

Precision Pressure Indicator

Model CPG2500



WIKA data sheet CT 25.02 - 01/2021



Applications

- Pressure standard for calibration labs
- Transfer standard with remote transducers
- Pressure instrument manufacturing
- Differential pressure measurement
- Simultaneous three channel pressure monitoring

Features

- Pressure ranges from 0.36 to 42,000 psi
- Removable / Interchangeable transducers
- Accuracy down to 0.008% of IS (IntelliScale)
- External pressure ranges from 0.36 to 15,015 psi
- Precision 0.004% FS
- Two year warranty



Precision Pressure Indicator CPG2500

Description

Application

The CPG2500 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 1, 2, or 3 pressure transducers. Two transducers are internal, and the third is external. The transducer channels are pneumatically isolated so that one channel can be configured with a sensor as high as 42,000 psi / 2,895 bar and another as low as 10 in. H₂O / 25 mbar. An optional barometric reference 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. Standard and premium sensors are available internally. External transducers are Mensor's CPT9000, CPT6100 or CPT6180 digital pressure transducers. See transducer chart on page 3 for ranges and uncertainty specification.

Advantage of IntelliScale and removable transducers

With the IntelliScale specification, each sensor is calibrated to give a percent of reading in the upper portion of the range. Three transducers 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 transducer is removable and interchangeable which allows remote recertification and quick transducer range changes while minimising downtime. The CPT9000, CPT6180 or CPT6100 external sensor is also available for remote applications.

Communication

The local user interface is displayed on a 7" color LCD touchscreen. Navigation within the intuitive menu structure is easily learned. Recognizable 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 Transducers, Model CPR2550			
Accuracy ⁽¹⁾	0.008%FS ⁽³⁾	0.008%IS-50 ⁽²⁾	0.008%IS-33 ⁽⁶⁾
Gauge Pressure	0...0.36 up to 10,000 psi ⁽⁴⁾ 0...25 mbar up to 700 bar	0...14.5 up to 6,000 psi ⁽⁴⁾ 0...1 up to 400 bar	0...14.5 psi up to 1,500 psi 0...1 bar up to 100 bar
Bi-Directional Pressure	-0.18...0.18 to -14.5...10,000 psi ⁽⁴⁾ -12.5...12.5 mbar to -1...700 bar	-14.5...145 to 6,000 psi ⁽⁴⁾ -1...10 to 400 bar	-14.5...145 to 1,500 psi -1...10 to 100 bar
Absolute Pressure ⁽⁴⁾⁽⁵⁾	0...7.5 up to 10,015 psi 0...0.5 up to 701 bar	0...14.5 up to 6,015 psi 0...1 up to 401 bar	0...14.5 psi up to 1,515 psi 0...1 up to 101 bar
Precision ⁽⁶⁾	0.004%FS	0.004%FS	0.004% FS
Calibration Interval	365 days ⁽⁷⁾	365 days	365 Days
Wetted parts	6000/7000 series Aluminum, 316 SS, brass, PTFE (Teflon®), Urethane, Silicone, RTV, Silicone grease, PVC, Epoxy, Buna-N, fluoroelastomers (Viton®)		
Pressure media	Ranges ≤ 15 psi – Pneumatic media only Ranges > 15 psi – Pneumatic and non-corrosive hydraulic media allowed		
Sensor			
Reading rate	33 readings/second		
Calibration adjustments	Internal zero adder and span multiplier, up to 11 point linearization for each sensor		

Premium Reference Transducers, Model CPR2580	
Accuracy ⁽¹⁾	0.014% FS ⁽³⁾
Absolute Pressure ⁽⁴⁾	0 ... 12,000 to 0 ... 22,000 psia 0 ... 24,000 to 0 ... 31,500 psia 0 ... 32,000 to 0 ... 42,000 psia
Precision ⁽⁶⁾	0.004%FS
Calibration Interval ⁽⁷⁾	365 days
Media Compatibility	
Wetted parts	6000/7000 series Aluminum, 316 SS, brass, PTFE (Teflon®), Urethane, Silicone, RTV, Silicone grease, PVC, Epoxy, Buna-N, fluoroelastomers (Viton®)
Pressure media	Pneumatic and non-corrosive hydraulic media allowed
Sensor	
Reading rate	10 readings/second
Calibration adjustment	Internal Zero adder and Span multiplier, up to 11 point linearization for each sensor

⁽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⁾ 0.01 % IS-50 accuracy: Between 0 ... 50 % of the full scale, the accuracy is 0.01% of half of the full scale value and between 50 ... 100 % of the full scale, the accuracy is 0.01 % of reading.

