Aviation Grade Digital Barometer Model 11906

allweatherinc

Overview

The Model 11906 (Single, Dual or Triple) Digital Barometers are designed to make accurate pressure measurements throughout a wide range of environmental conditions. Using capacitive, absolute pressure sensor technology, excellent hysteresis as well as outstanding temperature and long-term stability are achieved. By combining the sensor with AWI's quad-plate pressure port technology, venturi effects by wind speed are minimized contributing to the barometers exceptional repeatability. Its precision and diagnostic design make it ideal for applications requiring the highest in performance and reliability, such as aviation and meteorological studies.

Performance

When the pressure changes, the silicon diaphragm bend and changes the height of the vacuum gap in the sensor. As the vacuum changes the capacitance of the sensor changes, which is measured and converted into a pressure reading. The pressure sensor combines three powerful techniques for its superior performance: the use of single crystal silicon as sensor material, the capacitive measurement principle and the air sampling inlet. Silicon offers good elasticity, low hysteresis, excellent repeatability, small temperature dependence and superior long-term stability. The design of the capacitive pressure sensor was maximized for a wide dynamic range and includes a built-in overpressure blocking mechanism. Pressure sampling is accomplished through the quadplate pressure port that negates any outside air effects through its unique air inlet design.

Design

AWI's Dual and Triple Digital Barometer continuously ompensates for pressure linearity and temperature dependencey. Adjustments are made at seven temperature levels over the full operating temperature range and seven to nine pressure levels over the operating pressure range at each temperature level. The calculated individual basic pressure and temperature adjustment coefficients are stored in the EEPROM of each pressure transducer. The user cannot change these basic factor adjustments.

Chain of Calibration

Every Digital Barometer is calibrated through a scientifically valid chain of reference. The traceability chain goes directly from the product up to the National Institute of Standards and Technology (NIST) with an unbroken chain of calibrations. All barometers come with a factory calibration certificate which is NIST traceable.

Self Diagnostics

For reliable measurements, the 11906 barometer has two pressure transducers. The 11906-A has three transducers and the 11906-B has a single transducer. Software continuously checks that each transducer remains within set tolerances.

SENSORS

SPECIFICATIONS

Parameter	Specification
Operating Range	
Pressure Range	500 –1110 hPa
Temperature Range	-40 to +60ºC
Storage Temp	-60 to +60ºC
Humidity Range	noncondensing
Resolution	0.03 hPa ‡
Accuracy	
Linearity *	± 0.05 hPa
Hysteresis *	± 0.03 hPa
Repeatability *	± 0.03 hPa
Accuracy @ 25ºC	± 0.07 hPa
Temp Dependence †	± 0.10 hPa
Long-term Stability	± 0.10 hPa / year
Total including 1-year drift	± 0.20 hPa
Minimum Pressure Limit	0 hPa
Maximum Pressure Limit	5000 hPa absolute
Pressure Units	hPa, kPa, Pa, mbar, inHg, mmHg, torr, psia
Mechanics	
Housing	Epoxy Painted Aluminium
Communication	RS-485

* Defined as the ± standard deviation limits of end-point non-linearity, hysteresis error or repeatability error.

† Defined as ± 2 standard deviation limits of temperature dependence over the operating temperature range.

‡ Factory Setting

ORDERING INFORMATION

Part Number	Description
11906	Dual Digital Barometer *Includes:* *7150 Dual Barometer,* *M104598 Quad Plate Pressure Port,* *and Power/Data Cable*
11906-A	Triple Digital Barometer *Includes:* *7150-A Dual Barometer,* *M104598 Quad Plate Pressure Port,* *and Power/Data Cable*
11906-B	Single Digital Barometer *Includes:* *7150-B Single Barometer,* *M104598 Quad Plate Pressure Port,* *and Power/Data Cable*

DIMENSIONS & WEIGHTS

Weight	1 kg
Dimensions	5.71"W x 4.72"H x 2.56" D (145 mm x 120 mm x 65 mm)