

Modular pressure controller Model CPC6050



WIKA data sheet CT 27.62

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: -1 ... 210 bar (-15 ... 3,045 psi)
- Control speed < 10 s
- Control stability < 0.003 % FS (typical 0.001 % FS)
- Accuracy down to 0.01 % IS (IntelliScale)

Description

Design

The highly configurable model CPC6050 modular pressure controller offers maximum flexibility to best suit the customers' requirements. The instrument can have up to two independent pressure regulating channels which can operate simultaneously. Each channel can have up to two sensors. The instrument can also have an optional barometric reference for gauge or absolute pressure emulation. This instrument can be specified as a desktop or as 19" rack-mounting kit.

Application

The controller offers many applications within calibration laboratories and production environments because of its pressure range -1 ... 210 bar (-15 ... 3,045 psi) and accuracy down to 0.01 % IS-50.

Its ability to control pressures as low as 25 mbar (10" of H₂O) with a high stability makes it the ideal calibration and verification solution for healthcare and aerospace industries. Simultaneous calibration channels along with interchangeable plug-and-play pressure sensors and an intuitive GUI makes CPC6050 an easy-to-use and maintain instrument.



Modular pressure controller, model CPC6050

Functionality

The touchscreen, along with an intuitive user interface, provide maximum ease-of-use. The large number of menu languages add to its operability. In addition to specifying a certain pressure set point either by entering it via touchscreen or sending it via remote interface, the pressure can be changed in defined, programmable step sizes by using the STEP buttons. Moreover, the user can also easily create extensive test programs using the instrument menu. Depending on the application, the rate of control can be either pre-set fast, medium and slow rates or 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 (along with an optional USB-WiFi adapter) and an Ethernet interface for communication with other instruments, and thus the instrument can be integrated into existing systems.

Backward compatibility

The highly configurable CPC6050 can also be used with pressure sensors of its predecessor model CPC6000. The sensors can be used individually or together with the CPR6050, hence providing the user a complete backward capability.

Specifications Model CPC6050

Reference pressure sensors model CPR6050		
Pressure range	Standard	Optional
Accuracy ¹⁾	0.01 % FS	0.01 % IS-50 ²⁾
Gauge pressure	0 ... 0.025 to 0 ... 210 bar (0 ... 0.36 to 0 ... 3,045 psi)	0 ... 1 to 0 ... 210 bar (0 ... 15 to 0 ... 3,045 psi)
Bi-directional	-0.012 ... 0.012 to -1 ... 210 bar (-0.18 ... 0.18 to -15 ... 3,045 psi)	-1 ... 10 to -1 ... 210 bar (-15 ... 145 to -15 ... 3,045 psi)
Absolute pressure	0 ... 0.5 to 0 ... 211 bar abs. (0 ... 7.5 to 0 ... 3,060 psi abs.)	0 ... 1 to 0 ... 211 bar abs. (0 ... 15 to 0 ... 3,060 psi abs.)
Calibration interval	365 days ³⁾	365 days
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 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.
- 2) 0.01 % IS-50 accuracy: Between 0 ... 50 % of the full scale, the accuracy is 0.01 % of the half full scale and between 50 ... 100 % of the full scale, the accuracy is 0.01 % of reading.
- 3) 180 days for pressure ranges below 1 bar (15 psi) gauge or absolute and 145 psi bi-directional. 365 days for remaining of the specified ranges.
- 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.

Base instrument	
Instrument	
Instrument version	Standard: desktop case Option: 19" rack-mounting kit with side panels
Dimensions	see technical drawings
Weight	approx. 22.7 kg (50 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 connections	up to 8 ports with 7/16"- 20 F SAE and up to 2 ports with 1/8" F NPT Optional barometer: 1 port with barb fitting
Filter elements	The instrument has 40-micron filters on all pressure ports.
Pressure port adapters	Standard: without 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
Permissible pressure media	Dry, clean air or nitrogen (ISO 8573-1:2010 class 5.5.4 or better)
Wetted parts	Aluminium, brass, 316 and 316L stainless steel, Buna N, FKM/FPM, PCTFE, PEEK, PTFE, PPS, glass-filled epoxy, RTV, ceramic, silicone, silicone grease, urethane
Overpressure protection	Safety relief valve adjusted to specific customised measuring range

