

Precision pressure indicator Model CPG2500



WIKA data sheet CT 25.02



Applications

- Pressure standard for calibration laboratories
- Transfer standard with remote sensor
- Pressure instrument manufacturing
- Differential pressure measurement
- Simultaneous 3-channel pressure monitoring

Special features

- Pressure ranges from 0 ... 2.890 bar / 0 ... 42,000 psi
- Removable/interchangeable pressure sensors
- Accuracy down to 0.01 % IS (IntelliScale)
- External pressure sensor up to 400 bar / 6,000 psi



Precision pressure indicator model CPG2500

Description

Application

The model CPG2500 precision pressure indicator is used in calibration laboratories and manufacturing facilities as a source for precise pressure measurement. It is used to verify the accuracy of field pressure indicators/transmitters or as a laboratory standard and wherever there is a need for a high level of pressure accuracy in manufacturing, testing and calibration of pressure instruments or gauges.

Functionality

The CPG2500 can be configured with one, two or three pressure sensors. Two sensors are internal, and the third is external. The pressure sensors are pneumatically isolated so that one channel can be configured with a sensor as high as 690 bar / 10,000 psi and another as low as 25 mbar / 10 inH₂O at the same time. An optional barometric sensor can be added internally to display barometric pressure or used to emulate gauge or absolute pressure. Pressure ranges for each channel are specified by the customer.

The built-in pressure sensors are available as standard and premium sensors. As an external reference pressure sensor, Mensor's CPT6100 or CPT6180 precision pressure sensors are used.

The advantage of IntelliScale and removable sensors

With the IntelliScale specification, each sensor is calibrated so that the accuracy in the lower part of the measuring range is referenced to a fixed error, and in the upper part of the measuring range the accuracy is referenced to the measured value. Three sensors can be configured so that the percent of reading portions of their ranges are contiguous, giving a percent of reading uncertainty over a wide range. In addition, each reference pressure sensor is removable and interchangeable which allows an external recalibration and range changes while minimising downtime.

Communication

The local user interface is displayed on a 7" colour LCD touchscreen display. Navigation within the intuitive menu structure is easily learned. Recognisable touchscreen icons open screens for configuration and calibration.

Communicating to a remote computer is achieved through RS-232, IEEE-488, USB or Ethernet. Communication commands and queries are consistent with previous Mensor digital pressure gauges with added commands for the third channel.

Specifications Model CPG2500

Standard reference pressure sensors, model CPR2550

Pressure range		Optional	
Accuracy ¹⁾	0.03 % FS	0.01 % FS	0.01 % IS-50 ²⁾
Gauge pressure	0 ... 25 up to 0 ... 70 mbar 0 ... 0.36 up to 0 ... 1 psi	0 ... ≥ 70 mbar up to 0 ... 700 bar 0 ... ≥ 1 up to 0 ... 10,000 psi	0 ... 1 up to 0 ... 400 bar 0 ... 14.5 up to 0 ... 6,000 psi
Bi-directional	-25 ... +25 up to -35 ... 35 mbar -0.36 ... +0.36 up to -0.5 ... +0.5 psi	-35 ... +35 mbar up to -1 ... 400 bar -0.5 ... +0.5 psi up to -14.5 ... 6,000 psi	-1 ... 10 up to -1 ... 400 bar -14.5 ... 145 up to -14.5 ... 6,000 psi
Absolute pressure	--	0 ... 500 mbar up to 0 ... 401 bar abs. 0 ... 7.5 psi up to 0 ... 6,015 psi abs.	0 ... 1 up to 0 ... 401 bar abs. 0 ... 14.5 up to 0 ... 6,015 psi abs.
Calibration interval	180 days	180 days	365 days
Optional barometric reference			
Function	The barometric reference can be used to switch pressure types ³⁾ (absolute <=> gauge). With gauge pressure sensors, the measuring range of the sensor must begin with -1 bar / -14.5 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		

