

Moisture Sensor FHA 696 MF



- Moisture sensor for determination of the moisture content in mineral construction materials, wood and cardboard.
- Indirect measurement of the moisture through the determination of the dielectric constant.
- Capacity measurement through a high frequency electromagnetic field, which penetrates the material in a non-destructive way.

Technical Data

Measuring method:	capacitive	Measuring comb:	stainless spring steel 0.5mm, 70 x 35mm
Resolution:	0.1%	Weight:	260g
Measuring range (moisture):	0 to 50% moisture, referenced to mass	Nominal temperature:	15 to 25°C
Measuring range (material):		Operative range:	0 to +60°C
mineral construction materials	0 to 20%, moisture	Storage temperature:	-20 to +80°C
woods	0 to 50%, moisture	Signal output:	0 to 2V
paper and cardboard	0 to 20% moisture	Power supply:	+8 to +12V
Housing:	plastic handle with integrated electronics 40mm Ø, 130mm long	Current consumption	approx. 7 mA
Terminal block:	aluminium/plastic 20 x 25 x 70mm		

Accessories

	Order no.
Test block for min. construct. materials	ZB9696PE05
Test block for wood, paper, cardboard	ZB9696PE30

Type

Type	Order no.
Moisture sensor	FHA696MF

Wood moisture probe FHA 636 MF Hand-held probe for mobile test measurements



- Moisture sensor for determination of the moisture content in wood.
- Indirect moisture measurement according to the principle of conductivity.
- Determination of the moisture content in the material through the dependence of the electrical resistance on the moisture.

Technical Data

Measuring method:	principle of conductivity	Reproducibility:	± 1%
Measuring range:	7 to 30 % moisture, referenced to mass	Nominal temperature:	23°C ±2°C
Housing:	plastic handle 40mm Ø, 130mm long	Operating temperature:	0 to +60°C
Measuring tips:	stainless steel, uninsulated 3mm Ø, 50mm long	Storage temperature:	-20 to +80°C
Weight:	260g	Signal output:	0 to 2V
		Power supply:	7.5 to +12V
		Current consumption	max. 10 mA

Accessories

	Order no.
PTFE-insulated measuring tip - helps avoid measuring errors in the event of surface moisture, 1 piece (2 pieces are needed per probe)	ZB9636MFST

Type

Type	Order no.
Wood moisture probe	FHA636MF

Moisture content sensor - for wood, for stationary measuring operations FHA696MFS1 Capacitive sensor for applying onto the wood's surface



- Moisture content sensor for comparative measurement of moisture in wood materials
- The capacitive sensor with the measuring electronics is completely integrated in the damp-proof sensor housing. Plug-in ALMEMO® connecting cable
- This device is designed for stationary installation and long-term monitoring e.g. of wooden parts of buildings, roof structures (with laminated beams).
- It is also suitable for data logger operation in energy-saving sleep mode (intermittent mode).
- The sensor housing is quick and easy to install on the wooden surface in question.
- The material's moisture content is measured indirectly by determining its dielectric constant, which is moisture-dependent (but not temperature-dependent).
- Its capacity is measured via a high-frequency electrical field which penetrates the wood without destroying it.
- The ALMEMO® device acquires the material's moisture content based on the linearization curve stored in the ALMEMO® plug.
- This measuring operation can be performed using any current ALMEMO® device (version 6 and above).

10/2021 • We reserve the right to make technical changes.

