Precision pressure indicator Model CPG2500

for further approvals see page 4

Applications

- Pressure standard for calibration laboratories
- Transfer standard with external 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 1,600 bar (23,000 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 inH_2O 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 CPR2510, 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.

Data sheets showing similar products and accessories:
Calibration software WIKA-CAL; see data sheet CT 95.10
Pressure supply case, filling tube; see data sheet CT 91.41
Precision pressure reducing valve, volume displacer; see data sheet CT 91.42

Communication

The local user interface is displayed on a 7" colour LC display with touchscreen. 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

Reference pressure sensors			
Standard reference pressure sensor Model CPR2550			
Pressure range			**Optional**
Accuracy [1]	0.03 % FS	0.01 % FS	0.01 % IS-50 [2]
Gauge pressure	0 ... 25 to 0 ... 70 mbar (0 ... 0.36 to 0 ... 1 psi)	0 ... ≥ 70 mbar to 0 ... 700 bar (0 ... ≥ 1 to 0 ... 10,000 psi)	0 ... 1 to 0 ... 400 bar (0 ... 14.5 to 0 ... 6,000 psi)
Bi-directional	-12.5 ... +12.5 to -35 ... 35 mbar (-0.18 ... +0.18 to -0.5 ... +0.5 psi)	-35 ... +35 mbar to -1 ... 400 bar (-0.5 ... +0.5 psi to -14.5 ... 6,000 psi)	-1 ... 10 to -1 ... 400 bar (-14.5 ... +145 to -14.5 ... 6,000 psi)
Absolute pressure	--	0 ... 500 mbar to 0 ... 401 bar abs. (0 ... 7.5 psi to 0 ... 6,015 psi abs.)	0 ... 1 to 0 ... 401 bar abs. (0 ... 14.5 to 0 ... 6,015 psi abs.)
Calibration interval	180 days	365 days	365 days
Premium reference pressure sensor Model CPR2580			
Pressure range			
Accuracy [1]	0.008 % IS-33 [3]	0.008 % IS-50 [4]	
Absolute pressure	0 ... 1 to 0 ... ≤ 34.4 bar abs. (0 ... 15 to 0 ... ≤ 500 psi abs.)	0 ... 34.4 to 0 ... 401 bar abs. (0 ... 500 to 0 ... 6,015 psi abs.)	
Calibration interval	365 days	365 days	
Accuracy [1]	0.01 % FS	0.014 % FS	
Absolute pressure	0 ... 552 to 0 ... 1,034 bar abs. (0 ... 8,000 to 0 ... ≤ 15,000 psi abs.)	0 ... 1,034 to 0 ... 2,890 bar abs. (0 ... 15,000 to 0 ... 42,000 psi abs.)	
Calibration interval	365 days	365 days	
Optional barometric reference			
Function	The barometric reference can be used to switch pressure types [5] (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		

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

External reference pressure sensors

Reference pressure sensor Model CPR2510		
Accuracy [1]	0.025 % FS	
Gauge pressure	0 ... 1,600 bar (0 ... 23,206.4 psi)	Other on request
Absolute pressure	0 ... 25 bar (0 ... 362.6 psi)	Other on request
Pressure connection	G 1/2 B 1/4 NPT (up to 700 bar (10,000 psi))	
Calibration interval	365 days	
Further reference pressure sensors		
Reference pressure sensor Model CPT6100	For further information see data sheet CT 25.10	
Reference pressure sensor Model CPT6180	For further information see data sheet CT 25.10	

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.

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 LC display
Resolution	4 ... 6 digits depending on range and units
Keyboard	resistive touchscreen
Warm-up time	approx. 15 min
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 (6,000 psi): 7/16-20 F SAE/MS, adapter fittings selectable above 400 bar (6,000 psi): 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 (14.5 psi) 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)

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

Approvals

Logo	Description	Country
CE	**EC declaration of conformity** ■ EMC directive 2004/108/EC [6] EN 61326-1:2013 emission (group 1, class A) and interference immunity (industrial application) ■ Low voltage directive 2006/95/EG, EN 61010-1:2010	European Community
EAC	**EAC** ■ Electromagnetic compatibility ■ Low voltage directive	Eurasian Economic Community
	GOST Metrology/measurement technology	Russia
	KazInMetr Metrology/measurement technology	Kazakhstan
-	**MTSCHS** Permission for commissioning	Kazakhstan
	BelGIM Metrology/measurement technology	Belarus

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 intefere with other equipment under certain conditions. In such circumstances the operator is expected to take the appropriate measures.

