissible pressure	
Supply port	107 … 110 % FS at least 30 … 50 bar (435 ... 725 psi) over nominal pressure, whichever is greater
Measure/Control port	max. 105 % FS
Voltage supply	
Power supply	AC 100 ... 120 / 200 ... 240 V, 50/60 Hz
Power consumption	max. 140 VA
Permissible ambient conditions	
Storage temperature	0 ... 70 °C (32 ... 158 °F)
Humidity	5 … 95 % r. h. (non-condensing)
Compensated temperature range	15 ... 45 °C (59 ... 113 °F)
Mounting position	horizontal
Control parameters	
Control stability	0.008 % FS in a 25 ml test volume
Control time	30 s [6]
Control range	0 ... 100 % FS
Minimum control pressure	1 bar (14.5 psi)
Test volume	0 ...50 ccm
Communication	
Interface	Ethernet, IEEE-488, USB, RS-232
Command sets	Mensor, WIKA SCPI
Response time	approx. 100 ms
Internal program	up to 24 sequences with up to 99 steps each

Approvals

Logo	Description	Country
CE	**EU declaration of conformity** ■ EMC directive [7] EN 61326-1 emission (group 1, class A) and immunity (industrial application) ■ Low voltage directive ■ RoHS directive	European Union
EAC	**EAC (option)** ■ Pressure equipment directive ■ Low voltage directive	Eurasian Economic Community
(logo)	**GOST (option)** Metrology, measurement technology	Russia
(logo)	**BelGIM (option)** Metrology, measurement technology	Belarus

Certificates

Certificate	
Calibration [8]	Standard: A2LA calibration certificate Option: DKD/DAkkS calibration certificate
Recommended recalibration interval	1 year (dependent on conditions of use)

6) Regarding a 10 % FS pressure increase in a 25 ml test volume.
7) **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.
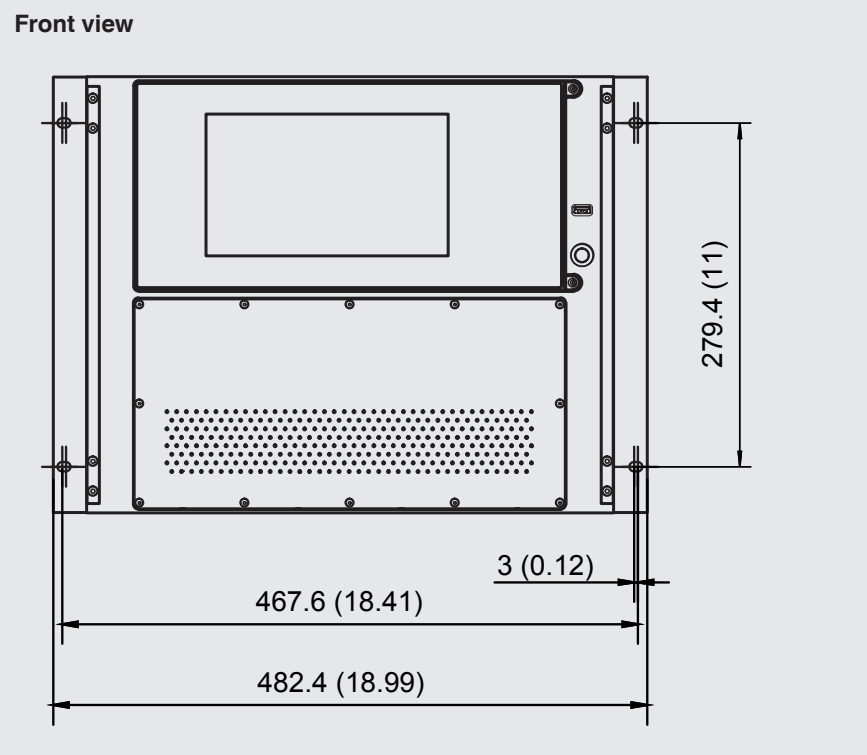8) Calibration in a horizontal position / operating position.