Premium reference pressure sensors, model CPR2580

Pressure range				
Accuracy ¹⁾	0.008% IS-33 ⁴⁾	0.008% IS-50 ⁵⁾	0.01% FS	0.014% FS
Absolute pressure	0 ... 1 up to 0 ... ≤ 34.4 bar abs. 0 ... 15 up to 0 ... ≤ 500 psi abs.	0 ... 34.4 up to 0 ... 401 bar abs. 0 ... 500 up to 0 ... 6,015 psi abs.	0 ... 552 up to 0 ... 1,034 bar abs. 0 ... 8,000 up to 0 ... ≤ 15,000 psi abs.	0 ... 1,034 up to 0 ... 2,890 bar abs. 0 ... 15,000 up to 0 ... 42,000 psi abs.
Calibration interval	365 days	365 days	365 days	365 days

- 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 measuring span, the accuracy is 0.01 % of half the measuring span and between 50 ... 100 % of the measuring span, the accuracy is 0.01 % of reading.
- 3) 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.
- 4) 0.008 % IS-33 accuracy: Between 0 ... 33 % of the measuring span, the accuracy is 0.008 % of the lower third of the measuring span and between 33 ... 100 % of the measuring span, the accuracy is 0.008 % of reading.
- 5) 0.008 % IS-50 accuracy: Between 0 ... 50 % of the measuring span, the accuracy is 0.008 % of the half measuring span and between 50 ... 100 % of the measuring span, the accuracy is 0.008 % of reading.

Base instrument

Instrument	
Instrument version	Standard: desktop case Option: - 19" rack-mounting with side panels incl. rack-mounting kit for single instrument mount - 19" rack-mounting with side panels incl. rack-mounting kit for dual instrument mount
Dimensions in mm	see technical drawings
Weight	approx. 5.7 kg / approx. 12.5 lbs. with all internal options
Display	
Screen	7" colour LCD display
Resolution	4 ... 6 digits depending on range and units
Keyboard	resistive touchscreen
Warm-up time	approx. 15 min

Base instrument

Connections

Number of integrateable sensors (selectable)	Standard: 1 reference pressure sensor Option: 2nd reference pressure sensor, external pressure sensor and barometric reference
Pressure connections	up to 400 bar: 7/16-20 F SAE/MS, adapter fittings selectable above 400 bar: Autoclave F250C/HIP HF4
Pressure adapters	Standard: without Option: 6 mm Swagelok® tube fitting, 1/4" Swagelok® tube fitting, 1/4" female NPT fittings, 1/8" female NPT fittings or 1/8 female BSP fittings
Permissible pressure media	clean, dry, non-corrosive, non-inflammable and non-oxidising gases (> 1 bar liquids possible)
Overpressure limits	110 % FS typical, optional external relief valves are available
Metals in contact w/media	6000/7000 series aluminium, 316 SS, brass, Inconel
Non-metals in contact w/media	Teflon®, urethane, silicone, RTV, silicone grease, PVC, epoxy, Buna N

Voltage supply

Power supply unit	AC 100 ... 120 V or AC 200 ... 240 V, 50 ... 60 Hz, 24 A max.
Power supply	DC 12 V, 24 A

Permissible ambient conditions

Storage temperature	0 ... 70 °C / 32 ... 158 °F
Humidity	0 ... 95 % r. h. (relative humidity, non-condensing)
Compensated temperature range	15 ... 45 °C / 59 ... 113 °F

Communication

Interface	IEEE 488, RS-232, USB and Ethernet
Command sets	Mensor, WIKA SCPI, Mensor 2100
Response time	approx. 20 ms

CE conformity, approvals and certificates

CE conformity

EMC directive ⁶⁾	2004/108/EC, EN 61326 emission (group 1, class A) and interference immunity (industrial application)
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Approval

GOST	Metrology/measurement technology, Russia
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Certificate

