

## CPA2501 Precision Air Data Indicator



### Applications

- Aviation Calibration Labs
- Aviation Repair Stations
- Manufacturers of Avionics Equipment
- Manufacturers of Aerospace Equipment
- Wind Tunnels

### Features

- 0.01% of full scale pressure accuracy
- RVSM compliant
- Ps, Qc, Ps/Pt or Ps/Qc configuration with virtual channels
- Altitude and airspeed rate indication
- Altitude ranges to 100,000 ft.
- Airspeed ranges to 1150 knots
- Indication in standard altitude and airspeed units

### Description

#### Applications

The CPA2501 is used in aviation and aerospace applications for calibration of altimeters and airspeed indicators, displaying altitude, airspeed, altitude rate (vertical airspeed) and airspeed rate (acceleration). Applied wherever there is a need for a high level of accuracy in an avionics indicator or calibration device.

#### Functional Flexibility

The CPA2501 can be configured with an altitude channel and an airspeed channel consisting of Ps/Pt or Ps/Qc. It can be configured as a single channel altitude/altitude rate indicator, (Ps only) a single channel airspeed/airspeed rate indicator (Qc only) or it can be a dual channel unit configured as Ps/Pt or Ps/Qc. In the Ps/Pt version the airspeed/airspeed rate channel is a calculated channel. An optional barometer can be installed for display in the front panel or as a separate channel. Pressure ranges for each channel can be specified by the customer. Guidelines for ranges are given in the pressure range section of the specifications on page 2.

#### Related Products:

CPG2500 Precision Pressure Indicator  
CPG2400 Digital Pressure Gauge



### CPA2501 Precision Air Data Indicator

#### Versions

The CPA2501 versions are as follows:

1. Ps (altitude version)
2. Qc (airspeed version)
3. Ps/Qc with a virtual Pt channel
4. Ps/Pt with a virtual Qc channel

An optional barometric sensor can be added to any version.

#### Communications

The manual user interface is through a wide screen display with touchscreen. Navigation within the intuitive menu structure is easily learned. Recognizable icons, when touched, open screens for configuration and calibration. Communicating to a remote computer is achieved through Ethernet, RS-232 or optional IEEE-488 communications. Commands used for communication are the same as the previous version of Mensor avionics gauge models 2108 and 2109 or the WIKA SCPI command set.

## Specifications

Sensor	Range and Accuracy	
<b>Ps Sensor</b>	0 ... 29.5 to 0 ... 37 in HgA @ 0°C	
Accuracy <sup>(1)</sup>	0.009% IS-50 <sup>(2)</sup>	
<b>Pt Sensor</b>	0 ... 40 to 0 ... 110 in HgA @ 0°C	
Accuracy <sup>(1)</sup>	0.01% IS-50 <sup>(2)</sup>	
<b>Qc Sensor</b>	-1 ... 3 to -1 ... 100 in HgD @ 0°C	
Accuracy <sup>(1)</sup>	0.01% Full Span	
<b>Barometric reference</b>	17 to 34 in HgA @ 0°C	
Accuracy <sup>(1)</sup>	0.01% R	
Calibration Interval	365 days	
Spec.	Value	
<b>Total uncertainty (altitude)</b>	<u>0...35 in Hg a</u>	<u>0...32 in Hg a</u>
	Sea level - ± 3 ft	Sea level - ± 3 ft
	10,000 ft - ± 4 ft	10,000 ft - ± 4 ft
	25,000 ft - ± 7 ft	25,000 ft - ± 7 ft
	40,000 ft - ± 13 ft	40,000 ft - ± 12 ft
	60,000 ft - ± 34 ft	60,000 ft - ± 31 ft
<b>Total uncertainty (airspeed)</b>	<u>-1...36 in Hg d</u>	<u>-1...103 in Hg d</u>
	50 knots - ± 1.0	100 knots - ± 1.0
	100 knots - ± 0.4	200 knots - ± 0.5
	200 knots - ± 0.2	500 knots - ± 0.2
	500 knots - ± 0.06	1000 knots - ± 0.04
Resolution	6 digits	
Over pressure limits	1.5 x pressure span	
Storage	-20 ... 70°C	
Warm-up	< 15 minute	
Reading rate	12.5 Hz	
Response time	80 mS	
Orientation	Negligible, can be removed with re-zeroing.	
Communications	USB Ethernet RS-232 IEEE-488	
Case size	8.6" W x 5.25" H x 12.7"D, without feet	
Weight	<5 lbs.	
Materials in contact with media	6000 series aluminum, 316 & 316L stainless steel, viton	
Media	Clean, dry, non-corrosive, non-combustible, non-oxidizing gases. Not suitable for oxygen use.	

Power input	90 to 264 VAC, 47-63 Hz, 90VA max – optional international power plugs.
Pressure interfaces	7/16-20 SAE
Versions	1. Ps (altitude version) 2. Qc (airspeed version) 3. Ps/Qc with a virtual Pt channel 4. Ps/Pt with a virtual Qc channel
Altitude units	Feet, miles, kilometers and meters
Airspeed units	Knots, miles/hr, meters/sec, kilometers/hr TAS and IAS airspeed
Rate units	/sec, /min, /hr, /3 hrs.
Pressure units	35 pressure units
Display	Wide screen color touchscreen
CE	The CPA2501 is compliant to: CE – Appropriate EN50081 and EN50082 emission and susceptibility standards.

### Model CPA2501 - Ordering Information

#### Specify:

Mode: Ps/Pt, Ps/Qc, Ps or Qc  
 Ps Range  
 Pt or Qc Range  
 Options: IEEE-488, barometer, international power plugs, rack

<sup>(1)</sup> Accuracy is defined by total measurement uncertainty with the coverage factor (k=2) and includes the intrinsic performance of the instrument (linearity, hysteresis, repeatability), the measurement uncertainty of the reference instrument, long term stability, influences of ambient conditions, drift and temperature effects over the calibrated range, with periodic zero point adjustment.

<sup>(2)</sup> The Intellscale (IS) specification is a percent of reading specification combined with a percent of full scale specification. For example the designation "0.01% IS-50", simply means that the uncertainty of the sensor is 0.01% of reading above 50% of Full Scale, and 0.01% of 50% of Full Scale below 50% of the Full Scale. The 0.008% IS-33 specification is the same except the uncertainty is 0.008% and the break over from percent of reading to percent of Full Scale is at 33% of Full Scale. Same rules apply for bidirectional ranges.

The calibration program at Mensor is accredited by A2LA as complying with both the ISO/IEC 17025:2005 and the ANSI/NCSL Z540-1-1994 standards. All Mensor primary standards are traceable to NIST. Mensor is registered to ISO9001:2008.



Since product innovation is a continuous process at Mensor, we reserve the right to change specifications without notice.