Base instrument	
Permissible pressure	
Supply port	~ 110 % FS
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. (relative humidity non-condensing)
Compensated temperature range	15 ... 45 °C (59 ... 113 °F)
Mounting position	horizontal
Control parameter	
Control stability	< 0.003 % FS of the active range (typical 0.001 % FS)
Control mode	slow, normal, fast and variable
Control time	10 s (regarding a 10 % FS pressure increase in a 50 ml test volume)
Control range	0 ... 100 % FS
Minimum control pressure	0.00017 bar (0.025 psi) over exhaust pressure or 0.05 % FS whichever is greater
Overshoots	< 0.15 % FS in fast control mode (typical < 0.05 % FS in slow control mode)
Test volume	50 ... 1,000 ccm
Communication	
Interface	Standard: Ethernet, IEEE-488, USB, RS-232 Optional: WiFi (with a USB-WiFi adapter)
Command sets	Mensor, WIKA SCPI, others optional
Response time	approx. 100 ms
Internal program	up to 64 sequences with up to 99 steps each

Approvals

Logo	Description	Country
	EC declaration of conformity <ul style="list-style-type: none"> ■ EMC directive ⁵⁾ 2004/108/EC, EN 61326-1:2013 emission (group 1, class A) and interference immunity (industrial application) ■ Low voltage directive 2006/95/EC, EN 61010-1:2010 	European Community

Certificates

Certificate	
Calibration ⁶⁾	Standard: A2LA calibration certificate (standard on factory) Option: DKD/DAkkS calibration certificate

5) **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.

6) Calibration in a horizontal position / operating position.

Approvals and certificates, see website

Modular design of the CPC6050

Up to two independent control channels

The model CPC6050 provides a high degree of flexibility by having two independent channels of operation within one instrument. This enables the user to perform two separate calibrations at the same time. Alternatively, the user can also perform delta function on the two channels to see the differential pressure. Each channel is equipped with its own pressure module and up to two pressure sensors. The pressure modules are based on a special solenoid valve regulation technology and provide precise control over the set pressure. The modules are available in four different variations depending on the pressure range.

Up to four pressure sensors

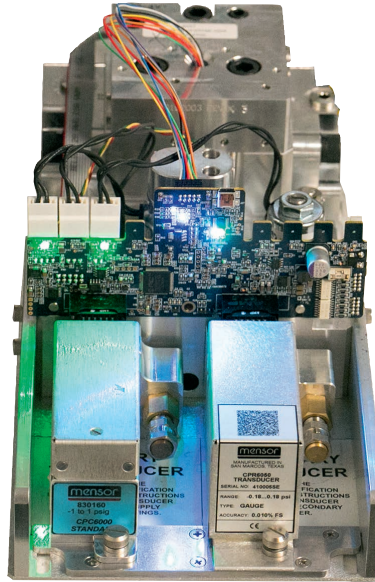
Each independent channel can contain up to two internal pressure sensors and utilise the instrument's removable barometric reference for pressure mode emulation. Each sensor contains its calibration, characterisation and communication functions and information. Each channel can be equipped either with two gauge or two absolute pressure sensors, thus providing the user a control range turndown of 20:1 per channel of the instrument. An optional calibration kit is available to calibrate the pressure modules externally.

Auto-channelling and auto-ranging capability

The model CPC6050 modular pressure controller is capable of automatically selecting the sensor within a channel via auto-range function depending on the user's pressure set point. The transition between sensors is automatic and seamless without any interruption in the user's application. Optionally the CPC6050 is also available as a single output option, thus allowing the user to access the two channels of the instrument together as a single channel. The transition between the two channels is automatic and provides the user with a very stable control over a wide dynamic pressure range. The maximum control range turndown is as high as 400:1 between the full scale value of the lowest and highest sensor.

Extremely easy to maintain

The modular design of the CPC6050 provides easy access and quick replacement of pressure sensors. The sensors can be replaced by opening the front panel in just 30 seconds and the control channels can be replaced in less than 5 minutes. These features make the instrument very easy to service and repair with least possible downtime to the user.