Calibration ⁷⁾	Standard: 3.1 calibration certificate per EN 10204 Option: DKD/DAkkS calibration certificate
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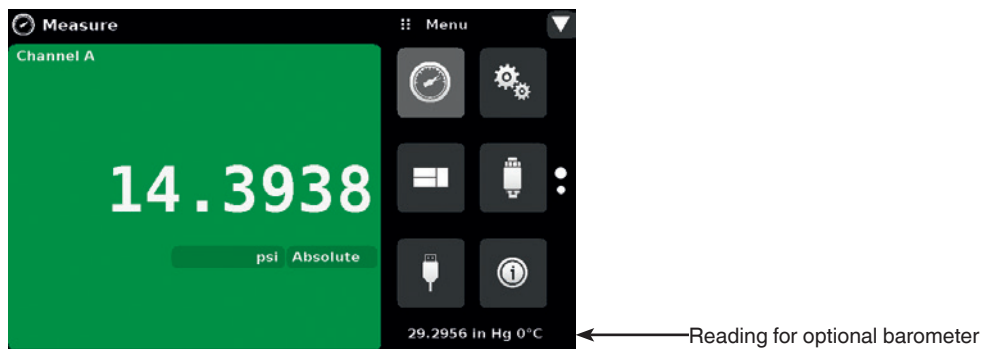
6) **Warning!** This is class A equipment for emissions and is intended for use in industrial environments. In other environments, e.g. residential or commercial installations, it can interfere with other equipment under certain conditions. In such circumstances the operator is expected to take the appropriate measures.

7) Calibration in a horizontal position.

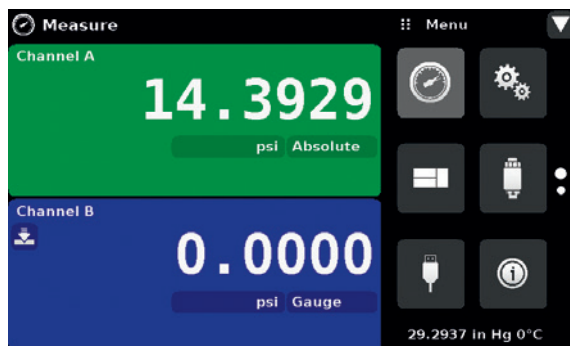
Approvals and certificates, see website

Operator interface

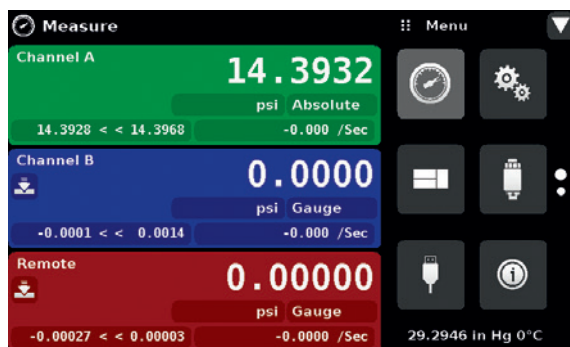
Single-frame channel “A” without auxiliary display of peak or rate



Dual-frame channel “A” and “B” without auxiliary display of peak or rate



Triple-frame channel “A”, “B” and “Remote” with auxiliary display of peak or rate



Local operation:

The intuitive operator interface of the CPG2500 provides visibility of one, two or three channels, each with or without the auxiliary display of peak, rate or both. Readings from the optional barometer can also be displayed in the lower right hand corner. Pressure units for each channel and the barometer can be selected from a list of 38 metric and imperial units. The setup “apps” are continuously visible for fast configuration for various applications.

Remote operation:

Remote control of the CPG2500 is achieved through the use of the IEEE-488, RS-232, Ethernet or USB interface.

Reference pressure sensors versatility

One or two pressure sensors can be chosen (see specifications).

