

# High-speed pressure controller Model CPC3050

WIKA data sheet CT 27.56



## Applications

- High speed controlling
- End-of-Line production testing
- Pressure calibration
- Automotive
- Oil and Gas

## Special features

- Control speed < 4 seconds for 25%FS steps
- Accuracy: 0.020% FS
- Range: -1 ... 210 bar (-15 ... 3,045 psi)
- PACE remote emulation
- Up to two individual transducer ranges
- Two year warranty



High-speed pressure controller, Model CPC3050

## Description

### Overview

The CPC3050 High-Speed Pressure Controller is designed with a primary focus on improving throughput in a manufacturing or calibration process. Offering pressure ranges as low as 0 ... 350 mbar (5 psi) up to 210 bar (3,045 psi), the CPC3050 can be the solution for multiple applications. This controller can be configured as a desktop or 19" rack-mount version. Capable of 2 internal reference transducers and a barometric reference, a single CPC3050 can provide a wide range of pressure control and also emulate both absolute or gauge pressure types. The two customizable transducer ranges provide more flexibility for customer needs and pressure range coverage.

### Application

The CPC3050 has an accuracy of 0.020%FS and uses a regulator technology that is designed specifically for high speed pressure control; ideal for end of line testing of an automated production and manufacturing line. Along with the high speed, the 0.020% FS accuracy provides adequate calibration requirements for numerous devices designed for the automotive and oil/gas industry.

### Functionality

The CPC3050 High-Speed Controller can be operated locally through a simple and intuitive menu that allows users to control and measure pressure. Additionally, it is capable of remote control with software that can drive all the same functions as local operation. Using serial, USB, Ethernet or GPIB, the CPC3050 can be completely setup to function automatically in a process and achieve optimal output of a manufacturing process. With the Mensor legacy command set, along with PACE emulated commands, it can also be a solution for previously defined remote software.

### Design

The standard chassis is designed to be a desktop for bench work in a production or engineering environment. For integration into a more automated process, the sleek design fits in a 3U rack mount tray. Along with the same pressure port layout as many other Mensor controllers, the CPC3050 uses a common SAE 7/16-20 threaded pressure ports, which makes it very easy to find the appropriate pressure adapters for most applications.

## Specifications

### Model CPC3050

#### Reference pressure transducers model CPR3050

|   |  |   |
|---|--|---|
| Pressure Range                          | Low Pressure (LP) <sup>8)</sup>  | High Pressure (HP) <sup>7)8)</sup>                          |
| Accuracy <sup>1)</sup>                  | 0.020% FS <sup>2)</sup>  |   |
| Gauge pressure <sup>3)</sup>            | 0 ... 5 up to 1,500 psi<br>(0 ... 0.35 up to 100 bar)  | 0 ... 1,500 up to 3,045 psi<br>(0 ... 100 up to 210 bar)    |
| Absolute pressure <sup>5)</sup>         | 0 ... 15 up to 0 ... 1,515 psi<br>(0 ... 1 up to 0 ... 101 bar)  | 0 ... 1,515 up to 3,060 psia<br>(0 ... 101 up to 211 bar)   |
| Bi-directional pressure <sup>3)4)</sup> | -2.5 ... 2.5 up to -15 ... 1,500 psi<br>(-0.17 ... 0.17 up to -1 ... 100 bar)  | -15 ... 1,500 up to 3,045 psi<br>(-1 ... 100 up to 210 bar) |
| Calibration interval                    | 365 days   |   |
| Optional barometric reference           |  |   |
| Function                                | The barometric reference can be used to switch pressure types <sup>6)</sup> , absolute <=> gauge. With gauge pressure transducers, the measuring range of the transducers must begin with -1 bar (-15 psi) in order to carry out a complete absolute pressure emulation. |   |
| Measuring range                         | 8 ... 17 psi abs. (552 ... 1,172 mbar abs.)  |   |
| Accuracy <sup>1)</sup>                  | 0.020% of reading  |   |
| Pressure units                          | 39 and two freely programmable   |   |

