

High-speed pneumatic pressure controller Model CPC3000

WIKA data sheet CT 27.55

Applications

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

Special features

- Pressure ranges -1 ... +70 bar
- Control speed < 3 sec.
- Control stability 0.004 % FS
- Precision up to 0.015 % IS (IntelliScale)
- Accuracy up to 0.025 % IS (IntelliScale)

Description

Design

With its compact design, its exceptionally reliable and patented control unit, and available measuring ranges of -1 ... +70 bar, the CPC3000 high-speed pneumatic pressure controller offers a wide range of application possibilities. The instrument is available as a desktop instrument or as a 19" rack-mounted unit.

Application

Since the controller offers an accuracy of up to 0.025 % IS-50, and the pressure can be controlled extremely quickly, it is particularly suited as a production tool for gauge and/or transmitter manufacturing or as a factory/working standard for the verification or calibration of all types of pressure measuring instrument.

Functionality

The large touch screen and the simple menu navigation guarantee maximum ease-of-use. In addition, its operability is further supported by the availability of a large number of menu languages.

Depending on the application, the operator can choose between 3 input functions or menu blocks:

- 1) Numeric keypad for the precise input of the pressure value (setpoint) which will be controlled.



High-speed pneumatic pressure controller model CPC3000

- 2) Step button block (max. 12). Each button thus represents a defined pressure value (these pressure steps are freely definable via the menu).
- 3) Jog buttons: with these, the 3 least significant decimal places of the current pressure value can be raised or lowered by a digit.

Software

In addition to the EasyCal professional calibration software, which enables the convenient calibration of pressure measuring instruments and the generation of test certificates, individual test programmes can also be created, e.g. within LabVIEW®. For the serial command formats, the Mensor standard, SCPI or further optional instruction sets are available.

Complete test and calibration systems

The controller has an IEEE-488.2, an Ethernet and a USB interface, so that connection to existing systems is possible via one of these interfaces. If required, complete mobile or stationary test sets can also be assembled to customer specifications.

Specifications

CPC3000

Reference pressure sensors

| Pressure range | Standard | Optional |
|-------------------|---------------------------------------|---------------------------------------|
| Accuracy | 0.025 % FS | 0.025 % IS-50 ¹⁾ |
| Gauge pressure | 0 ... 0.35 bar to 0 ... 70 bar | 0 ... 1 bar to 0 ... 70 bar |
| Bi-directional | -1 ... +0.35 bar to +0.35 ... +70 bar | - |
| Absolute pressure | 0 ... 1 bar abs. to 0 ... 71 bar abs. | 0 ... 1 bar abs. to 0 ... 71 bar abs. |
| Precision | 0.015 % FS | 0.015 % IS |

Optional barometric reference

| | |
|-----------------------|--|
| Function | The barometric reference can be used to switch pressure types ²⁾ , absolute <=> gauge. With gauge pressure sensors, the measuring range of the sensors must begin with -1 in order to carry out an absolute pressure emulation. |
| Measuring range | 552 ... 1172 mbar abs. |
| Accuracy | 0.02 % of measured value |
| Pressure units | 38 and 2 freely programmable |

1) 0.025 % IS-50 accuracy: 0.025 % of measured value in the upper half of the measuring range.

2) 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.

Base instrument

| Instrument | |
|-------------------------------|--|
| Instrument version | Standard: desktop case with bezel and handle Optional: 19" mounting with side panels |
| Dimensions in mm | see technical drawings |
| Weight | approx. 9.1 kg |
| Display | |
| Screen | 7.0" colour LCD with touchscreen |
| Resolution | 4 ... 6 digits |
| Display update | 4 values/sec |
| Warm-up time | approx. 15 min |
| Compensated temperature range | 15 ... 45 °C |
| Connections | |
| Pressure connections | 4 ports with 7/16"- 20 F SAE incl. 6 mm tube fitting adaptors |
| Filter elements | Filter element (40 micron) included in each pressure port |
| Permissible pressure media | dry, clean air or nitrogen |
| Wetted parts | aluminium, brass, 316 and 316L stainless steel, Buna N, FKM/FPM, glass-filled epoxy, RTV, nylon, ceramic |
| Overpressure protection | Safety relief valve |
| Permissible pressure | |
| Supply Port | ~ 110 % FS |
| Measure/Control Port | max. 105 % FS |
| Power supply | |
| Power supply | AC 100 ... 240 V, 50 Hz |
| Power consumption | max. 90 VA |