Approvals and certificates, see website
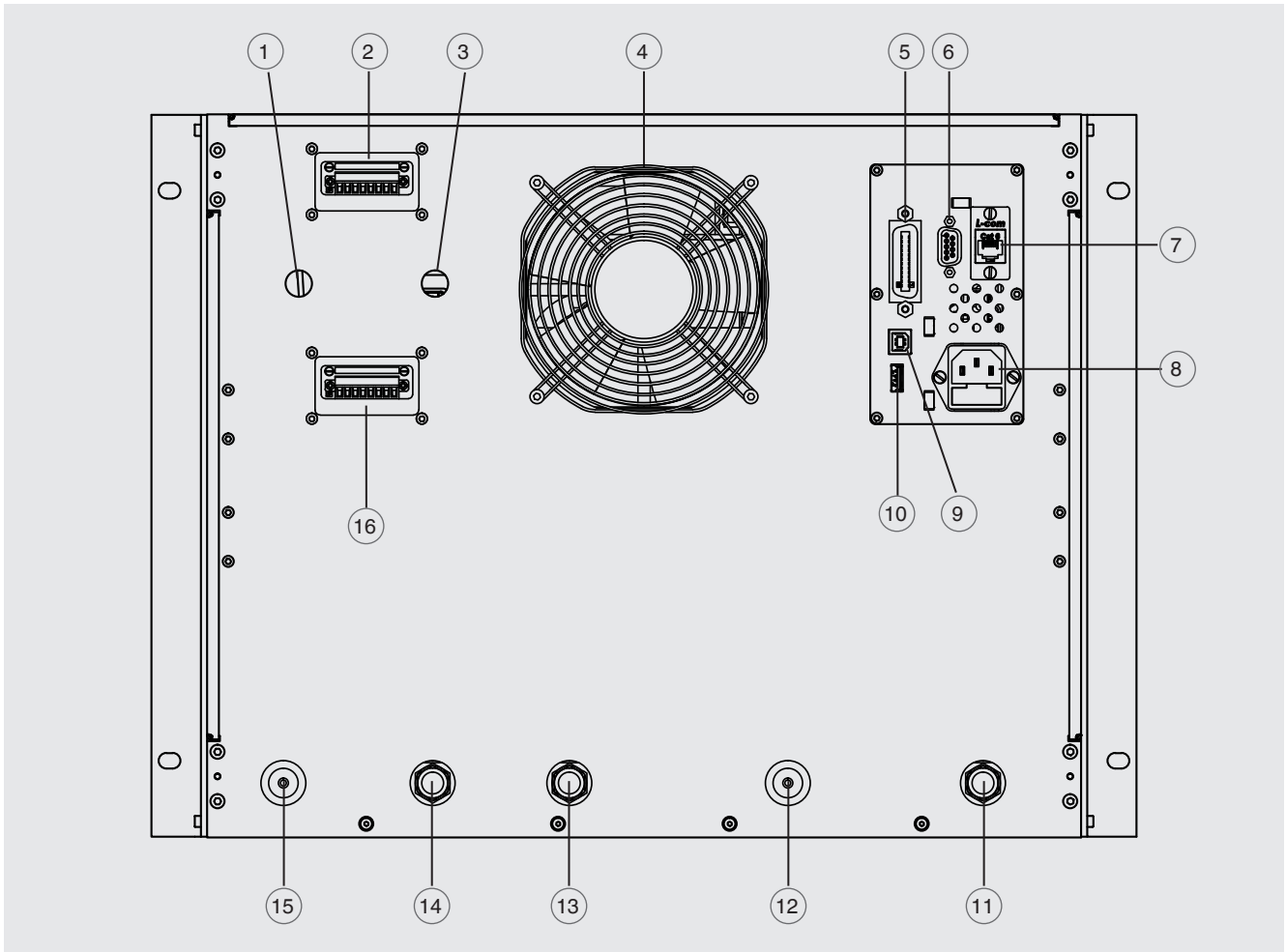
Dimensions in mm (in)

Desktop case

Front view

354.4 (13.95)

428 (16.85)

Side view (left)

433.3 (17.06)