- 1) It is defined by the total measurement uncertainty, with the coverage factor (k = 2) and includes 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 with recommended zero point adjustment every 30 days..
- 2) FS = Full Span.
- 3) Ranges from 1,500 to 3,045 psi will be sealed gauge transducers..
- 4) The negative portion of a bidirectional range has the same accuracy as the equivalent positive range.
- 5) The minimum calibrated range of absolute transducers is 600mTorr
- 6) For pressure type emulation, we recommend a native absolute pressure transducer, since the zero point drift can be eliminated through a zero point adjustment.
- 7) Minimum primary sensor range must be greater than 1,500/1,515 psi.
- 8) Secondary range must be within 10:1 ratio of the primary range.

#### Base Instrument



|                             |   |
|-----------------------------|---|
| <b>Instrument</b>           |   |
| Instrument Version          | Standard: desktop case<br>Optional: 19" rack-mounting kit   |
| Dimensions                  | See technical drawings  |
| Weight                      | approx. 12.7 kg (28 lbs).   |
| <b>Display</b>              |   |
| Screen                      | 7.0" color LCD with resistive touchscreen   |
| Warm-up time                | approx. 15 min.   |
| <b>Connections</b>          |   |
| Pressure connections        | 5 ports with 7/16"-20 F SAE and 1 port with 10-32 UNF female  |
| Filter elements             | The instrument has a 40-micron filter on all pressure ports.  |
| Pressure port adapters      | Standard: without<br>Optional: 6mm tube, 1/4" tube, 1/4" female NPT, 1/8" female NPT, or 1/8" female BSP  |
| Barometer port adapters     | Standard: barb fitting<br>Optional: 6mm tube, 1/4" tube   |
| Permissible pressure media  | Dry, clean air or nitrogen (ISO 8573-1:2010 class 5.5.4 or better)  |
| Wetted parts                | Aluminum: 6061-T6 / 2024-T4, Stainless Steel: 303 / 304 / 316 / 316L / 13-8 PH, Brass, Nickel, Buna-N, FKM/FPM, Tungsten carbide, Cerazur ceramic, PTFE, PEEK. Glass-filled epoxy, RTV, ceramic, silicone, silicone grease, urethane, 430FR, 300 series CRES. |
| Over pressure protection    | Safety relief valve for regulator 3,600 psi. <sup>1)</sup>  |
| <b>Permissible pressure</b> |   |
| Supply port                 | 110 - 120% FS or 10 psi (0.69 bar), whichever is greater.   |
| Measure/Control port        | 105% FS primary transducer range  |

| Base Instrument                        |   |
|--|---|
| Plumbing                               | ≥0.11" (2.8 mm) ID for optimal performance  |
| <b>Voltage supply</b>                  |   |
| Power supply                           | AC 100 ... 120 V, 50/60 Hz; AC 220 ... 240 V, 50/60 Hz                                      |
| Power consumption                      | max 150 VA  |
| <b>Permissible ambient conditions</b>  |   |
| Compensated temperature range          | 0 to 50 °C (50 to 122 °F)   |
| Operating temperature range            | -20 to 70 °C (-4 to 158 °F)   |
| Storage temperature range              | -20 to 70 °C (-4 to 158 °F)   |
| Humidity                               | 5 ... 95% r.h. (non -condensing)  |
| Mounting position                      | Horizontal  |
| <b>Control parameters</b>              |   |
| Control stability                      | High Speed: < 0.025% FS primary transducer (Industrial mode: < 0.01% FS primary transducer) |
| Control modes                          | Industrial, High Speed (default), and Custom  |
| Control time <sup>7)8)</sup>           | 3-4 s   |
| Control range                          | 0 ... 100% FS   |
| Minimum control pressure <sup>9)</sup> | 0.025 psi (0.0017 bar) over exhaust pressure or 0.05% FS, whichever is greater.             |
| Overshoot                              | < 1% FS in High Speed mode (<0.5% FS in Industrial mode)                                    |
| Test volume                            | 0 ... 1000 cc   |

7) 25% FS pressure steps in High Speed mode in 50cc test volume.