⁽³⁾ FS = full span.

⁽⁴⁾ Ranges from 1500 to 2000 psig will be sealed gauge transducers.

⁽⁵⁾ The minimum calibrated range of absolute transducer(s) is 600 mTorr.

⁽⁶⁾ It is defined as the combined effects of linearity, repeatability and hysteresis throughout the stated compensated temperature range.

⁽⁷⁾ 180 days for pressure ranges (absolute and gauge) below 1 bar (15 psi) and -1...1 bar (-15...14.5 psi) bidirectional. 365 days for the remainder of specified ranges.

⁽⁸⁾ 0.008 % IS-33 accuracy: Between 0 ... 33 % of the full scale, the accuracy is 0.008% of one third of the full scale value and between 33 ... 100 % of the full scale, the accuracy is 0.008 % of reading.

⁽⁹⁾ 0.008 % IS-50 accuracy: Between 0 ... 50 % of the full scale, the accuracy is 0.008% of half of the full scale value and between 50 ... 100 % of the full scale, the accuracy is 0.008 % of reading.

Specifications (Continued)
Model CPG2500

Basic Instrument

Instrument	
Instrument version	Standard: Table top with tilt feet 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	See technical drawing on page 4.
Weight	12.5 lbs./ 5.7 kg (with all internal options)
Warm-up time	Approximately 15 minutes
Display	
Screen	7" color LCD
Resolution	Selectable from 4 to 7 digits, depending on range and units
Data entry	Touch screen keypad
Measurement Units	psi, psf, osi, atm, inH2O@4C, inH2O@20C, inH2O@60F, mbar, bar, Dy/cm2, pascal, hPa, kPa, MPa, inHg@0C, inHg@60F, mTorr, Torr, mmHg@0C, cmHg@0C, mHg@0C, mmH2O@4C, cmH2O@4C, mH2O@4C, mmH2O@20C, cmH2O@20C, mH2O@20C, mSW, ftH2O@4C, ftH2O@20C, ftH2O@60F, inSW, ftSW, tsi, tsf, g/cm ² , kg/cm ² , kg/m ² , % of Range, + plus 2 user defined units (multiplier from psi, bar or pascal)
Rate Units	/sec., /min., /hr., /3-hr
Languages	English, German, Spanish, French, Italian, Portuguese, Polish, Russian, Chinese, Japanese, Korean
Measurement filters	Off, Low, Normal (default), High
Connections	
Number of integrated transducer (selectable)	Standard: 1 reference transducer Optional: 2nd reference transducers, external transducer, internal barometric reference
Pressure connections	To 6015 psi: Up to 4 ports 7/16 - 20 female SAE. 1 10-32 UNF female port. Ranges >6015 psi: Up to 2 Autoclave F250C/HIP HF4
Pressure adaptors	Standard: None Optional: Up to 6015 psi, 1/4 inch tube fittings, 6 mm tube fittings, 1/4 in. female NPT fittings, 1/8 in. female NPT fittings or 1/8 in. female BSP fittings.
Overpressure limits	110 % FS typical, optional external relief valves are available
Voltage supply	
Power input requirements	100-120 or 200-240 VAC, 50-60Hz, 24VA max
Switching power supply	Output: 12 VDC, 1.67 A (includes 4 region specific plugs adapters)
Permissible ambient conditions	
Storage temperature range	0 to 70 deg C
Operating environment	0 ... 95 % RH (relative humidity, non-condensing)
Operating temperature range	15 ... 40 deg C
Communications	
Remote interface	IEEE 488, RS-232, USB and Ethernet
Command sets	Mensor, WIKA SCPI

Approvals

Approvals included in the scope of delivery

Logo	Description	Country
CE	EU declaration of conformity	European Union
	EMC directive ¹⁾ EN 61326-1 emission (group 1, class A) and immunity (industrial application)	
	Low voltage directive EN 61010-1	
	RoHS directive EN 50581	
CE	RoHS directive China RoHS	China

1) 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.