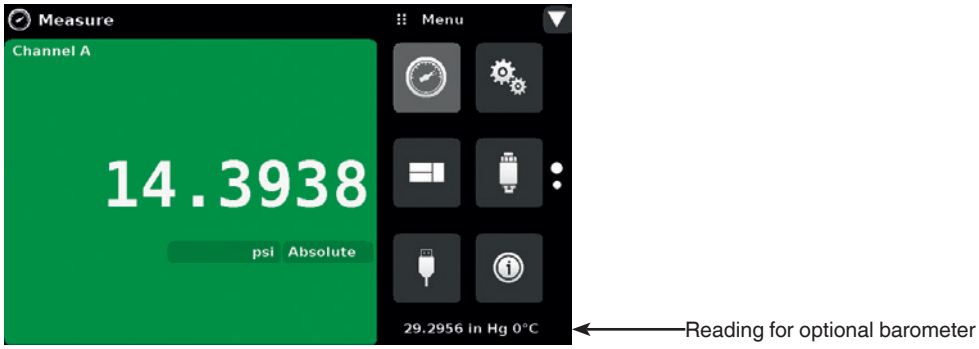
Certificates	
Certificate	
Calibration [7]	Standard: 3.1 calibration certificate per EN 10204 Option: DKD/DAkkS calibration certificate

7) Calibration in a horizontal position.

Approvals and certificates, see website

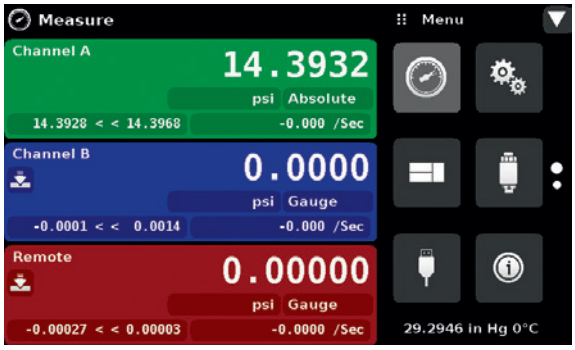
Operator interface

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 interface cable.

An optional removable internal barometric reference can also be orderd. 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 interface cable/power cord, calibration sled (barometer only) and remote calibration software.

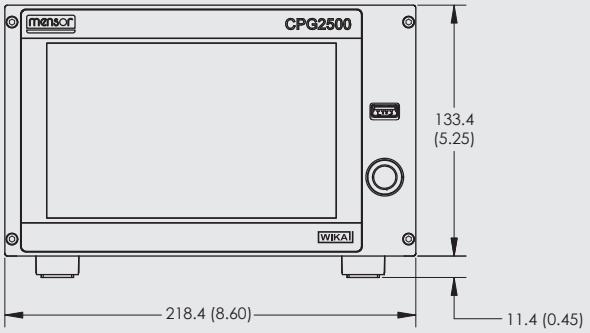
Removable / replaceable reference pressure sensor

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

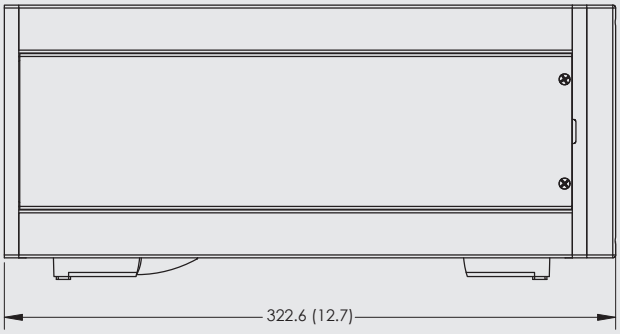
Dimensions in mm (in)

