



# Aviation Grade Digital Barometer Model 11901 or 11901-B

## Overview

The Model 11901 Dual or Model 11901-B Single Digital Barometer 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.

## Inherent 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 quad-plate pressure port that negates any outside air effects through its unique air inlet design.

## Accuracy By Design

AWI's Dual and Single Digital Barometer continuously compensates for pressure linearity and temperature dependency.

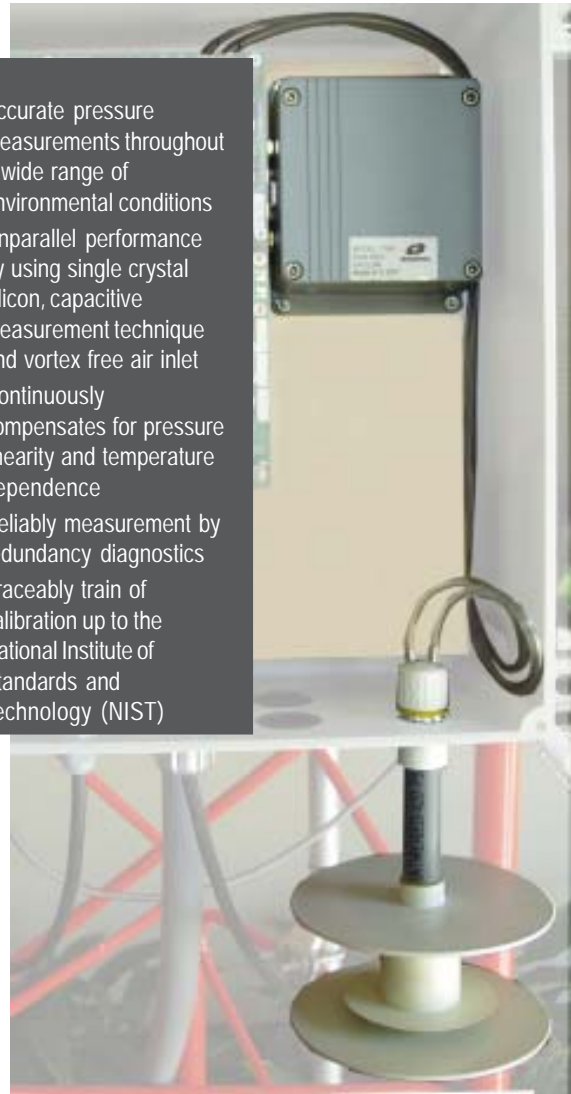
Adjustments are made at seven temperature levels over the full operating temperature range and seven to nine pressure levels over the operating pressure range at each temperature level.

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.

## Scientifically Valid 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

- Accurate pressure measurements throughout a wide range of environmental conditions
- Unparallel performance by using single crystal silicon, capacitive measurement technique and vortex free air inlet
- Continuously compensates for pressure linearity and temperature dependence
- Reliably measurement by redundancy diagnostics
- Traceably train of calibration up to the National Institute of Standards and Technology (NIST)



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

For reliable measurements the 11901 barometer has two pressure transducers while the 11901-B has one transducer. Software continuously checks that each transducer remains within set tolerances.

SENSORS

## Specifications

### Barometric pressure

#### Operating Range

Pressure range	500-1100 hPa
Operating temperature range	-40 to +60°C
Storage temperature range	-60 to +60°C
Humidity range	non-condensing
Resolution	0.01 hPa•
Accuracy	
Linearity *	± 0.05 hPa
Hysteresis *	± 0.03 hPa
Repeatability*	± 0.03 hPa
Calibration uncertainty **	± 0.08 hPa
Temperature dependence ***	± 0.10 hPa
Long-term stability	± 0.10 hPa / year
Total including one-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

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

\*\* Defined as ± standard deviation limits of inaccuracy of the working standard at 1000 hPa in comparison to international standards (NIST).

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

- Factory setting

### Mechanics

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

Communication RS-485

## Ordering Information

11901	Dual Digital Barometer <i>Includes: 7190 Dual Barometer, M104598 Quad Plate Pressure Port and Power/Data Cable</i>
11901-B	Single Digital Barometer <i>Includes: 7190 Single Barometer, M104598 Quad Plate Pressure Port and Power/Data Cable</i>



**allweatherinc**

**All Weather, Inc.**

1165 National Drive  
Sacramento, CA 95834

Phone: 916 928-1000

USA Toll Free: 800 824-5873

Fax: 916 928-1165

[www.allweatherinc.com](http://www.allweatherinc.com)