Certificates

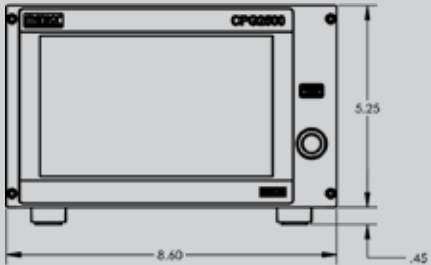
Certificate	
Calibration	<ul style="list-style-type: none"> ■ A2LA calibration certificate (standard on factory) ■ Optional: DKD/DAkkS calibration certificate for an absolute pressure measuring range ■ Optional: DKD/DAkkS calibration certificate for a gauge pressure measuring range
Recommended recalibration interval	365 days (dependent on conditions of use)

Approvals and certificates, see website

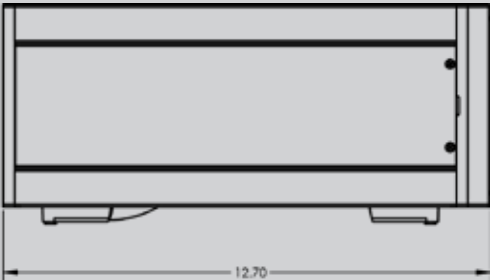
Dimensions in inches

Desk top case

Front view

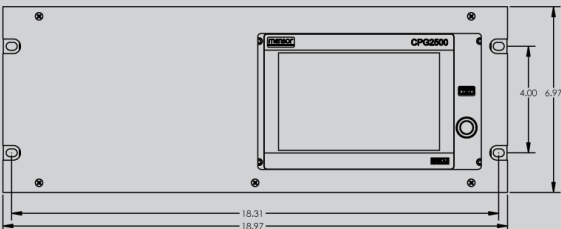