8) Time includes default stable delay 0.5s.

9) Low point specification is vacuum region for absolute transducers.

| Approvals and Certificates  |   |                |
|---|---|----------------|
| Logo  | Description   | Country        |
|  | <b>EU Declaration of Conformity</b><br>EU Importer: WIKA, 63911 Klingenberg, Germany  | European Union |
|  | <b>UKCA Declaration of Conformity</b><br>Importer: WIKA Instruments Ltd, Unit 6 & 7 Goya Business Park, The Moor Road, Sevenoaks Kent, TN15 5GY | Great Britain  |
| <b>Certificates</b>   |   |                |
| Calibration <sup>11)</sup>  | Standard: A2LA accredited calibration certificate (standard on factory)<br>Optional: DKD/DAkkS calibration certificate                          |                |

10) **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.

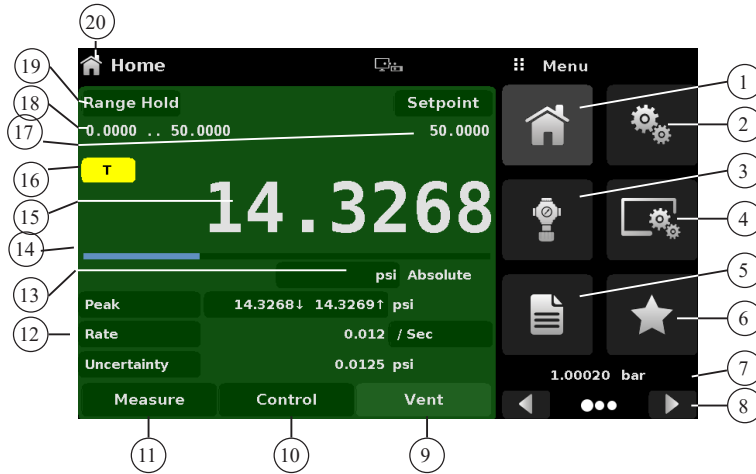
11) Calibration in a horizontal position/operating position.

## Touchscreen and intuitive operator interface

Shortly after power-up, the standard main screen (see following picture) is displayed. In this menu screen, one can switch between the operating modes using the buttons **MEASURE** (11), **CONTROL** (10) and **VENT** (9). The instrument is a precision pressure controller, whose setup (incl. optional functions) can be easily configured via the touchscreen.

### Standard desktop/main screen

v



① Home application

② General settings

③ Control settings

④ Display settings

⑤ Programs

⑥ Favorites

⑦ Barometric pressure reading (optional)

⑧ Menu scroll features forward / back

⑨ **VENT**

Immediately vents the system, including the test assembly connected to the Measure/Control port, to atmosphere.

⑩ **CONTROL**

In control mode the instrument provides a highly accurate pressure at the Measure/Control port of the respective channel at the desired set point.

⑪ **MEASURE**

In measure 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).

⑫ Auxiliary displays either peak, rate or alternate units

⑬ Current pressure unit and type

⑭ Optional bar graph

⑮ Current measuring value

⑯ Tare function

⑰ Entered set point

⑱ Pressure range of the transducers

⑲ Selection of the active transducer or auto-range

⑳ Current application name

# Automatic Contamination Prevention System (A-CPS)

## Active decontamination

The Automatic CPS can be mounted either in a wall/ rack mount configuration by the keyholes (Figure 8.6.1-A) on either or both side of the accessory or placed on a steady surface as a desktop accessory.

The DUT can be mounted either on top of the accessory for convinient test stand setup or on the back of the accessory for connection with a pressure hose (Figure 8.6.1-B). The not connected port should be sealed by the plug provided to ensure no leakage.

