High-precision sensor for temperature, humidity, atmospheric pressure FHAD 36 RAx
Wide operating temperature range Automatic atmospheric pressure compensation
Digital sensor with ALMEMO® D6 plug

ALMEMO® connecting cable with sensor (example FHAD 36 RAS)

General features, ALMEMO® D6 sensors
see page 15

Common technical features FHAD 36 RAx

- Digital capacitive humidity sensor with integrated signal processor, designed to meet the highest accuracy requirements in humidity measurement
- Unique correction and adjustment process
  All sensor characteristics and adjustment data are saved in the humidity sensor itself.
- A digital atmospheric pressure sensor integrated in the ALMEMO® D6 plug itself provides automatic pressure compensation for all pressure-dependent humidity variables.
- Humidity calculation 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.
- Humidity variable, Absolute humidity in g/m³
- All relevant ambient parameters are measured with just one sensor.
- The humidity variables are calculated from the three primary measuring channels (real measurable variables). temperature, relative humidity, atmospheric pressure
- Freely selectable measurable variables
- Four measuring channels are programmed (at our factory).
  temperature (°C, T, t), relative humidity (%H, RH, Uw), dewpoint (°C, DT, td), atmospheric pressure (mbar, AP, p)
  Other humidity variables can also be selected:
  mixture (g/kg, MH, r), absolute humidity (g/m³, AH, dv), vapor pressure (mbar, VP, e), enthalpy (kJ/kg, En, h)
  This device can be configured directly on a PC using USB adapter cable ZA 1919 AKUV. (see chapter „Networking“).

! **The recommended application range for capacitive sensors** is up to dew point temperatures in the range of 80°C td. Measurements at high humidity and high temperatures can lead to a larger sensor drift with capacitive sensors. Permanent changes in sensor characteristics can be caused by chemical / physical processes. Contamination in the measuring medium and falling below the dew point temperature (in extreme climates), can further intensify this effect.

Common technical data FHAD 36 RAx

Digital temperature / humidity sensor (including A/D converter)	
Operative range	depending on sensor type
Humidity	
Sensor	capacitive
Measuring range	5...98 % RH
Adjusted	at +23 °C and 10%, 35%, 80% RH
Accuracy	±1.3 % RH (at +23°C ±5 K)
Reproducibility	0.3 % RH
Response time T_{63}	typical 15 seconds at typical 1 m/s (without filter)
Temperature	
Sensor	Pt100 Class B
Measuring range	-100 to +170 °C Please observe operative range ! (depending on sensor type)
Accuracy at +23 °C ±5 K	±0.2 K
Reproducibility	0.05 °C

Sensor connector on the sensor / sensor cable	
Plug connector (Materials : anticorodal aluminum, anodized) IP65	
Operative range of the electronics	
in the connecting cable (coupling)	-40 to +90 °C
in the grip (of hand-held sensors)	-40 to +85 °C
ALMEMO® connecting cable	
Coupling (length = 100 mm) with cable, length = 2 or 5 meters (Materials : TPU, -40 to +90 °C) with ALMEMO® D6 plug	
Digital atm. pressure sensor (integrated in ALMEMO® D6 plug)	
Measuring range	700 to 1100 mbar
Accuracy	±2.5 mbar (at 23 °C ±5 K)
ALMEMO® D6 plug	
Refresh rate	1 second for all four channels
Supply voltage	6 to 13 VDC
Current consumption	9 mA

DAkkS or factory calibration KH9xxx temperature, humidity for digital sensor, see chapter „Calibration certificates“.
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

High-precision sensor for temperature, humidity, atmospheric pressure FHAD 36 RAS Automatic atmospheric pressure compensation. Digital sensor with ALMEMO® D6 plug

General description and common technical data
FHAD 36 Rx (see page 196)

Technical data

Operative range	-40 to +90 °C	Filter cartridge	Polycarbonate
Housing material	Polycarbonate	Filter	Polyethylene

Accessories

	Order no.
Brackets for wall mounting (see page 194)	**ZB9600W**

Variants Including factory test certificate and polyethylene filter

	Order no.
High-precision digital temperature / humidity sensor, with plug connector, including ALMEMO® connecting cable with coupling and ALMEMO® D6 plug, and integrated digital atmospheric pressure sensor	
Connecting cable, length 2 meters	**FHAD36RAS**
Same as above Connecting cable, length 5 meters	**FHAD36RASL05**

Filters

for FHAD 36-RAS

Variants

	Order no.
Filter insert made from polyethylene with a polycarbonate filter cartridge for standard applications good response time and good protection against fine particulates	**ZB9636APE**
Filter insert made from stainless-steel wire fabric with a polycarbonate filter cartridge quickest response time not suitable for environments that are bioactive or contaminated with fine particulates (risk of congestion)	**ZB9636AWM**
Filter insert made from PTFE (polytetrafluoroethylene) with a polycarbonate filter cartridge good protection against fine particulates, high chemical resistance, slower response time	**ZB9636APTFE**