Side view

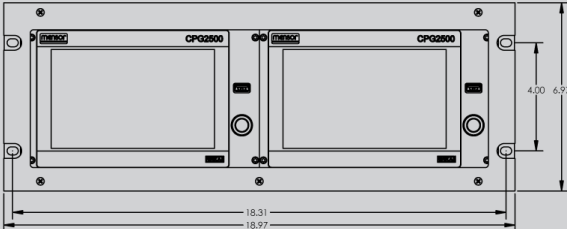


19" rack mount

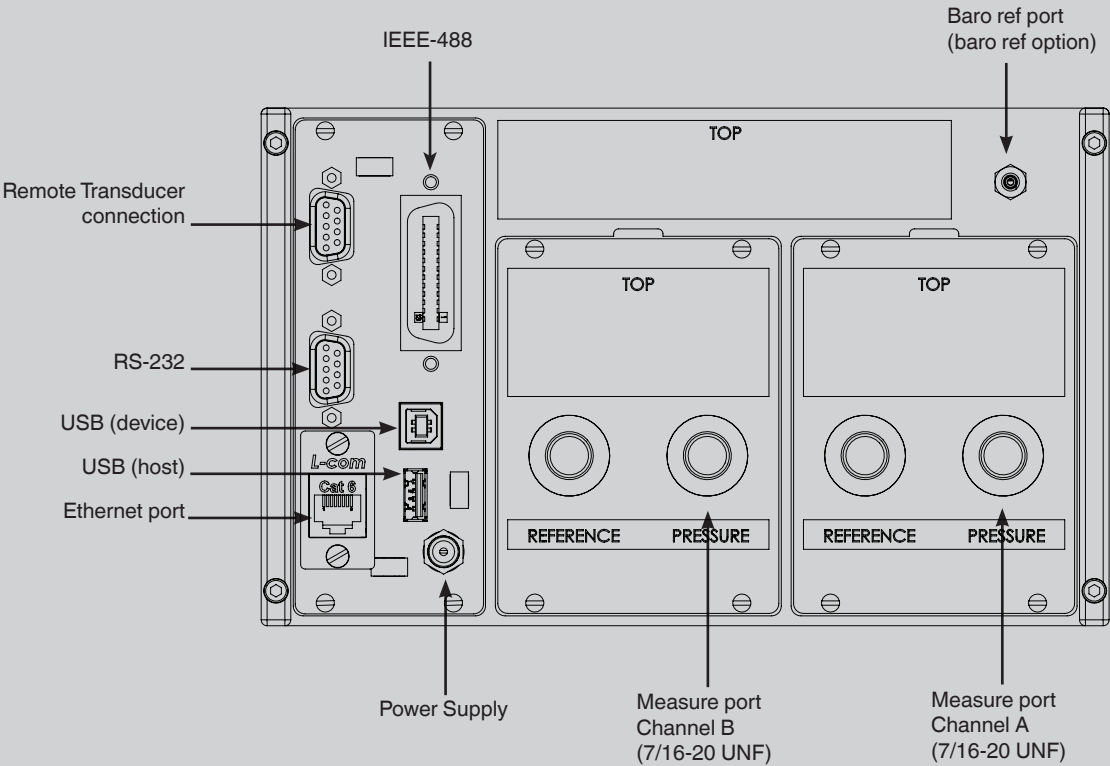
Single mount - Front view



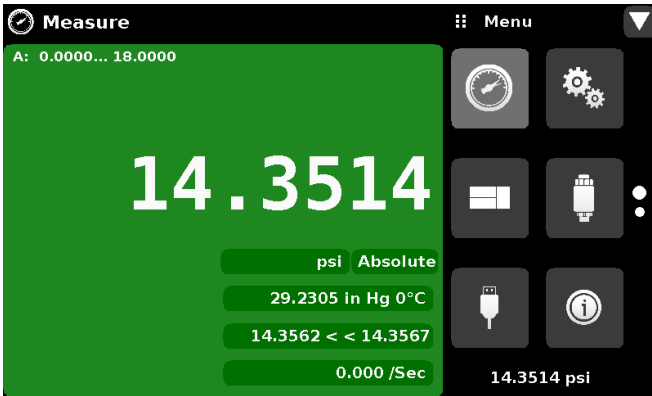
Dual mount - Front view



Rear Panel



Operator Interface

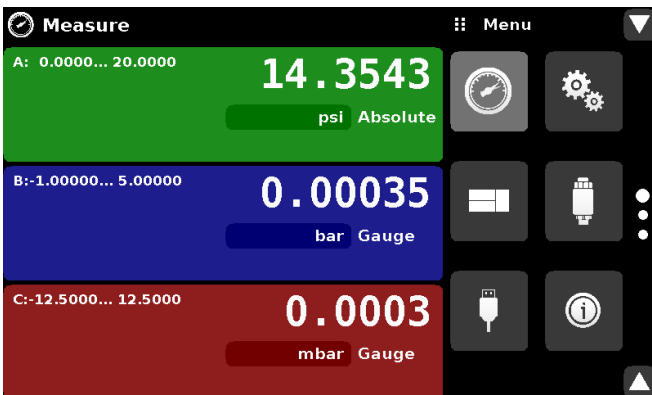


Single frame Channel “A” with auxiliary display of Alternate Units, Peak and Rate. Barometer units set to psi.

← Reading for optional barometer



Dual frame Channel “A” and “B” without auxiliary display of Alternate Units, Peak and Rate. Barometer units set to inHg 0°C.