Desktop case

Front view

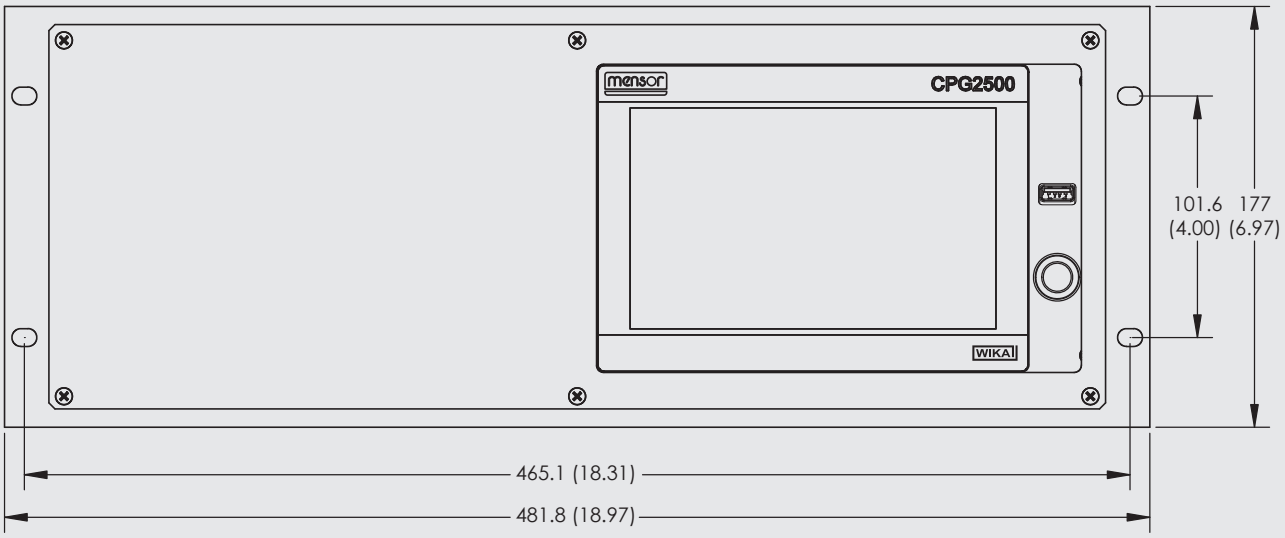


Side view (left)