High-precision sensor for temperature, humidity, atmospheric pressure FHAD 36 RAIC
Industrial-standard design for high temperatures up to +170 °C
Automatic atmospheric pressure compensation. Digital sensor with ALMEMO® D6 plug

General description
and common technical data
FHAD 36 Rx (see page 196)

Technical data

Operative range	-100 to +170 °C
Sensor length	144 mm incl. sensor
	(Other lengths 294 mm are available on request.)
Housing material	PEEK
Filter cartridge	Stainless steel 1.4301
Filter	Stainless-steel wire fabric filter
Electronics	length: 111 mm

Accessories

	Order no.
Assembly screw fittings for 15 mm sensor Brass, nickel-plated Thread M20x1.5 Viton® seal, up to +200 °C	**ZB9636KV**
Mounting flange Steel, nickel-plated Diameter 80 mm	**ZB9636F**

Variants Including factory test certificate and stainless-steel wire fabric filter

	Order no.
High-precision digital temperature / humidity sensor, industry-standard, with high-temperature sensor cable and plug connector, including ALMEMO® connecting cable with coupling and ALMEMO® D6 plug Integrated digital atmospheric pressure sensor	
Sensor cable, length = 2 meters, Connecting cable, length 2 meters	**FHAD36RAIC102**
Same as above Sensor cable, length = 5 meters, Connecting cable, length 2 meters	**FHAD36RAIC105**
Same as above Sensor cable, length = 2 meters, Connecting cable, length 5 meters	**FHAD36RAIC102L05**
Same as above Sensor cable, length = 5 meters, Connecting cable, length 5 meters	**FHAD36RAIC105L05**

Filter

for sensors with filter cartridge
for FHAD 36 RAIC

Variants

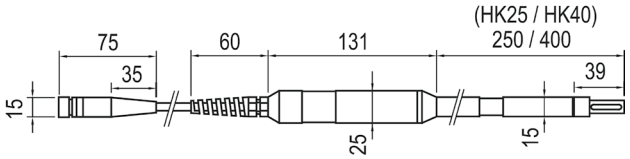
	Order no.
Stainless-steel wire fabric filter quickest response time not suitable for environments that are bioactive or contaminated with fine particulates (risk of congestion)	**ZB9636AIWM**
Stainless-steel sinter filter best protection in environments heavily contaminated with particulates good response time for low humidities (not to be used for high humidities)	**ZB9636AISSS**
PTFE filter good protection against fine particulates, high chemical resistance, slower response time	**ZB9636AIPTFE**

Other designs are available on request

FHAD 36-RAIMx :
Industry-standard humidity sensor FHAD 36 RAIM
in stainless steel Diameter 15 mm, -100 to +170 °C

FHAD 36-RAIEx :
Screw-fit humidity sensor FHAD 36 RAIE, up to 100 bar,
stainless steel Thread G 1/2-inch, -100 to +170 °C

High-precision sensor for temperature, humidity, atmospheric pressure FHAD 36 RHK
Hand-held sensor for temperatures up to +170 °C
Automatic atmospheric pressure compensation, Digital sensor with ALMEMO® D6 plug



Sensor plug, cable, sensor with handle

For on-site test measurements,
not for stationary installation

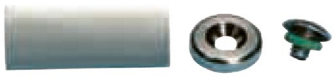
General description and
common technical data FHAD 36 Rx
(see page 196)

Technical data

Operative range	-100 to +150 / +170 °C (see variants)
Operative range of the electronics in the grip	-40 to +85 °C
Housing material	Shaft PEEK
Filter cartridge	Brass, nickel-plated
Filter	Stainless-steel wire fabric filter
Response time T_{63}	<10 seconds at typical 1 m/s, without filter

Filter

for sensors with filter cartridge
for FHAD 36 RIC and FHAD 36 RHK



Variants

	Order no.
Stainless-steel wire fabric filter quickest response time not suitable for environments that are bioactive or contaminated with fine particulates (risk of congestion)	**ZB9636M15**
Stainless-steel sinter filter best protection in environments heavily contaminated with particulates good response time for low humidities (not to be used for high humidities)	**ZB9636S15**
PTFE filter good protection against fine particulates, high chemical resistance, slower response time	**ZB9636T15**

Variants Including factory test certificate and stainless-steel wire fabric filter

	Order no.
High-precision digital temperature / humidity sensor Handle with 2-meter sensor cable and plug connector, including ALMEMO® connecting cable, length 0.3 meters, with coupling and ALMEMO® D6 plug Integrated digital atmospheric pressure sensor	
Operative range up to +150 °C Sensor length 250 mm	**FHAD36RHK25**
Operative range up to +170 °C Sensor length 400 mm	**FHAD36RHK40**

Other designs are available on request

FHAD 36-RHPx :
Humidity probe with pointed tip, Diameter 10 mm
for taking meas. in loose bulk materials, -40 to +85 °C

FHAD 36-RHSx :
Humidity probe with flat blade 18 x 4 mm
for taking meas. in paper or textile stacks, -40 to +85 °C