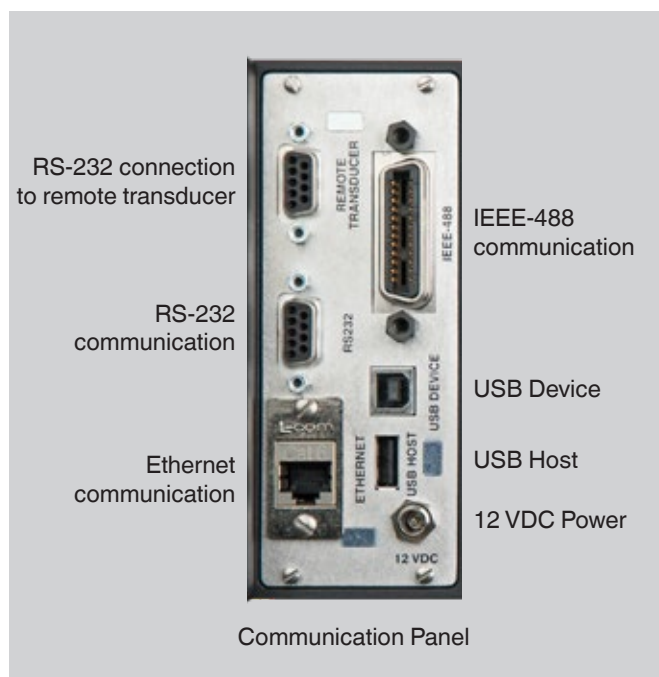
Triple frame Channel “A”, “B” and “Remote” with auxiliary display of Alternate Units, Peak and Rate, plus Zero button displayed. Barometer units set to psi.

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 “Alternate Units”, “Peak”, and/or “Rate”. 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 communication interface.



Transducer versatility

One or two transducers can be chosen from the list provided in the “Transducers” section of the specifications on page 3. In addition, a remote transducer range (Max Range ≤ 15,015 psi) can be chosen from the “Standard Range” section. Remote transducers are Mensor CPT9000, CPT6100 or CPT6180 models set to communicate via RS-232 with a baud rate that can be chosen from four selectable baud rates.

All internal transducers are removable and interchangeable. Simply remove the 4 slotted screws on the rear panel, slide the transducer out and remove the communication cable. An optional removable internal barometric reference can also be ordered.

All CPG2500 transducers can be calibrated while in the instrument using the instrument firmware. They can also be calibrated externally with an optional communication / power cable, calibration sled (needed for barometer only) and remote calibration software available at www.mensor.com/download_software_en_um.WIKA



Removable / Replaceable Transducer



Remote Transducers

Removable / Replaceable Barometric Reference

Application



Precision Pressure Indicator CPG2500

Communication
RS-232



CPR2510, CPT9000, CPT6100 or CPT6180
Remote Transducer

Communication
RS-232
IEEE-488
USB
Ethernet



Remote communication to PC

There are a variety of applications for the CPG2500:

- Transfer standard to verify the accuracy of field or factory transducers, digital or dial pressure gauges
- Laboratory pressure standard
- High accuracy pressure indicator
- Differential pressure indication, for verification or calibration
- Precision barometer
- Component in an OEM application that requires pressure indication and precision pressure output
- Precision flow meter pressure monitoring
- Leak testing
- Remote indication of pressure in manufacturing processes

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. A demo version is available for free download. A template helps the user and guides him through the creation process of a document.

To switch from the demo version to a licensed version, a USB dongle with a valid licence must be purchased.

The pre-installed demo version changes automatically to the selected version when plugging in the USB dongle and remains available as long as the USB dongle is connected to the PC.



- The user is guided through the calibration or logger process
- Management of calibration data and instrument data
- Intelligent pre-selection via SQL database
- Menu languages: German, English, Italian, French, Dutch, Polish, Portuguese, Romanian, Spanish, Swedish, Russian, Greek, Japanese, Chinese
More languages will be due with software updates
- Customer-specific complete solutions possible

The supported instruments are continuously expanded and even customer-specific adaptations are possible.

For further information see data sheet CT 95.10

The WIKA-Cal calibration software is available for online calibrations together with a PC. The scope of software functions depends on the selected licence. Several licences can be combined on one USB dongle.