Pressure module equipped with up to two sensors



Modular design of the hardware

Working ranges of the controller modules

Bi-directional or gauge pressure [bar (psi)] ¹⁾

-1 (-15)	0	3.4 (50)	10 (150)	100 (1,500)	210 (3,045)
LPSVR MODULE ± 12.5 mbar (± 0.18 psi) ²⁾					
MPSVR MODULE ± 0.7 bar (± 5 psi) ²⁾					
HPSVR MODULE -1 ... 5.2 bar (-15 ... +75 psi) ²⁾					
EPSVR MODULE -1 ... 10 bar (-15 ... +150 psi) ²⁾					

Absolute pressure [bar (psi)] ¹⁾

0	4.4 (60)	11 (165)	101 (1,515)	211 (3,060)
LPSVR MODULE 0 ... 0.5 bar (0 ... 7.5 psi) ²⁾				
MPSVR MODULE 0 ... 1 bar (0 ... 15 psi) ²⁾				
HPSVR MODULE 0 ... 5.2 bar (0 ... +75 psi) ²⁾				
EPSVR MODULE 0 ... 11 bar (0 ... 165 psi) ²⁾				

1) Mixing of absolute pressure and gauge pressure sensors in a module is not possible.

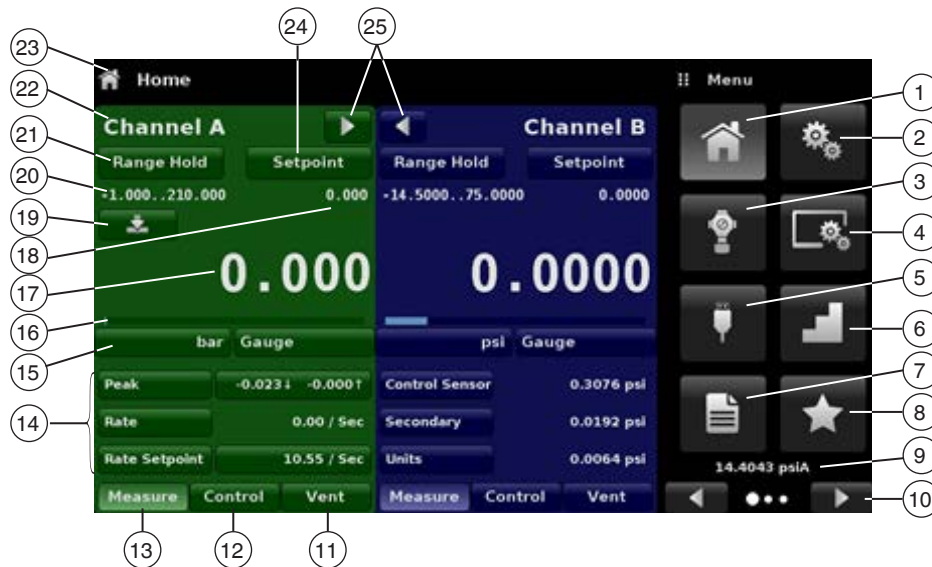
2) Smallest recommendable sensor range

For controlling absolute pressure a vacuum pump connected at the supply low port is required.

Easy operation via touchscreen

Shortly after power-up, the standard home screen (see following picture) 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