Technical Data

Measuring method	capacitive	Housing	Plastic 51 x 53 x 36 mm (LxWxH)
Measuring range	0 to 50 % moisture percentage in wood with respect to total mass (at 23 °C)	Signal connection	Built-in plug
Resolution	0.1 % moisture content	Protection	Housing and plug connection IP64
Reproducibility	±1 % moisture content	ALMEMO® connecting cable	Coupling, PVC cable, 5 meters
Nominal temperature	23 °C ±2 K	ALMEMO® plug	Linearization for wood, stored in the ALMEMO® plug (for ALMEMO® devices version 6 and above)
Suitable conditions	0 to +80 °C Air humidity 0 to 90 % RH (no dew formation, no ice)	Supply voltage	via ALMEMO® plug (5 V)
Storage temperature	-20 to +80 °C	Current consumption	approx. 7 mA

Variants

Moisture content sensor for wood, sensor integrated in the sensor housing, with built-in plug, connecting cable 5 meters, ALMEMO® plug for current ALMEMO® devices, version 6 and above

Order no.
FHA696MFS1

Moisture content sensor - for wood, for stationary measuring operations FHA 636-MFS1 Conductivity measurement with measuring tips that can be screwed into the wood Sensor with integrated temperature sensor for automatic temperature compensation



- Moisture content sensor for comparative measurement of moisture in wood materials
- Two hanger bolts are screwed into the wood surface and connected via measuring lines to the measuring electronics in the damp-proof sensor housing.
- The sensor housing with the integrated temperature sensor is also fixed in position on the wood surface.
- Plug-in ALMEMO® connecting cable
- The material's moisture content is measured indirectly by determining its electrical conductivity, which is moisture-dependent.
- It is also temperature-dependent. However, the displayed moisture value is automatically temperature-compensated by means of an integrated temperature sensor.
- The ALMEMO® device acquires the material's moisture content based on the linearization curve stored in the ALMEMO® plug.
- This measuring operation can be performed using any current ALMEMO® device (version 6 and above).

! This device is designed for stationary installation and long-term monitoring e.g. of wooden parts of buildings, roof structures (with laminated beams). Data logger operation in sleep mode (intermittent mode) is required in order to protect the wood from salinization or drying out!

Technical Data

Measuring method	Electrical conductivity	Measuring lines	2 lines, PTFE-insulated, length = 0.5 meters with circular cable lugs 4 mm
Measuring range	5 to 50 % moisture percentage in wood with respect to total mass (at 23 °C)	Measuring tips	2 stainless-steel M4 hanger bolts Total length = 60 mm including 4 stainless-steel nuts, 4 stainless-steel lock washers
Resolution	0.2 % moisture content	Clearance	2.5 cm at right angles to the grain
Reproducibility	±1 % moisture content	Signal connection	Built-in plug
Nominal temperature	23 °C ±2 K	Protection	Housing, including connectors IP63
Temperature sensor	NTC, integrated in sensor housing	ALMEMO® connecting cable	Coupling, PVC cable, 5 meters
Temperature compensation	in range 0 to +80 °C	ALMEMO® plug	Linearization for wood, stored in the ALMEMO® plug (for ALMEMO® devices version 6 and above)
Suitable conditions	0 to +80 °C Air humidity 0 to 90 % RH (no dew formation, no ice)	Supply voltage	via ALMEMO® plug (5 V)
Storage temperature	-20 to +80 °C	Current consumption	approx. 5 mA
Housing	Plastic 51 x 53 x 36 mm (LxWxH)		
Measuring connection	2 built-in sockets, 4 mm, with transverse hole		

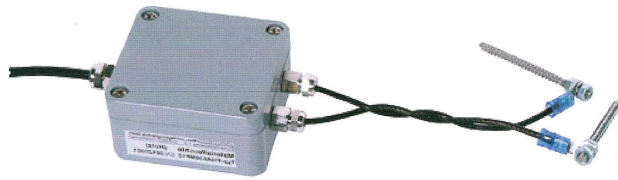
Variants

Moisture content sensor for wood, with measuring tips, measuring line, sensor housing, connecting cable, 5 meters ALMEMO® plug, for current ALMEMO® devices, version 6 and above

Order no.

FHA636MFS1

Moisture content sensor - for wood, for stationary measuring operations FHA 636-MF10 Conductivity measurement with measuring tips that can be screwed into the wood. Interval operation for long-term measurements.