All available reference pressure sensors, either the standard CPR2550 or the premium CPR2580 can be mixed in the same basic chassis. In addition, a remotely measuring precision pressure sensor CPT6180 or CPT6100 can be chosen. All internal pressure sensors are removable and interchangeable. Simply remove the four slotted screws on the rear panel, slide the reference pressure sensor out and remove the communication cable.

An optional removable internal barometric reference can also be ordered. The instrument can be adapted to different calibration and measurement tasks due to the easily exchangeable sensor technology. All relevant sensor calibration and characterisation data is stored on the sensor electronics which is individually generated for each sensor.

All CPG2500 reference pressure sensors can be calibrated while in the instrument using the instrument firmware. They can also be calibrated externally with an optional communication/power cord, calibration sled (barometer only) and remote calibration software.



Removable / replaceable reference pressure sensor

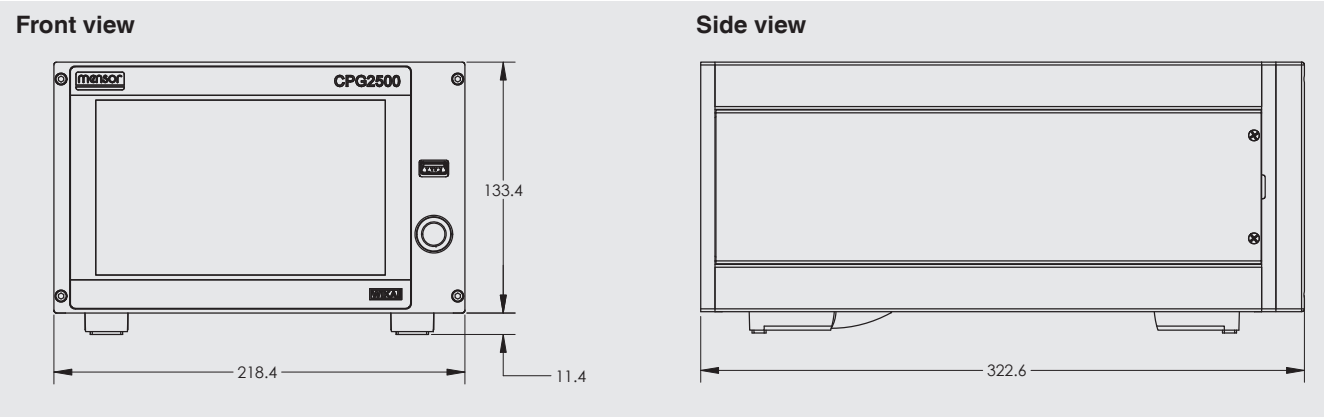


Figure left: External reference pressure sensor
Figure right: Removable / replaceable barometric reference