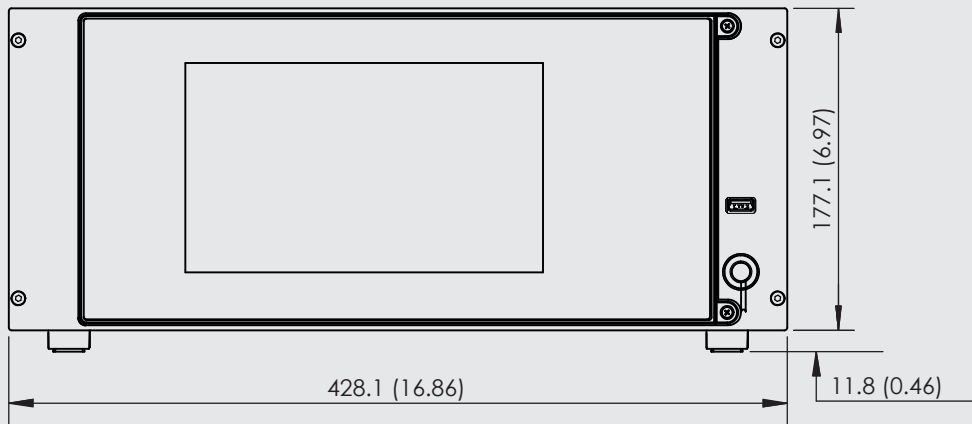


- | | |
|--|---|
| <ul style="list-style-type: none"> ① Home application ② General settings ③ Controller settings ④ Display settings ⑤ Remote settings ⑥ Step settings ⑦ Sequences settings ⑧ Favourites settings ⑨ Barometric pressure reading (optional) ⑩ Menu scroll features forward / back ⑪ VENT
Immediately vents the system, including the test assembly connected to the Measure/Control port, to atmosphere. ⑫ CONTROL
In control mode the instrument provides a highly accurate pressure at the Measure/Control port of the respective channel in accordance with the desired set point. ⑬ 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). | <ul style="list-style-type: none"> ⑭ Auxiliary displays with either pressure mode, peak, rate or alternate units ⑮ Current pressure unit and mode ⑯ Optional bar graph ⑰ Current measuring value ⑱ Entered set point ⑲ Zero/tare function ⑳ Pressure range of the sensors ㉑ Selection of the active sensor or auto-range ㉒ Active channel ㉓ Current application name ㉔ Set-point selection ㉕ Screen collapse/expand |
|--|---|

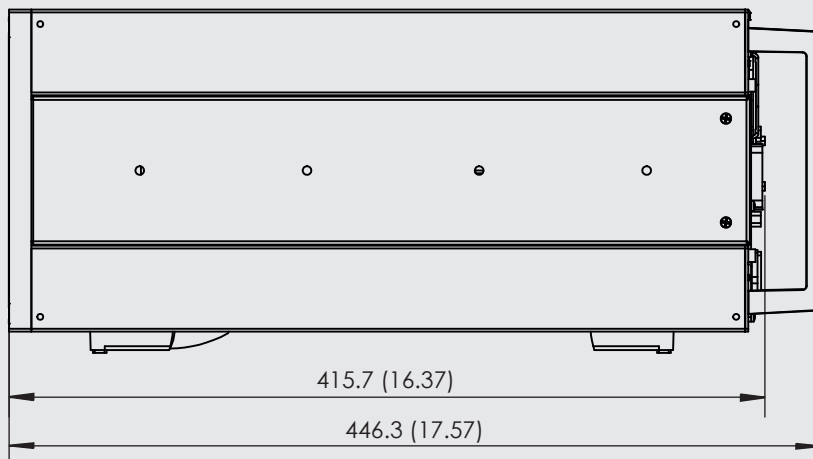
Dimensions in mm (in)