Permissible ambient conditions

| | |
|-----------------------|---|
| Operating temperature | 5 ... 50 °C |
| Storage temperature | 0 ... 70 °C |
| Humidity | 0 ... 95 % r.h. (relative humidity, non-condensing) |
| Mounting position | horizontal or slightly tilted |

Control parameter

| | |
|-------------------|--|
| Control stability | < 0.004 % FS |
| Control time | < 3 (with a sudden pressure increase of 10 % FS in a 150 ml test volume) |
| Control range | 0 ... 100 % FS |
| Test volume | 50 ... 1000 ccm (without throttle) |

Communication

| | |
|--------------|------------------------------------|
| Interface | Ethernet, IEEE-488, USB |
| Command sets | Mensor, WIKA SCPI, others optional |

Approvals and certificates

CE conformity

| | |
|-----------------------------|--|
| EMC directive ³⁾ | 2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application) |
| Low voltage directive | 2006/95/EC, EN 61010-1 |

Certificate

| | |
|---------------------------|--|
| Calibration ⁴⁾ | Incl. 3.1 calibration certificate per EN 10204 |
|---------------------------|--|

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.

4) Calibration in a horizontal position.

Easy operation via touch screen

Standard desktop / main screen

Shortly after power-up, the standard desktop (see following picture) displays. In this menu screen, one can switch between the operating modes using the buttons "MEASURE / CONTROL / VENT" (bottom left).

Annotations for the main screen:

- entered setpoint → Setpoint 1.00000
- Current pressure value → 1.00000
- Pressure unit (adjustable via pop-up menu) → bar
- Operating mode → Measure Control Vent
- Input menu field (Numeric/Step Funct./Jog Funct.)

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).

CONTROL
In 'Control' mode, the instrument provides a highly accurate pressure to the test port, corresponding to the desired setpoint.

VENT
Immediately vents the system, including the test assembly connected to the test port, to atmosphere.

Clear menu design (incl. expandable, helpful additional information)

The menu screen is designed particularly clearly and offers the possibility of displaying additional information via the SETUP menu (see following picture).

Annotations for the SETUP menu:

- Current defined max. control range (configurable via SETUP) → -1.00000 5.00000
- SETUP menu → [Key icon]
- Communication status of the interface* → [Icon]
- Display of the optional integrated barometer* → Barometer 1.01754
- Bargraph (% FS) as a visual indication of the current utilisation of the measuring range → [Bar graph]

SETUP menu
via the SETUP menu, the following items can be easily configured:

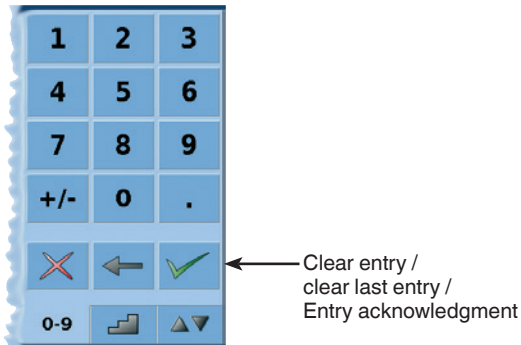
- Language (17 available in total)
- Maximum control range
- Step and Jog functions
- Communications settings
- Display of additional information

* displayed if required

Optimal setting options in 'Control' mode through 3 different input menu modes

A) Direct setpoint input via numeric keypad

Application: numeric setpoint input via Touchscreen.



Screen with the input menu: NUMERIC

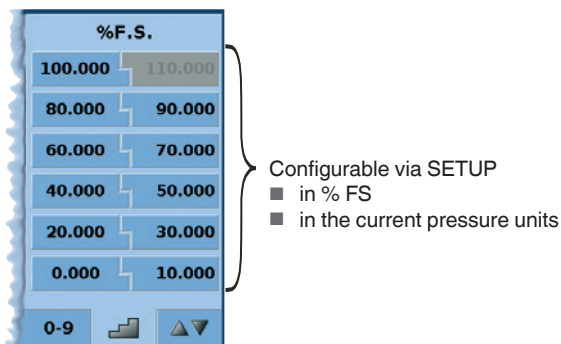
Operation

The required pressure value/setpoint is entered using the numeric keypad and acknowledged by pressing the green 'tick' in the buttons underneath.

This provides the setpoint adopted by the controller, which is immediately controlled and provided at the test port.

B) Step-wise changing of the setpoint via defined steps using the Step function

Application: simple calibration using defined test steps, without external software.