The pressure connection to the Measure/ Control port of the CPC3050 is established by a pressure tube with 7/16" SAE adapters. The Automatic CPS is powered by the CPC3050 using a 3 meter long flexible cable which connects to the Automatic CPS Backplate on the instrument.



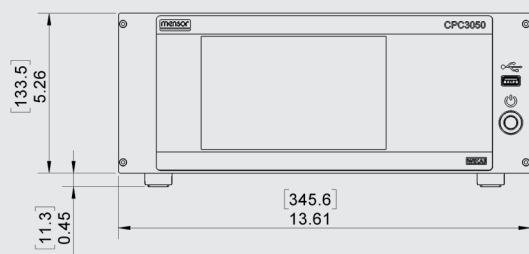
## A-CPS Specifications

| Operating Conditions          |  |
|-------------------------------|--|
| Maximum operating pressure    | 3,065 psig (211 bar gauge)   |
| Maximum operating temperature | 80 °C (176 F)  |
| Voltage Supply                |  |
| Power supply                  | 12 VDC   |
| Power consumption             | 13 VA  |
| Pressure Connection           |  |
| To the M/C port of CPC3050    | 1 port with 1/4" tube adapted to 7/16"- 20 F SAE   |
| To the DUT                    | 2 ports with<br>Standard: 7/16" - 20 F SAE<br>Option: 6 mm tube fitting, 1/4" tube fitting, 1/4" female NPT fittings, 1/8" female NPT fittings or 1/8" female BSP fittings |
| Dimensions & Weight           |  |
| Dimensions                    | 5.5 in x 10.5 in x 5.5 in (W x H x D)  |
| Weight                        | 3.99 kg (8.8 lbs)  |

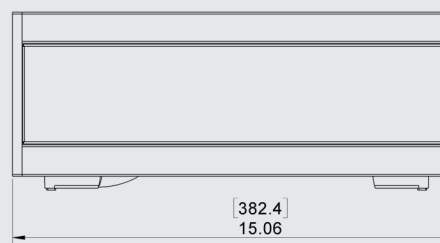
## Dimensions mm (in)