Desktop case

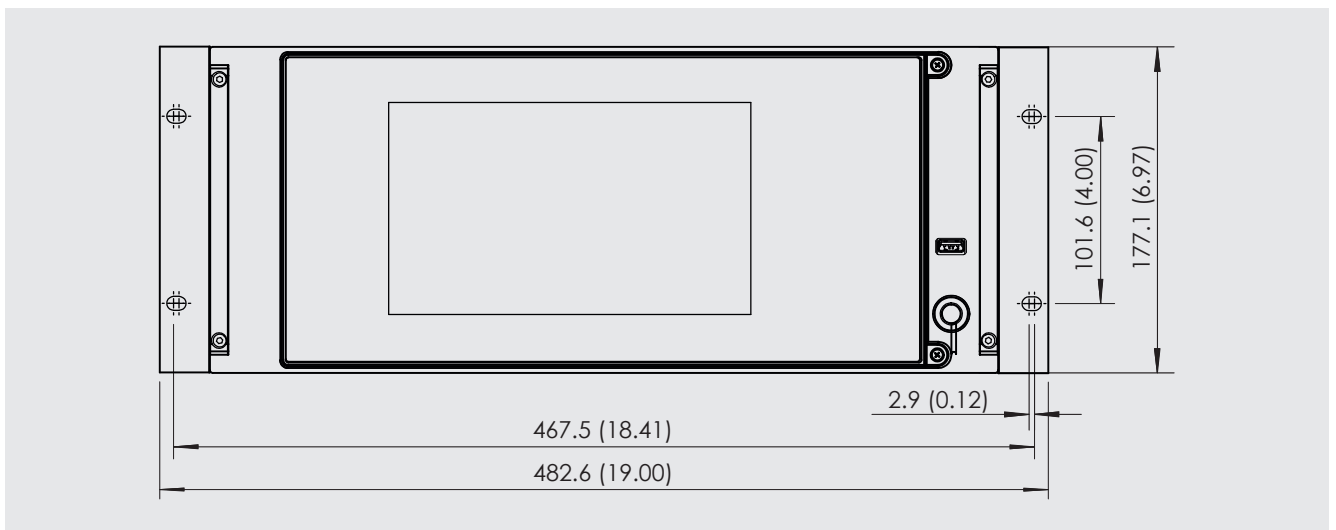
Front view



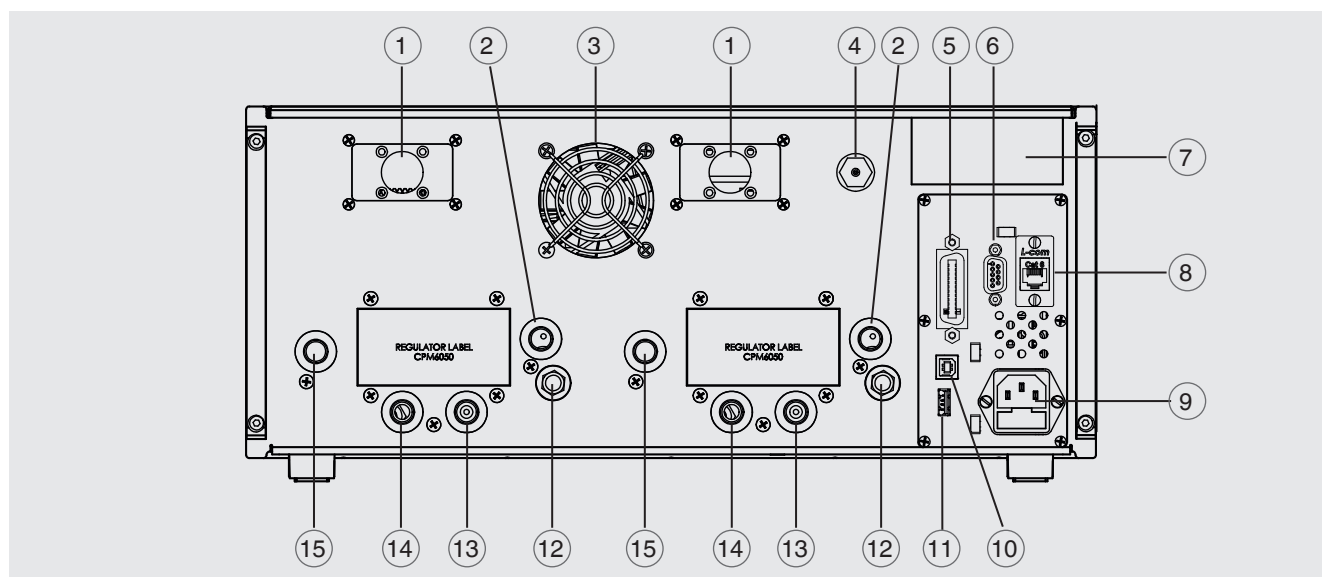
Side view (left)



19" rack-mounting kit with side panels, front view



Electrical and pressure connections - rear view



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

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.



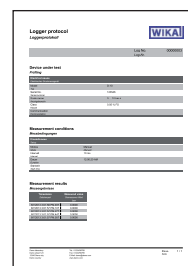
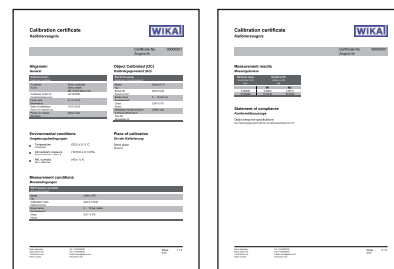
Log Demo

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

- Modular pressure controller model CPC6050 (desktop case)
- 1.5 m (5 ft) power cord
- Operating instructions
- A2LA calibration certificate (standard on factory)

Accessories

- Pressure adapters
- Interface cable
- Coalescing filter
- Block and bleed valve
- Pressure booster
- WIKA-CAL calibration software

Options

- DKD/DAkkS calibration certificate
- Barometric reference
- Spare reference pressure sensor
- Spare pressure module
- 19" rack-mounting kit with side panels
- Customer-specific system
- Adapters and fittings for pressure connections

Ordering information

Model / Case type / Channel A: Pressure controller module / Channel B: Pressure controller module / Barometric reference / Type of certificate for barometric reference / Delta function for 2-channel versions / Single output for 2-channel versions / Power cord / Additional ordering information

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