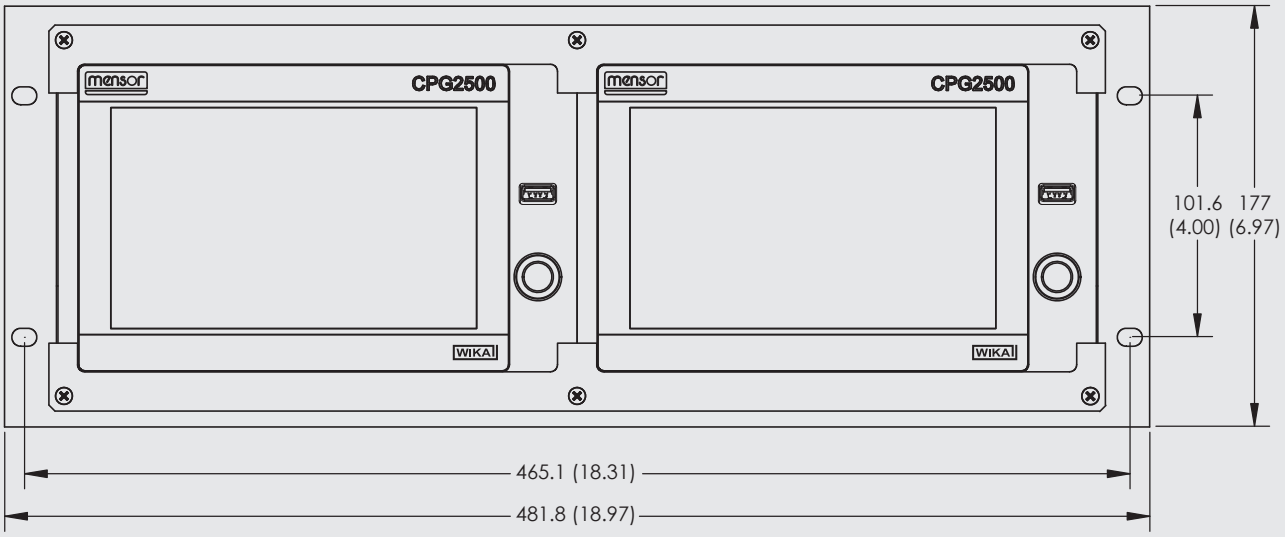


19" rack-mounting, front view

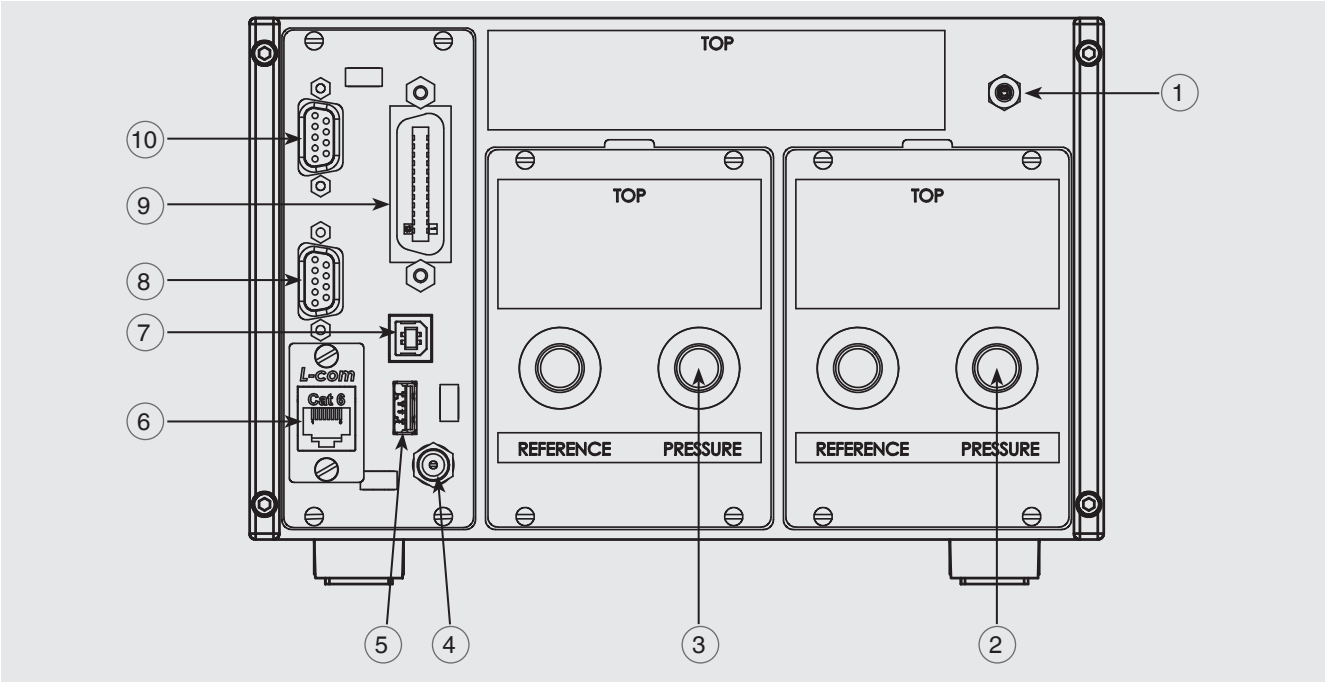
Singel instrument



Dual instrument



Electrical and pressure connections - rear view



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

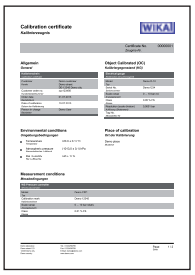
For further information see data sheet CT 95.10

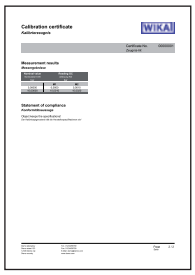
Calibration certificates can be created with the Cal-Template and logger protocols can be created with the Log-Template.

Cal Demo
Generation of calibration certificates limited to 2 measuring points, with automatic initiation of pressures via a pressure controller.

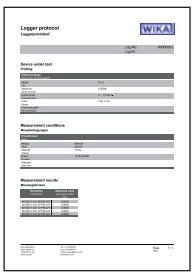
Cal Light
Generation of calibration certificates with no limitations on measuring points, without automatic initiation of pressures via a pressure controller.

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 (6,000 psi))

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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