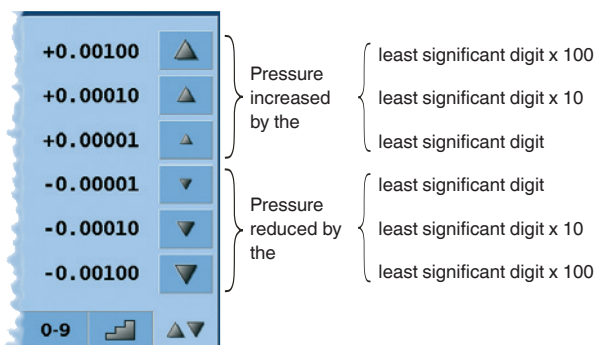
Screen with the input menu: STEP

Operation

The fields in the Step menu contain defined setpoints (in % FS or actual pressure units), which are configurable via the SETUP menu. By pressing a step button, the corresponding pressure is immediately controlled and provided at the test port.

C) Fine adjustment of the last 3 significant digits of the setpoint using the Jog function

Application: Fine adjustment of a pressure value (up and down), e.g. to calibrate pressure gauges (bring the pointer to an exact point).

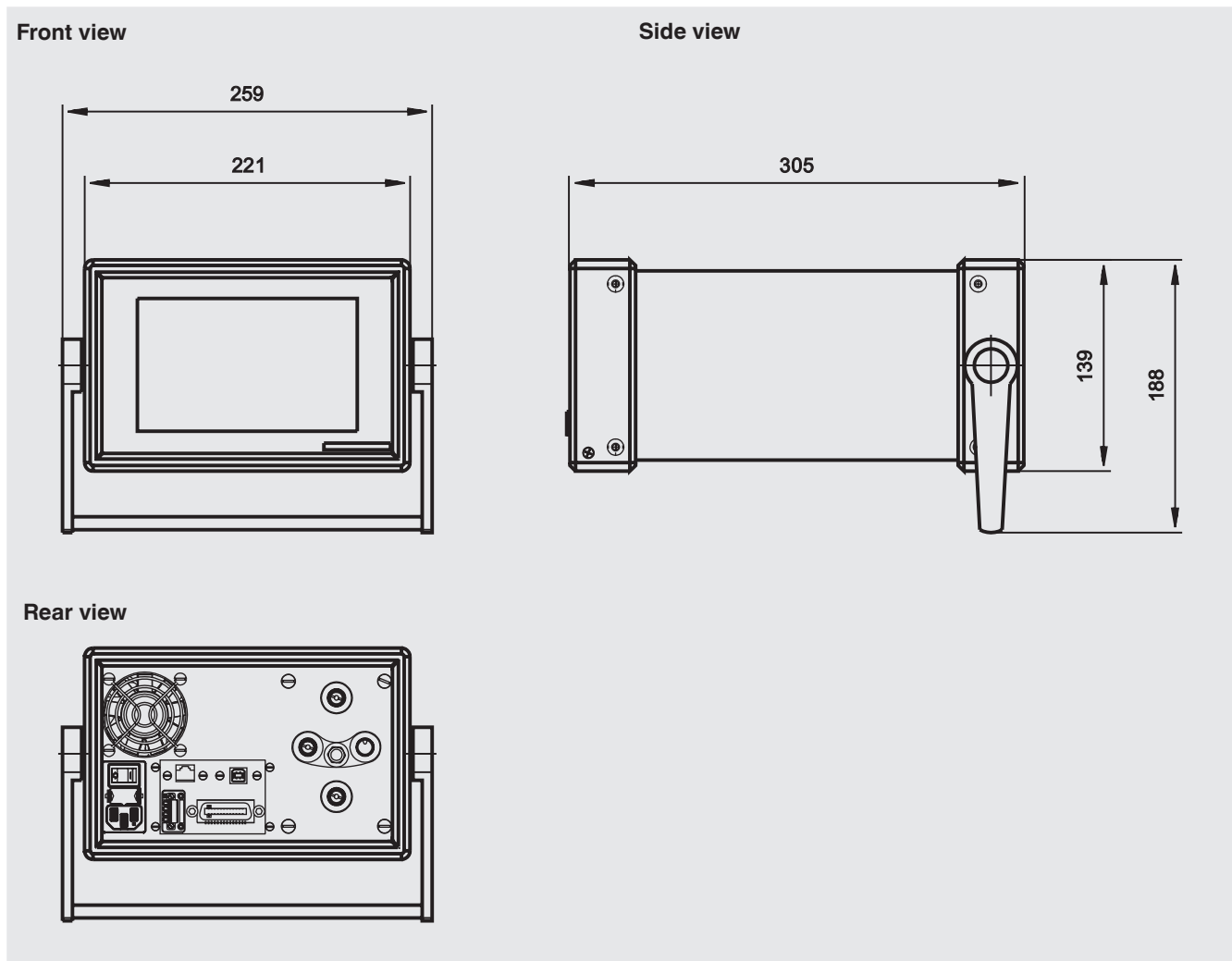


Screen with the input menu: JOG

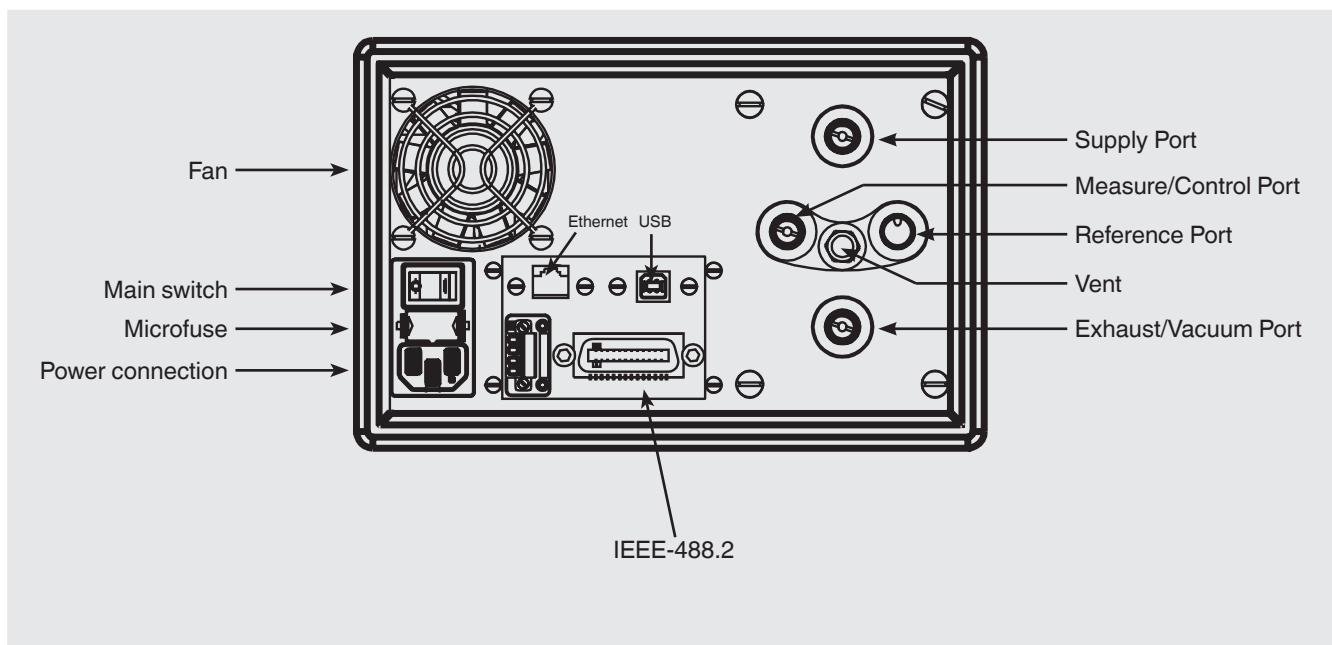
Operation

The fields in the Jog menu contain defined values, which correspond to the last three significant digits of the current pressure value. Thus the current resolution of the pressure value directly affects the magnitude of these jog buttons. By pressing one of the jog buttons, the corresponding adjusted setpoint is immediately controlled and provided at the test port.

Dimensions in mm



Electrical and pressure connections - rear



Scope of delivery

- Model CPC3000 high-speed pressure controller (desktop case with bezel and handle)
- 1.5 m power cord
- Operating instructions
- 3.1 calibration certificate per DIN EN 10204

Options

- DKD/DAkkS calibration certificate
- Barometric reference
- 19" rack mounting with side panels
- Customer-specific system

Accessories

- Pressure adapters
- Interface cable
- EasyCal professional calibration software

Ordering information

Model / case / unit / accuracy / measuring range / type of certification / barometric reference / pressure connection adapter / power cord / additional order info

© 2008 WIKA Alexander Wiegand SE & Co. KG, all rights reserved.
The specifications given in this document represent the state of engineering at the time of publishing.
We reserve the right to make modifications to the specifications and materials.



