Pneumatic high-pressure controller
Model CPC7000

Applications
- Healthcare 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)

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.

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

<table>
<thead>
<tr>
<th>Pressure range</th>
<th>CPR8000</th>
<th>CPR8050</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong></td>
<td>Standard: 0.01 % Full span</td>
<td>0.01 % Full span</td>
</tr>
<tr>
<td></td>
<td>Option: 0.01 % IS-50</td>
<td></td>
</tr>
<tr>
<td><strong>Gauge pressure</strong></td>
<td>100 ... 400 bar (1,500 ... 6,000 psi)</td>
<td>400 ... 700 bar (6,000 ... 10,000 psi)</td>
</tr>
<tr>
<td><strong>Absolute pressure</strong></td>
<td>101 ... 401 bar (1,515 ... 6,015 psi)</td>
<td>401 ... 701 bar (6,015 ... 10,015 psi)</td>
</tr>
<tr>
<td><strong>Calibration interval</strong></td>
<td>365 days</td>
<td>365 days</td>
</tr>
</tbody>
</table>

### Optional barometric reference

| Function | The barometric reference can be used to switch pressure types 4), 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** | 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.

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 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 version | Standard: Desktop case |
| Dimensions | see technical drawings |
| Weight | approx. 40 kg (88.2 lbs) |
| Warm-up time | approx. 15 min |

#### Instrument

- **Screen**: 8.9" LC colour display with resistive touchscreen
- **Resolution**: 4 ... 6 digits depending on range and units

#### Connections

- **Pressure connection**: M16 x 1.5 female with sealing cone
- **Filter elements**: All pressure connections of the instrument feature a 20-µm filter.
- **Permissible pressure media**: Minimum nitrogen 2.8 or better
- **Overpressure protection**: Burst disc up to 1,000 bar (14,500 psi)

#### Permissible pressure

- **Supply port**: 107 ... 110 % FS at least 30 ... 50 bar (435 ... 725 psi) over nominal pressure
- **Measure/Control port**: max. 105 % FS

#### Voltage supply

- **Power supply**: AC 100 ... 240 V, 50 Hz / 60 Hz
- **Power consumption**: max. 120 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
### Basic Instrument

<table>
<thead>
<tr>
<th>Control parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control stability</td>
<td>0.008 % FS in a 25 ml test volume</td>
</tr>
<tr>
<td>Control time</td>
<td>30 s (regarding a 10 % FS pressure increase in a 25 ml test volume)</td>
</tr>
<tr>
<td>Control range</td>
<td>0 ... 100 % FS</td>
</tr>
<tr>
<td>Minimum control pressure</td>
<td>1 bar (14.5 psi)</td>
</tr>
<tr>
<td>Test volume</td>
<td>0 ... 50 ccm</td>
</tr>
</tbody>
</table>

### Communication

<table>
<thead>
<tr>
<th>Interface</th>
<th>Standard: Ethernet, IEEE-488, USB, RS-232</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command sets</td>
<td>Mensor</td>
</tr>
<tr>
<td>Response time</td>
<td>approx. 100 ms</td>
</tr>
<tr>
<td>Internal program</td>
<td>up to 64 sequences with up to 99 steps each</td>
</tr>
</tbody>
</table>

### Certificates

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration</td>
<td>Standard: Factory calibration certificate</td>
</tr>
<tr>
<td></td>
<td>Option: DKD/DAkkS calibration certificate</td>
</tr>
<tr>
<td>Recommended recalibration interval</td>
<td>1 year (dependent on conditions of use)</td>
</tr>
</tbody>
</table>

Approvals and certificates, see website
**Modular design of the CPC7000**

Due to the modular sensor design, the large pressure range of 0 ... 700 bar (0 ... 10,000 psi) and the ability to exchange the sensors through the front, the CPC7000 pneumatic pressure controller brings a maximum degree of flexibility in terms of hardware design or a subsequent sensor expansion.

**Up to three precision pressure sensors possible**

The CPC7000 offers at least one precision pressure sensor (also optional two or three), whose calibration data is stored in the sensor.

In one controller, either absolute or gauge pressure sensors are possible. With two or three available reference sensors, the measuring ranges of one controller can either be selected automatically via the auto-range function or via the menu.

Each larger sensor must include the measuring range of the next smaller sensor. Optionally, a barometric reference allows switching between gauge pressure and absolute pressure.

**Extremely easy to maintain**

The modular design of the CPC7000 offers the maximum serviceability and the highest possible adaptability in the shortest time. The sensors of different measuring ranges can, through opening the front console, be exchanged in just five minutes (plug-and-play).

These features make the instrument very easy to service and repair with least possible downtime to the user.
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** 13, **CONTROL** 12 and **VENT** 11 at the bottom of the screen.

**Standard desktop / home screen**

<table>
<thead>
<tr>
<th>1</th>
<th>Home application</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>General settings</td>
</tr>
<tr>
<td>3</td>
<td>Control settings</td>
</tr>
<tr>
<td>4</td>
<td>Display configuration</td>
</tr>
<tr>
<td>5</td>
<td>Remote control settings</td>
</tr>
<tr>
<td>6</td>
<td>Step settings</td>
</tr>
<tr>
<td>7</td>
<td>Sequences settings</td>
</tr>
<tr>
<td>8</td>
<td>Favourites</td>
</tr>
<tr>
<td>9</td>
<td>Navigation within the menu</td>
</tr>
<tr>
<td>10</td>
<td>Set-point selection</td>
</tr>
<tr>
<td>11</td>
<td><strong>VENT</strong> Immediately vents the system, including the test assembly connected to the Measure/Control port, to atmosphere.</td>
</tr>
<tr>
<td>12</td>
<td><strong>CONTROL</strong> In control mode the instrument provides a highly accurate pressure at the Measure/Control port in accordance with the desired set point.</td>
</tr>
<tr>
<td>13</td>
<td><strong>MEASURE</strong> In measuring mode, the pressure present at the Measure/Control port is measured with high accuracy (if you switch directly from <strong>CONTROL</strong> to <strong>MEASURE</strong> mode, the last controlled pressure in the connected test assembly will be maintained/locked. When reading the pressure values, temperature changes or external leakages in this state can lead to repercussions.</td>
</tr>
<tr>
<td>14</td>
<td>Current pressure unit and mode</td>
</tr>
<tr>
<td>15</td>
<td>Current measured value</td>
</tr>
<tr>
<td>16</td>
<td>Entered set point</td>
</tr>
<tr>
<td>17</td>
<td>Pressure range of the sensors</td>
</tr>
<tr>
<td>18</td>
<td>Selection of the active sensor or auto-range</td>
</tr>
<tr>
<td>19</td>
<td>Current application name</td>
</tr>
</tbody>
</table>
Dimensions in mm (in)

Desktop case

Front view

Side view (left)

19" rack-mounting kit with side panels

Front view
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
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 stick with the template must be purchased.

The pre-installed demo version automatically changes to the selected full version when the USB stick is inserted and is available as long as the USB stick 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

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

- Modular pressure controller model CPC7000 (desktop case)
- Power cord with 1.5 m (5 ft)
- Operating instructions
- Factory calibration certificate

Options

- DKD/DAkkS calibration certificate
- Barometric reference
- Max. 2 further references (CPR8050 or CPR8000)
- 19” rack-mounting kit with side panels
- Customer-specific system
- Adapters and fittings for pressure connections

Accessories

- Interface cable
- Pressure booster for high-pressure supply
- WIKA-CAL calibration software

Accessories

- Interface cable
- Pressure booster for high-pressure supply
- WIKA-CAL calibration software

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 / Further approvals / Additional ordering information