- Wood moisture probe for long-term measuring
- Switched measuring current (intermittent mode) prevents salinization or dehydration of the material.
- For long-term monitoring of wooden parts of buildings (e.g. roof structures with laminated beams)

! Operation with the device in SLEEP mode is not possible.

10/2021 • We reserve the right to make technical changes.

Technical Data

Measuring method	Principle of conductivity Intermittent mode for long-term measuring Every 120 minutes the measuring current is activated very briefly and a new measured value is acquired; during the pauses the measuring current remains OFF.	Measuring tips	2 stainless-steel hanger bolts M4 Total length = 60 mm including 4 stainless-steel nuts 2 stainless-steel locking washers
Measuring range	5...50 % moisture content wood, mass related (at 23° C)	Clearance	2.5 cm at right angles to the grain
Housing	Metal case 65 x 60 x 35 mm (LxWxH) with cable bushings	Operating temperature	0 to +60 °C
Measuring cable	Permanently fitted, 2 sensor lines, PTFE insulated Length = 0.5 meters (= maximum possible length) with cable lugs in circular form, diameter 4 mm	Voltage supply	via ALMEMO® connector
		Connecting cable	PVC Length = 5 meters with ALMEMO® connector

Variants

Moisture content sensor for wood for long-term measurements (interval operation), with measuring tips, measuring line, connecting cable 5 m with ALMEMO® connector

Order no.

FHA636MF10

Sensor for measuring the moisture in materials FHA 696 GF1 For determining the moisture content in granulated materials such as wood chips, wood pellets, and sawdust



- The sensor operates on the principle of an open plate capacitor. The moisture contained in a material can be measured in terms of that material's dielectric constants.
- Moisture content can be determined in a matter of seconds - in wood chips or wood pellets, and sawdust, in grain and cereals, and other granulated materials.
- The characteristics of the materials to be measured can be specified on a highly customized basis; a wide variety of granulates, e.g. various cereal types, can thus be measured

Technical Data

Measuring principle	capacitive
Measuring range	0 to 99.9 % water content as a weight percentage H ₂ O
Resolution	0.1%
Measuring radius / penetration depth	approx. 10 cm around the sensor
Temp. range of material	+5 to +40 °C
Operating temp. range	+5 to +40 °C
Storage temp. range	-20 to +70 °C
Signal output	ALMEMO® (voltage)
Power supply	5 V from ALMEMO® measuring instrument
Current consumption	approx. 5 mA

Dimensions	
Sensor head	Ø = 22 mm, length = 200 mm Rounded tip
Extensions	3 pieces, screw-on Ø = 18 mm, length = 300 mm
End piece	Plastic Ø = 22 mm, length = 30 mm
Cable terminal	Mountable male connector on sensor head
Cable	PVC, length = 2 meters with ALMEMO® connector The cable is led through the extension tubes and end piece.

Option

Determining characteristics for special customer-specific materials

1. We need a sample of approx. 10 liters of your granulate (e.g. wood, cereal, plastic). This sample should be sealed in an air-tight package, e.g. shrink-wrapped in plastic film.
2. We use various dried samples to determine the characteristics of your particular material.
3. We then program these characteristics in the ALMEMO® connector for the moisture content probe..

Pro rata processing costs per material sample, net (service)

Order no. OA9696GFK

Advisory note:

If the material cannot absorb water (not hygroscopic), it will not be possible to measure its moisture content.

In this case the processing fee we charge will be reduced.



Variants

Sensor for measuring moisture in granulated wood chips and pellets comprising :

Sensor head, 3 screw-on extensions, end piece, connecting cable 2 meters, with ALMEMO® connector programmed for wood chips (also programmable for wood pellets; if required, please indicate) including carry case

Test block for FHA696GF for wood chips and wood pellets

Order no.

