Precision Pressure Indicator
Model CPG2500

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

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 minimizing 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

<table>
<thead>
<tr>
<th>Accuracy(^{(1)})</th>
<th>0.01%FS(^{(3)})</th>
<th>0.01%IS-50(^{(2)})</th>
<th>0.008%IS-33(^{(8)})</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gauge Pressure</strong></td>
<td>0...0.36 up to 10,000 psi</td>
<td>0...14.5 up to 6,000 psi</td>
<td>0...14.5 psi up to 1,500 psi</td>
</tr>
<tr>
<td>0...25 mbar up to 700 bar</td>
<td>0...1 up to 400 bar</td>
<td>0...1 bar up to 100 bar</td>
<td></td>
</tr>
<tr>
<td><strong>Bi-Directional Pressure</strong></td>
<td>-0.18...0.18 to -14.5...10,000 psi</td>
<td>-14.5...145 to 6,000 psi</td>
<td>-14.5...145 to 1,500 psi</td>
</tr>
<tr>
<td>-12.5...12.5 mbar to -1...700 bar</td>
<td>-1...10 to 400 bar</td>
<td>-1...10 to 100 bar</td>
<td></td>
</tr>
<tr>
<td><strong>Absolute Pressure</strong>(^{(4)})</td>
<td>0...7.5 up to 10,015 psi</td>
<td>0...14.5 up to 6,015 psi</td>
<td>0...14.5 psi up to 1,515 psi</td>
</tr>
<tr>
<td>0...0.5 up to 701 bar</td>
<td>0...1 up to 401 bar</td>
<td>0...1 up to 101 bar</td>
<td></td>
</tr>
<tr>
<td><strong>Precision</strong>(^{(6)})</td>
<td>0.004%FS</td>
<td>0.004%FS</td>
<td>0.004%FS</td>
</tr>
<tr>
<td><strong>Calibration Interval</strong></td>
<td>365 days(^{(7)})</td>
<td>365 days</td>
<td>365 Days</td>
</tr>
</tbody>
</table>

#### 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:** 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

<table>
<thead>
<tr>
<th>Accuracy(^{(1)})</th>
<th>0.008% IS-50(^{(9)})</th>
<th>0.01% FS(^{(3)})</th>
<th>0.014% FS(^{(3)})</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Absolute Pressure</strong>(^{(4)})</td>
<td>0 ... 1,500 to 0 ... 3,300 psia</td>
<td>0 ... 8,000 to 0 ... 11,000 psia</td>
<td>0 ... 12,000 to 0 ... 22,000 psia</td>
</tr>
<tr>
<td>0 ... 4,200 to 0 ... 6,600 psia</td>
<td>0 ... 24,000 to 0 ... 31,500 psia</td>
<td>0 ... 32,000 to 0 ... 42,000 psia</td>
<td></td>
</tr>
<tr>
<td><strong>Precision</strong>(^{(6)})</td>
<td>0.004%FS</td>
<td>0.004%FS</td>
<td>0.004%FS</td>
</tr>
<tr>
<td><strong>Calibration Interval</strong> (^{(7)})</td>
<td>365 days</td>
<td>365 days</td>
<td>365 days</td>
</tr>
</tbody>
</table>

#### 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:** Hydraulic media only available > 6,015 psia

#### Sensor
- **Reading rate:** 10 readings/second
- **Calibration adjustments:** Internal Zero adder and Span multiplier, up to 11 point linearization for each sensor

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\(^{(1)}\) 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

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Standard: Table top with tilt feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrument version</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>See technical drawing on page 4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>12.5 lbs./ 5.7 kg (with all internal options)</td>
</tr>
<tr>
<td>Warm-up time</td>
<td>Approximately 15 minutes</td>
</tr>
</tbody>
</table>

#### Display

<table>
<thead>
<tr>
<th>Screen</th>
<th>7” color LCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>Selectable from 4 to 7 digits, depending on range and units</td>
</tr>
<tr>
<td>Data entry</td>
<td>Touch screen keypad</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement Units</th>
<th>psi, psf, osi, atm, inH20@4C, inH20@20C, inH20@60F, mbar, bar, Dy/cm², pascal, hPa, kPa, MPa, inHg@0C, inHg@60F, mTorr, Torr, mmHg@0C, cmHg@0C, mHg@0C, mmHh2@4C, cmHh2@4C, mHh2@20C, mmHh2@20C, cmHh2@20C, mHh2@20C, mSW, ftH20@4C, ftH20@20C, ftH20@60F, inSW, ftSW, psi, tsf, g/cm², kg/cm², kg/m², % of Range, + plus 2 user defined units (multiplier from psi, bar or pascal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate Units</td>
<td>/sec., /min., /hr., /3-hr</td>
</tr>
<tr>
<td>Languages</td>
<td>English, German, Spanish, French, Italian, Portuguese, Polish, Russian, Chinese, Japanese, Korean</td>
</tr>
<tr>
<td>Measurement filters</td>
<td>Off, Low, Normal (default), High</td>
</tr>
</tbody>
</table>

#### Connections

<table>
<thead>
<tr>
<th>Number of integrated transducer (selectable)</th>
<th>Standard: 1 reference transducer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional: 2nd reference transducers, external transducer, internal barometric reference</td>
<td></td>
</tr>
<tr>
<td>Pressure connections</td>
<td>To 6015 psi: Up to 4 ports 7/16 - 20 female SAE. 1 10-32 UNF female port. Ranges &gt;6015 psi: Up to 2 Autoclave F250C/HIP HF4</td>
</tr>
<tr>
<td>Pressure adaptors</td>
<td>Standard: None</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Overpressure limits</td>
<td>110 % FS typical, optional external relief valves are available</td>
</tr>
<tr>
<td>Voltage supply</td>
<td>100-120 or 200-240 VAC, 50-60Hz, 24VA max</td>
</tr>
<tr>
<td>Switching power supply</td>
<td>Output: 12 VDC, 1.67 A (includes 4 region specific plugs adapters)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Permissible ambient conditions</th>
<th>0 to 70 deg C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating environment</td>
<td>0 to 95 % RH (relative humidity, non-condensing)</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>15 to 40 deg C</td>
</tr>
</tbody>
</table>

#### Remote interface

| IEEE 488, RS-232, USB and Ethernet |

#### Command sets

| Mensor, WIKA SCPI |

#### CE conformity and certificates

<table>
<thead>
<tr>
<th>CE compliance</th>
<th>EN61326-1:2013 electromagnetic compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN61010-1:2010 safety/CB scheme</td>
<td></td>
</tr>
<tr>
<td>RoHS directive</td>
<td>2011/65/EU, article 4</td>
</tr>
<tr>
<td>Calibration</td>
<td>Calibration certificate per ISO/IEC 17025:2005. Accreditation is by the American Association for Laboratory Accreditation (A2LA).</td>
</tr>
</tbody>
</table>
Dimensions in inches

Front view

Side view

Single mount - Front view

19" rack mount

Dual mount - Front view

Rear Panel

IEEE-488

Baro ref port (baro ref option)

Remote Transducer connection

RS-232

USB (device)

USB (host)

Ethernet port

Power Supply

Measure port Channel B (7/16-20 UNF)

Measure port Channel A (7/16-20 UNF)
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

**Application**

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 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

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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 CPG2500
- Switching power supply with 5 ft / 1.5 m power cord
- Operating instructions

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))

Accessories

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

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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