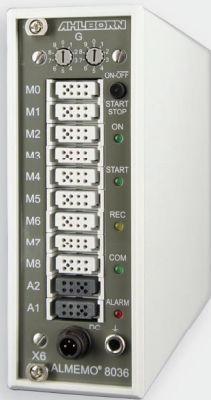


## ALMEMO® 8036-9



**Reference measuring instrument for temperature and humidity**

**Multi-channel measuring instrument with nine measuring inputs for Pt100 sensors and Pt100 psychrometers. High-precision measuring with resolution of 0.001 K**

**For calibration laboratories, quality assurance procedures, and monitoring of test and measuring rooms**

**For use either as PC interface or with external memory connector as data logger**

## Technical data and functions

### Multi-channel instrument for high-precision measuring

Reference measuring instrument ALMEMO® 8036-9 ensures very high levels of resolution, precision, and linearity when measuring temperature, using up to nine Pt100 sensors - or alternatively up to four Pt100 psychrometers.

This reference measuring instrument is suitable for use as calibration standard in calibration laboratories, for quality assurance procedures, or as a multi-channel instrument for high-precision measuring operations, e.g. in test and measuring rooms or climate chambers.

With the Pt100 the measuring ranges have been expanded considerably, up to +670 °C at the highest resolution of 0.001 K and up to +850 °C at a resolution of 0.01 K. The measured value units can be programmed to either °C / K / °F.

Reference measuring instrument ALMEMO® 8036-9 operates with special ALMEMO® plugs incorporating expanded programming possibilities. These plugs, it should be noted, cannot be interchanged with the ordinary plugs used with ALMEMO® V6 / V7 measuring instruments.

### Very high precision thanks to multi-point adjustment and input of coefficients for the Pt100 characteristic

This very high level of precision is achieved by calibrating the measuring chain comprising Pt100 sensor and measuring instrument. For each individual sensor there are two error correction methods available.

1. Multi-point adjustment in up to 35 temperature points
2. Input of coefficients R0 and A, B, C for the Pt100 characteristic as per the Callendar / Van Dusen equation

Linearization is then performed using the sensor-specific Pt100 characteristic.

Both correction procedures can be used for any sensor simultaneously. The correction values from multi-point adjustment and the coefficients of the Pt100 characteristic are saved in the sensor connector.

Sensors are identified by means of a programmable 10-character alphanumeric designation stored in the sensor connector and a serial number. Similarly, for the purpose of monitoring the calibration interval, the date of the next calibration due and the calibration interval can be programmed and saved in the sensor connector.

### High-precision humidity measuring with atmospheric pressure compensation and calculation as per Dr. Sonntag and W. Bögel

The Pt100 psychrometer incorporates two temperature sensors assigned to two measuring inputs.

The digital atmospheric pressure sensor integrated in the ALMEMO® device ensures that any pressure-dependent humidity variables are pressure-compensated automatically.

Humidity is calculated on the basis of formulae as per Dr. Sonntag and the enhancement factor as per W. Bögel (correction factor  $fw(t,p)$ ) for real mixed gas systems). This substantially widens the measuring range and improves the accuracy of humidity variable calculations.

Temperature is measured to a resolution of 0.001 K, relative humidity to 0.01% RH, and dewpoint temperature to 0.01 K.

Humidity variables are calculated from the three primary measuring channels (real measurable variables) - dry temperature (TD °C), wet temperature (TW °C), and atmospheric pressure (mbar).