476.3 (18.75)
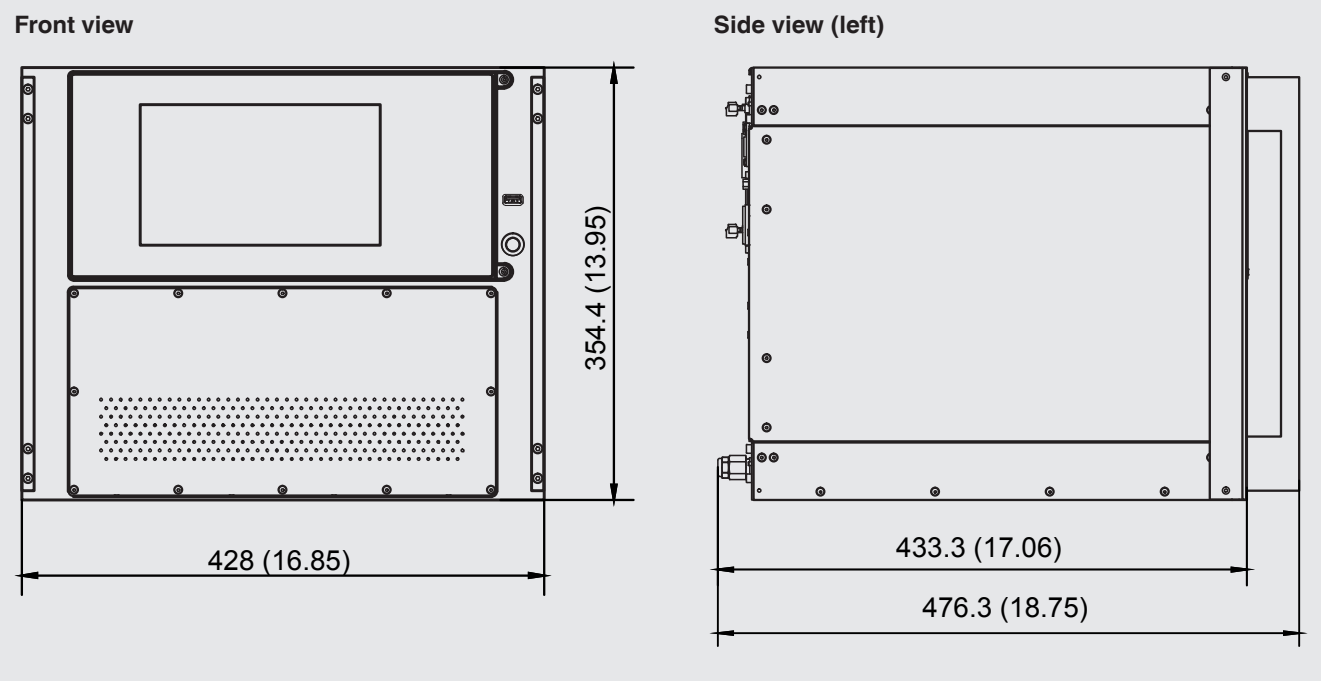
19" rack-mounting kit with side panels, front view

Front view

279.4 (11)

3 (0.12)

467.6 (18.41)

482.4 (18.99)

Electrical and pressure connections - rear view

1. Optional: Barometric pressure connection (M12 female thread)
2. Digital I/O 1-3
3. Reference connection (M12 female thread)
4. Fan
5. IEEE-488 interface
6. RS-232 interface
7. Ethernet port
8. Power supply
9. USB interface (instrument) for remote communication
10. USB interface (host) for service
11. Vent pressure reference incl. silencer
12. Measure/Control port (M16 x 1.5 female with sealing cone)
13. Vent incl. silencer (ATM)
14. Controlled vent incl. silencer (ATM)
15. Supply port (M16 x 1.5 female with sealing cone)
16. Digital I/O 4-6

Efficient operation in a wide pressure range

The CPC7000 pneumatic high-pressure controller provides a high degree of flexibility by having up to three pressure sensors within the instrument. This allows the user to have a superior accuracy over a wider dynamic range of operation. Each sensor contains its calibration, characterization and communication functions and information.
The instrument can be equipped either with all gauge pressure sensors or all absolute pressure sensors. The highest sensor in the instrument must encompass the range of the smaller sensors.