Cal-Template (light version)	Cal-Template (full version)	Log-Template (full version)
<ul style="list-style-type: none"> ■ Semi-automated calibration with use of any Mensor controller 	<ul style="list-style-type: none"> ■ Fully automatic calibration with use of any Mensor controller 	<ul style="list-style-type: none"> ■ Live measurement recording for a certain period of time with selectable interval, duration and start time ■ Creation of logger protocols with graphic and/or tabular representation of the measurement results in PDF format ■ Export of measurement results as CSV file possible
<ul style="list-style-type: none"> ■ Creation of calibration certificates 3.1 per DIN EN 10204 ■ Export of calibration reports to Excel® template or XML file ■ Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa ■ Creation of calibration certificates with no limitations on measuring points 		
Ordering information for your enquiry for a single license:		
WIKA-CAL-LZ-Z-Z	WIKA-CAL-CZ-Z-Z	WIKA-CAL-ZZ-L-Z
Ordering information for your enquiry for the pair license:		
Cal-Template (light version) together with Log-Template (full version)		WIKA-CAL-LZ-L-Z
Cal-Template (full version) together with Log-Template (full version)		WIKA-CAL-CZ-L-Z

Accessories

Accessories for CPG2500	Order code
Description	CPX-A-G1
19" rack mount kit with side panels for two CPG2500	-D-
19" rack mount kit with side panels for one CPG2500	-R-
Adapter set w/relief valve 1/8" NPT female thread incl. relief valve for pressure ranges ≤ 70 bar / ≤ 1000 psi	-1-
Adapter set w/relief valve 1/8" NPT female thread incl. relief valve for pressure ranges > 70 bar / > 1000 psi	-2-
Barometric reference Measuring range: 8 ... 17 psi abs, 0.01% of reading	-3-
Barometric reference Measuring range 552 ... 1172 mbar abs, 0.01% of reading	-K-
Barometric reference Measuring range 552 ... 1172 hPa abs, 0.01% of reading	-L-
Calibration adapter for reference pressure sensors Power supply and software included	-4-
Calibration adapter for barometric reference Power supply and software included	-5-
Carrying case	-6-
Communication cable For CPT9000 as external transducer	-7-
Communication cable For CPR2510 as external transducer	-8-
RS-232 communication cable For CPT61xx	-9-
Power Supply	-P-
Adapter set 6mm tube fittings (2 adapters, Pmax 137 bar / 2000 psi)	-M-
Adapter set 6mm tube fittings (2 adapters, Pmax 400 bar / 6000 psi)	-C-
Adapter set 1/4" tube fittings (2 adapters, Pmax 137 bar / 2000 psi)	-I-
Adapter set 1/4" tube fittings (2 adapters, Pmax 400 bar / 6000 psi)	-E-
Adapter set 1/8" BSPG female fittings (2 adapters, Pmax 137 bar / 2000 psi)	-B-
Adapter set 1/4" NPT female fittings (2 adapters, Pmax 137 bar / 2000 psi)	-N-
Adapter set 1/4" NPT female fittings (2 adapters, Pmax 400 bar / 6000 psi)	-A-
Adapter set 1/8" NPT female fittings (2 adapters, Pmax 137 bar / 2000 psi)	-S-
Adapter set 1/8" NPT female fittings (2 adapters, Pmax 400 bar / 6000 psi)	-F-
Ordering information for your enquiry:	
1. Order code: CPX-A-C8 2. Option:	↓ []

Scope of delivery

- Precision Pressure Indicator CPG2500
- Switching power supply with 5 ft / 1.5 m power cord
- Operating instructions
- ISO/IEC 17025:2005, A2LA accredited calibration certificate

Options

- DKD/DAkkS calibration certificate
- 19" rack mount kits
- Second internal sensor
- External pressure sensor (CPT9000, CPT6100 or CPT6180)
- Barometric reference
- Single range barometer
- Pressure relief valve kit (up to 6000 psi (400 bar))

Ordering information

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

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



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