In the second ALMEMO® plug (dry sensor) there are up to three humidity variables, simultaneously programmable : relative humidity (%), dewpoint (°C), and mixture (g/kg). Abs. humidity (g/m<sup>3</sup>), vapor pressure (mbar), enthalpy (kJ/kg)

### Other equipment

- Five LEDs for indicating various operating states
- One pushbutton for switching the device on / off and to start / stop a measuring operation
- Data logger mode with plug-in ALMEMO® memory connector with micro SD card (accessory)
- Two ALMEMO® output sockets for simultaneously connecting a PC or network and an ALMEMO® memory connector

### ALMEMO® Control configuration software

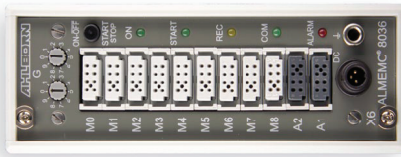
The ALMEMO® Control software (included in delivery) can be used on a PC to program all sensor parameters in the Pt100 sensor or in the Pt100 psychrometer : measuring range / resolution, units, smoothing, text description, calibration date and calibration interval, multi-point adjustment, locking level.

The ALMEMO® Control software also be used to completely program the device.

### WinControl software for measured data acquisition

The WinControl software (accessory) can be used to acquire and document measured values from the reference measuring instrument. In the calibration laboratory the reference measuring instrument (reference standard) and the ALMEMO® device (test item) can be networked together and evaluated using WinControl.

## ALMEMO® 8036-9



### Technical data

<b>Measuring inputs</b>	Nine ALMEMO® measuring inputs for Pt100 sensors and Pt100 psychrometers	<b>Digital atmospheric pressure sensor</b> (integrated in the device)	Measuring range	700 to 1100 mbar
Electrical isolation	Semiconductor relay (50 V)	Accuracy	±2.5 mbar (at 23 °C ±5 K)	
A/D converter	Delta-sigma, 24-bit, 1.25 mops	<b>Outputs</b>	Two ALMEMO® sockets for interface cable and ALMEMO® memory connector	
Measuring range	Pt100, 4 conductors, -200 to +670 °C Resolution 0.001 K Pt100, 4 conductors, -200 to +850 °C Resolution 0.01 K	<b>Standard equipment</b>	Operation 1 key, 5 LEDs, 2 coding switches Date and time-of-day Real-time clock, buffered by lithium battery	
Measuring current	1 mA	<b>Power supply</b>	Mains adapter ZB1212NA10 100 to 240 VAC to 12 VDC, 2 A, electrically isolated	
Accuracy	±0.010 K ±1 digit in range -50 to +560°C Resolution 0.001 K ±0.05 K ±1 digit in range -100 to +850 °C Resolution 0.01 K	Current consumption	without input and output modules approx. 35 mA	
Nominal conditions	+23 °C ±2 K, 1013 mbar	Active mode	(with memory connector approx. 45 mA)	
Temperature drift	typical 2 ppm / K	Sleep mode	approx. 0.05 mA	
Calculated humidity variables	Analytic equation (not an approximation)	<b>Housing</b>	180 x 049 x 137 mm (LxWxH) Polystyrene (PS), approx. 490 g	

Input connector ALMEMO® 8036-9	Order no.
ALMEMO® input connector for the user's own third party high-precision sensors, Pt100, 4 conductors, 0.001 K resolution, for ALMEMO® 1030-2/1036-2/8036-9	ZA9030FS7P3
ALMEMO® input connector for the user's own third party high-precision sensors, Pt100, 4 conductors, 0.01 K resolution, for ALMEMO® 1030-2/1036-2/8036-9	ZA9030FS2P3

Accessories	Order no.
Memory connector with micro SD, including USB card reader (see chapter ,General accessories')	ZA1904SD
WinControl software for measured data acquisition per device up to 20 channels for any number of devices and channels	SW5600WC1 SW5600WC2

Connecting cables	Order no.
USB data cable, electrically isolated	ZA1919DKU
Ethernet data cable, electrically isolated	ZA1945DK

Standard delivery	Order no.
Reference measuring instrument ALMEMO® 8036-9, nine inputs for Pt100 sensors and Pt100 psychrometers, integrated atmospheric pressure sensor, including mains unit ZB1212NA10	MA80369

DAkkS / DKD calibration KD92xxD, atmospheric pressure, for measuring chain (sensor and device), see catalog chapter Calibration certificate.  
The DAkkS calibration meets the requirements of DIN EN ISO/IEC 17025 for test equipment.