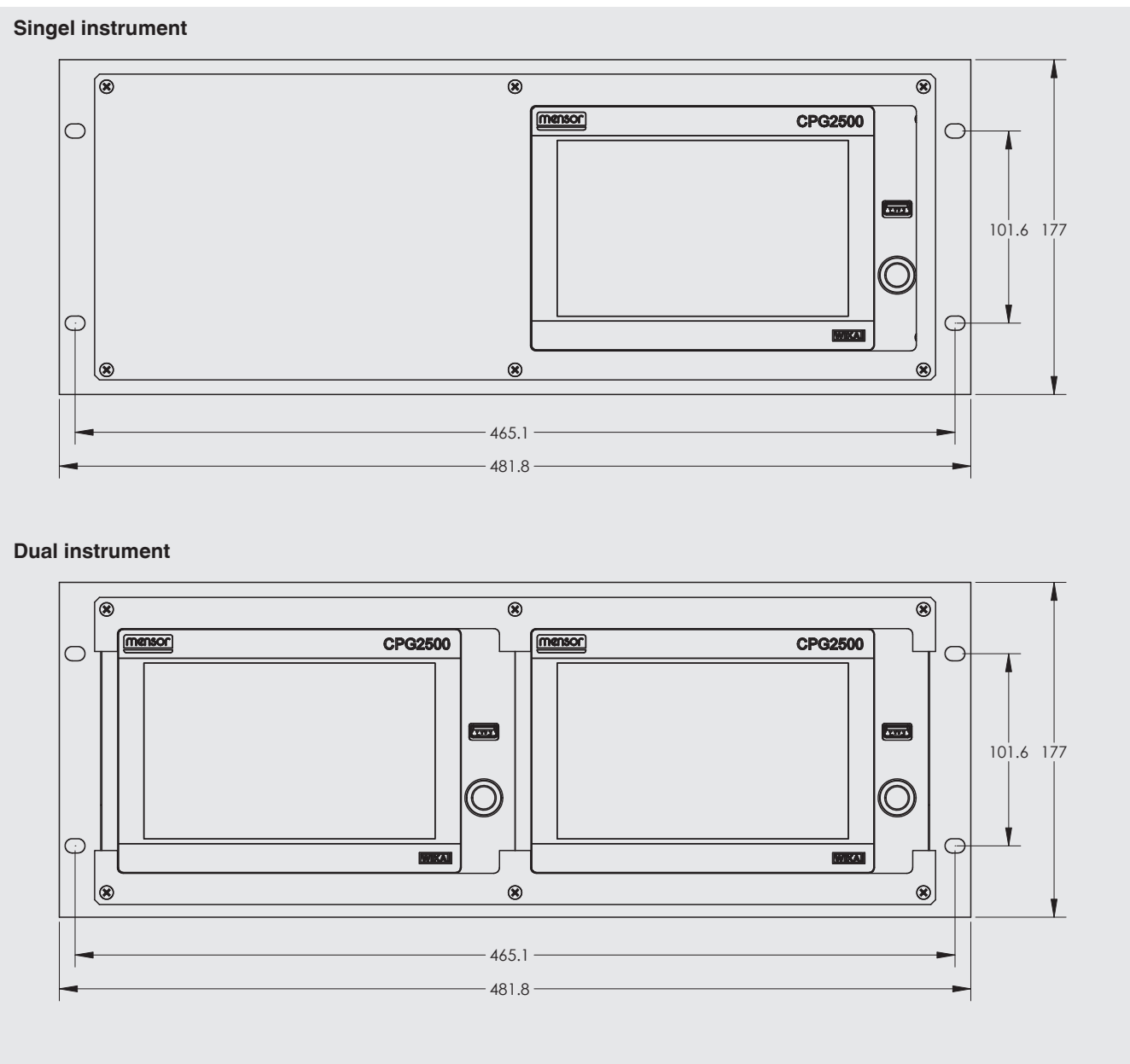


Dimensions in mm

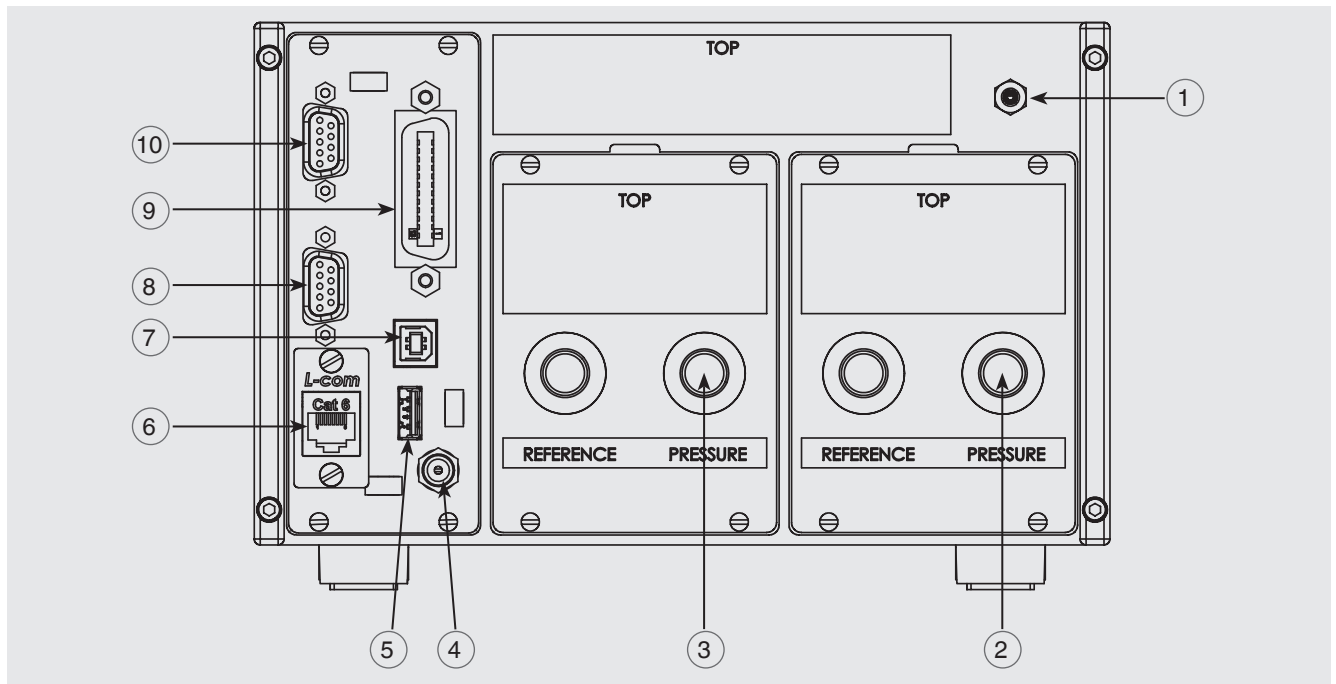
Desktop case



19" rack-mounting, front view



Electrical and pressure connections - rear view



- | | |
|--|------------------------------|
| ① Connection for optional barometric reference | ⑥ Ethernet port |
| ② Measure port channel A (7/16-20 UNF) | ⑦ USB interface (instrument) |
| ③ Measure port channel B (7/16-20 UNF) | ⑧ RS-232 interface |
| ④ Power supply | ⑨ IEEE interface |
| ⑤ USB interface (host) | ⑩ External sensor connection |

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.



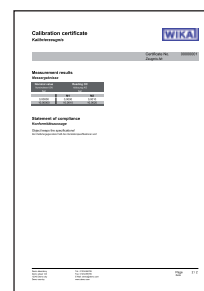
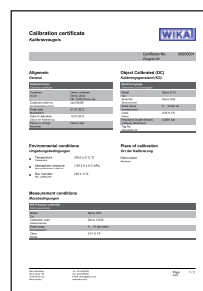
Cal Light

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.



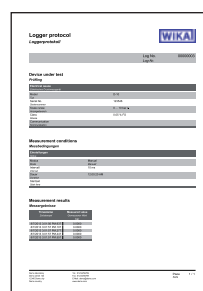
Log Demo

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

- Precision pressure indicator model CPG2500
- 1.5 m / 5 ft power cord
- Operating instructions
- 3.1 calibration certificate per DIN EN 10204

Accessories

- Robust transport case
- Pressure adapters
- Interface cable
- WIKA-CAL calibration software

Options

- DKD/DAkkS calibration certificate
- 19" rack mount kit
- Second internal sensor
- External pressure sensor
- Barometric reference
- Analogue output
- Pressure relief valve kit (up to 400 bar)

Ordering information

Model / Case type / Reference pressure sensor channel A / Reference pressure sensor channel B / External pressure sensor connection cable / Barometric reference / Type of certificate for barometric reference / Additional ordering information

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We reserve the right to make modifications to the specifications and materials.



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