FHA696GF1

ZB9696PE22

Water Detection Probe FHA 936 WD



- Water detection probe for instant detection of uncombined water.
- Particularly suitable for construction applications, especially in locations that are difficult to check visually, e.g. at sealing joints, under cement floors etc.
- Indirect moisture measurement according to the principle of conductivity.
- Probe with two collets for easy electrode replacements.
- Electrodes in three different designs for matching any required application.

Technical Data

Measuring method:	detection of water	Weight:	260g
Meas. values:	<10% no water >10% water	Nominal temperature:	23°C ±2°C
Housing:	plastic handle 40mm Ø, 130mm long	Operating temperature:	0 to +60°C
Electrodes:	stainless steel	Storage temperature:	-20 to +80°C
Electrode types:	uninsulated with rounded tip: 200mm long, 3mm Ø uninsulated with sharp-edged tip: 50mm long, 3mm Ø spring steel strap: 200mm long, 6mm wide, 0.5mm high	Signal output:	ALMEMO® (approx. 0 to 2V)
		Power supply:	7.5 to 15V
		Current consumption	max. 10 mA

Type

Water detection probe

Order no.

FHA936WD

Tensiometer FDA 602 TM3

- Measurement of soil moisture through the identification of suction pressure. The suction pressure is the force with which water is being held in the soil or is available for absorption. This is the force that must be produced by the plant roots in order for water to be absorbed.
- The porous, clay tip of the tensiometer transfers water from within to the drier outer surroundings by means of capillarity, thereby, creating a sub-pressure within the sealed tensiometer tube. This sub-pressure is a measure of the moisture level and can be determined as a value or used directly to activate an electrical switch. The customary unit of measurement is hPa.
- However, a tensiometer also functions in dry air as long as evaporation can take place over the porous, clay chamber. Therefore, moisture levels can be measured even in coarse-grained or very loose substrate.
- Suction pressure measurements are largely independent of the salt concentration of the substrate or soil.

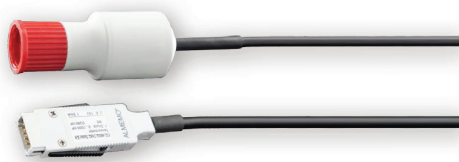
Typical Suction Pressure at Peat Substrates

30 - 40 hPa	very moist
50 - 120 hPa	moist
150 - 200 hPa	dried
>200 hPa	dry

Typical Suction Pressure at Open fields (intermediate grade soil)

< 50 hPa	saturated
100 - 150 hPa	wet to moist
>200 hPa	start drying
200 - 500 hPa	Irrigation

Moisture tension meter, electronics



Technical Data

Measurement:	Measurement of soil moisture through the identification of suction pressure.
Measure range:	0 to -1000 hPa relative (negative pressure)
Output	0,3 to 3,0 V
Power supply	5 V via ALMEMO® connector
Cable	Sensor with cable, length = 5m, with ALMEMO® connector

Type

Tensiometer electronics
for screwing onto the tensiometer
with cable and ALMEMO® connector

Order no.

FDA602TM3

Types

Order no.

Insertion Tensiometer L2

ZB9602TML2



Ceramic cell	Cylindrical, with tip, Ø 20 x 65 mm
Overall length	approx. 340 mm
Insertion depth	typical 250 mm

Insertion Tensiometer LKV2

ZB9602TMKV2



Ceramic cell	Cylindrical, with tip, Ø 15 x 40 mm
Overall length	approx. 160 mm
Insertion depth	typical 70 mm

Surface Tensiometer FO

ZB9602TMFO



Sensor completely porous for measuring in thin layers of substrate.

Dimensions:	65 mm, Ø 70 mm
Sink deep:	approx. 30 - 60 mm

Surface Tensiometer FV

ZB9602TMFV



Standard model for use on capillary matting, for moist to moderately moist cultivation or for general measurement on moist surfaces.

Dimensions:	65 mm, Ø 70 mm
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