Pneumatic high-pressure controller, model CPC7000

Autoranging capability
The instrument is capable of automatically selecting between the installed sensors depending on the user's pressure set point. The transition between the sensors is automatic and provides the user a stable and seamless control.

Emergency venting
The CPC7000 pneumatic high pressure controller has emergency venting feature when the front door is open or in case of a power failure. This ensures the operator's safety while working at high pneumatic pressures. Additionally the controller also vents any unused sensors.

These features make the instrument an efficient and safe controller to be used for various applications.

Easy operation via touchscreen

Shortly after power-up, the standard home screen (see following figure) is displayed. In this menu screen, one can switch between the operating modes using the buttons **MEASURE**, **CONTROL** and **VENT** at the bottom of the screen.

Standard desktop / main screen

① Home application	⑫ **MEASURE** In measuring mode, the pressure present at the Measure/Control 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). Temperature changes or external leakage may impact the pressure reading in this state.
② General settings	
③ Control settings	
④ Display settings	
⑤ Remote settings	
⑥ Step settings	⑬ Auxiliary displays either uncertainty, peak value, rate or alternative units
⑦ Sequences settings	⑭ Current pressure unit and mode
⑧ Favourites	⑮ Current measured value
⑨ Navigation within the menu	⑯ Entered set point
⑩ **VENT** Immediately vents the system, including the test assembly connected to the Measure/Control port, to atmosphere.	⑰ Pressure range of the sensor
	⑱ Selection of the active sensor or auto-range
	⑲ Current application name
⑪ **CONTROL** In control mode the instrument provides a highly accurate pressure at the Measure/Control port in accordance with the desired set point.	⑳ Set-point selection

WIKA-Cal calibration software

Easy and fast creation of a high-quality calibration certificate

WIKA-Cal calibration software serves for the creation of calibration certificates or logger protocols for pressure measuring instruments. A demo version is available for free download.

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

The pre-installed 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 will be 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

Three WIKA-Cal licenses are available together with a pressure controller of the CPC series

The WIKA-Cal calibration software is available 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 (light version)	Cal-Template (full version)	Log-Template (full version)
- Semi-automatic calibration	- Fully automatic calibration	- Live measurement recording for a certain period of time with selectable interval, duration and start time
- Calibration certificate creation 3.1 per DIN EN 10204 - Calibration reports can be exported to Excel® template or XML file - Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa - Generation of calibration certificates with no limitations on measuring points		- Creation of logger reports with graphic and/or tabular representation of the measurement results in PDF format - Export of measurement results as CSV file possible
Ordering information for your enquiry for a single license		
WIKA-CAL-LZ-Z-Z	WIKA-CAL-CZ-Z-Z	WIKA-CAL-ZZ-L-Z
Ordering information for your enquiry for a pair license:		
Cal-Template (light version) together with Log-Template (full version)		WIKA-CAL-LZ-L-Z
Cal-Template (full version) together with Log-Template (full version)		WIKA-CAL-CZ-L-Z

Accessories for CPC7000	Order code
Description	**CPX-A-C7**
19" rack-mounting kit	-2-
Barometric reference Measuring range 552 ... 1.172 mbar abs. (8 ... 17 psi abs.) Accuracy to 0.01 % of reading	-3-
for barometric reference, voltage supply and software	-5-
Calibration adapter and voltage supply with interface cable RS-232	-6-
Adapterset M12 on 9/16-18 UNF female	-1-
Ordering information for your enquiry:	
1. Order code: CPX-A-C5 2. Option:	⇓ [ ]

Scope of delivery

- Pneumatic high-pressure controller model CPC7000 (desktop case)
- Power cord 1.5 m (5 ft)
- Operating instructions
- A2LA calibration certificate (standard on factory)

Options

- DKD/DAkkS calibration certificate
- Barometric reference
- Spare reference pressure sensor (CPR8050 or CPR8000)
- 19" rack-mounting kit
- Customer-specific system
- Adapters and fittings for pressure connections

Ordering information

Model / Case type / Instrument version / Reference pressure sensor 1 / Reference pressure sensor 2 / Reference pressure sensor 3 / Barometric reference / Type of certificate for the barometric reference / Pressure adapter / Power cord / Further approvals / Additional ordering information

12/2019 EN