### Desktop Case

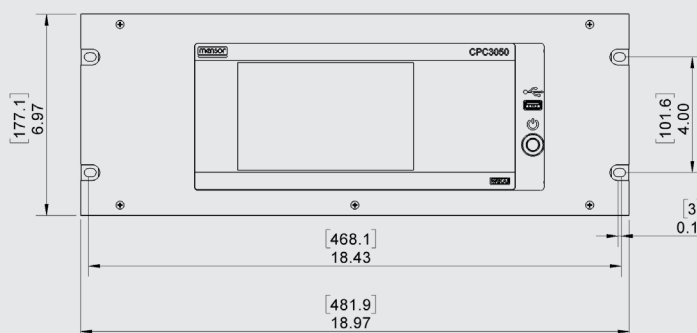
Front view



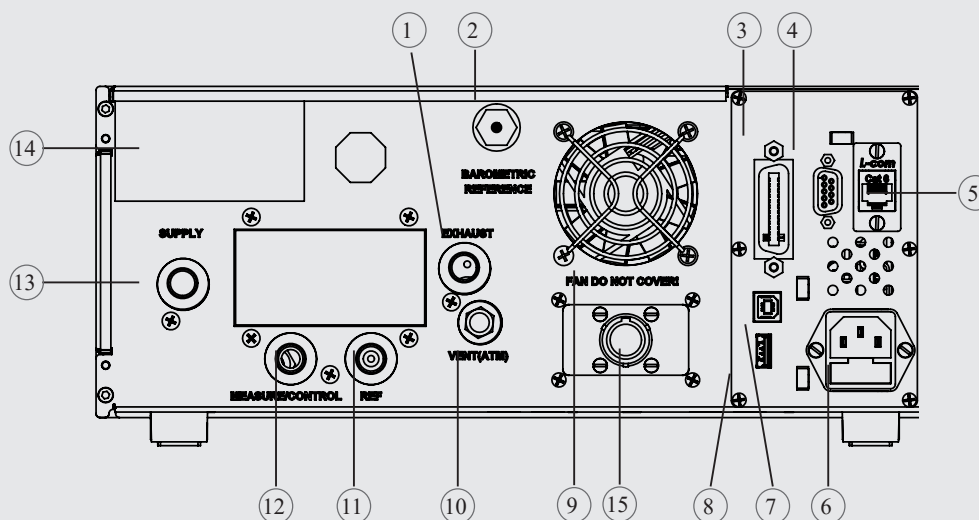
Side view



19" rack-mounting kit,  
front view



### Electrical and pressure connections - rear view



- |   |                                      |
|---|--------------------------------------|
| ① Exhaust port (7/16-20 UNF)                          | ⑨ Fan                                |
| ② Barometric reference port (10-32 UNF)               | ⑩ Vent (ATM)                         |
| ③ IEEE-488 interface                                  | ⑪ Reference port (7/16-20 UNF)       |
| ④ RS-232 interface                                    | ⑫ Measure/Control port (7/16-20 UNF) |
| ⑤ Ethernet port                                       | ⑬ Supply port (7/16-20 UNF)          |
| ⑥ Power supply  | ⑭ Instrument label                   |
| ⑦ USB interface (instrument) for remote communication | ⑮ Automatic CPS connector            |
| ⑧ USB interface (host) for service                    |                                      |

## Accessories

| Accessories for CPC3050   | Order code   |
|---|--------------|
| Description   | CPX-A-C4     |
| 19" rack mount kit with side panels                                     | -R-          |
| Barometric reference, measuring range 8 ... 17 psi abs, 0.02% rdg.      | -6-          |
| Barometric reference, measuring range 552 ... 1172 mbar abs, 0.02% rdg. | -P-          |
| Barometric reference, measuring range 552 ... 1172 hPa abs, 0.02% rdg   | -Q-          |
| Calibration adapter for barometric reference, power supply and software | -5-          |
| Carrying case   | -7-          |
| Adapter set 1/8" female BSP fittings (4x)                               | -B-          |
| Adapter set 1/4" tube fittings (4x)                                     | -I-          |
| Adapter set 6mm tube fittings (4x)                                      | -M-          |
| Adapter set 1/4" female NPT fittings (4x)                               | -N-          |
| Adapter set 1/8" female NPT fittings (4x)                               | -S-          |
| Kit - block and bleed valve, ≤ 6000 psi                                 | -8-          |
| Kit - coalescing filter, ≤ 3600 psi                                     | -9-          |
| Automatic CPS (Contamination Protection System)                         | -A-          |
| Replacement filter for automatic CPS                                    | -2-          |
| <b>Ordering information for your enquiry:</b>                           |              |
| 1. Order code: CPX-A-<br>2. Option:                                     | ↓C4<br>[   ] |

## Scope of delivery

- High speed pressure controller model CPC3050 (desktop case)
- Operating instructions
- 1.5 m (5 ft) power cord
- A2LA calibration certificate (standard on factory)

## Options

- Pressure adapters
- Interface cable
- Coalescing filter
- Block and bleed valve
- Pressure booster
- DKD/DAkkS calibration certificate
- Barometric calibration sled and software

## Ordering Information

CPC3050 / Instrument version / Pressure application / Pressure unit / Type of pressure / Start of measuring range / End of measuring range / Type of certificate / Pressure adapter / Carrying case / Additional order information

Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.

All standard Mensor products are provided with a calibration certificate traceable to NIST. The calibration program at Mensor is accredited to both ISO/IEC 17025:2017 and Z540-1-1994 by A2LA. Mensor is certified to ISO9001:2015.



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