1. Please read before commissioning

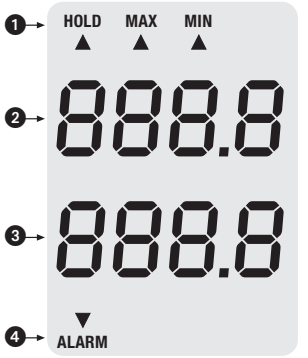
- *Please read the user guide carefully before using the apparatus, and follow all instructions.*
- *Never carry out measurements on live parts.*

Correct utilisation and exclusion of liability

- *The measuring apparatus must only be operated within the bounds of the specified technical data.*
- *The measuring apparatus must only be used under correct operating conditions and for the purpose for which it was constructed.*
- *Operating safety is no longer guaranteed if the apparatus is converted or modified.*
- *The recording of valid measurement results, deductions and measures derived from these are exclusively the responsibility of the user! We neither guarantee nor accept liability for the correctness of the presented results. Under no circumstances do we accept liability for damages caused by utilisation of the presented measurement results.*

2. Display

1. *Upper menu*
2. *Measured value display digit*
3. *Alarm threshold setting display*
4. *Lower menu*



3. Operation

In contrast to conventional hand-held measuring devices, this apparatus has a “THUMB WHEEL” on the left-hand side of the housing. This wheel allows a 15° upward or downward rotary movement, and can also be pressed in the central position.

The upper menu is selected with the upward rotary movement. The lower menu for setting the alarm threshold value is selected by means of a downward rotary movement.

Press the thumb wheel in the central position to switch the apparatus on and off, and also to confirm input values.

The three positions of the THUMB WHEEL:

Central position (symbol in remainder of text: ➔): Switch on: press briefly; switch off: press for approximately 4 seconds (no menu activated)

Upward rotary movement (symbol in remainder of text: ↑): Activate the upper menu with HOLD MAX MIN. Select via ↑, confirm with ➔, cancel with ↓ or do not press for 20 seconds.

Downward rotary movement (symbol in remainder of text: ↓): Activate the lower menu to enter alarm threshold value. Select via ↓, confirm with ➔, cancel with ↑ or do not press for 20 seconds.

Directions for switching off the apparatus:

To switch off, press the thumb wheel in the middle position ➔ for approximately 4 seconds. ***Important: The apparatus can only be switched off when it is in measurement / display mode.*** If a menu function is selected the apparatus cannot be switched off.

4. The upper menu

The functions ***HOLD, MAX and MIN*** can be selected in the upper menu.

The selection is made with ↑, the selected function blinks and is confirmed with ➔. The confirmed function is indicated statically in the display. You can exit the menu with ↓ or by not pressing anything for 20 seconds.

HOLD "freezes" the measured value.
MAX represents the maximum value in the activated time period.
MAX represents the minimum value in the activated time period.

5. The lower menu

The ***ALARM*** function can be selected in the lower menu.

The selection is made with ↓, the selected function blinks and is confirmed with ➔. The confirmed function is indicated statically in the display. You can exit the menu with ↑ or by not pressing anything for 20 seconds.

Set the desired alarm threshold value with ↑ and ↓ and confirm with ➔. The set alarm threshold value is then permanently stored until it is next changed.

6. Utilisation

General information on the measurement principle

The apparatus is a capacitative humidity indicator via which humidity and humidity distribution can be rapidly localised without causing damage.

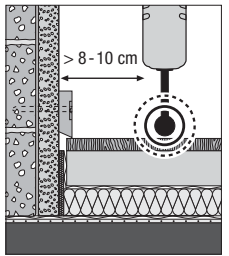
It is especially suitable for undertaking preliminary checks on the readiness for use of building materials, with additional CM measurements. The humidity indication allows the most meaningful measurement points to be localised for removal of material for the CM measurement.

Large surface areas can also be rapidly and effectively measured by utilising the alarm function. The user can concentrate on the measured object without having to constantly look at the measurement results on the display. The apparatus notifies the user via an acoustic signal as soon as the pre-set threshold value is exceeded.

Measurement range:	*0 - 200 digits*
Penetration depth:	*20 to 40 mm, depending on the bulk density of the material*
Calibration:	*Electronic. When switching on, hold the ball head in the air. The displayed value must move between 0 and 5 digits.*

Measurement procedure:

1. *Grip the apparatus as far back as possible, otherwise the capacitative field will lead to incorrect measurements*
2. *Place the measuring head perpendicular to the measured material.*
3. *Maintain a minimum distance of 8 to 10 cm from corner areas.*
4. *Place the measuring head on smooth surfaces. Rough surfaces produce faulty measurement values.*



Interfering influences and instructions to be followed

- *The measurement results should be used exclusively for orientating humidity measurements.*
- *The bulk density of the measured material is an important influence on the measured value. The higher the bulk density, the higher the measured value.*
- *Before measurement, the measurement point must be cleansed of impurities (e.g. residual paint, dust).*
- *If metal is contained in the measured material (e.g. nails, screws, cables, pipes, etc.) and is within the measurement field of the sensor, the measured value increases significantly.*

- *If the ball head is held in corners (e.g. window frames), the measured value is basically higher since there is more substance in the scatter field of the measuring head. A distance of greater than 8 to 10 cm from the corner must be maintained.*
- *The ball head must be kept perpendicular to the measured material during the measurement, pressed firmly against the surface and not slanted.*
- *Rough surfaces will always show a measured value that is too low.*
- *Depending on the bulk density of the measured material, the effective depth of the apparatus is 20 to 40 mm. Reading of deeper zones is not possible.*
- *In the case of material thicknesses of less than 2 cm, there is the danger that humidity values of adjacent material layers may influence the measured value.*
- *Comparison measurements are carried out on similar materials by measuring at an apparently dry place, wherein this value forms the dry reference value.*
  If the measured values at the subsequent measurement positions are then substantially higher, it can be assumed that the area close to the surface is damp.
  The main field of application of the capacitative measurement procedure is the comparative measurement of the same or similar materials. Hence this procedure is well suited to the assessment of water damage, for location of leaks and for localising areas of humidity for indication of measurement points for CM measurements.

Assessing the measured values in the case of wood and building humidity

With consideration of the aforementioned instructions for use and interference influences, the recordable measured values (digits) can be divided into rough humidity ranges.

1. Assessment of measured values in the case of wood

The assessment applies to the “dry” range that exists at room temperature in dry and occupied premises, and the “saturation range” that is defined in that not only water bonded in the cell wall is measured, but also free water in the cell cavities.

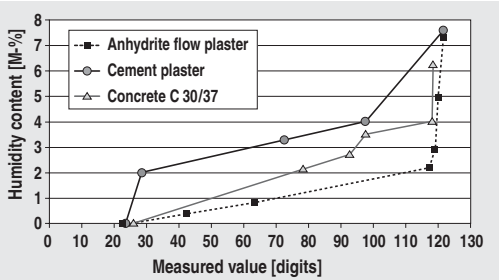
Display [digit]	Wood humidity range
< 50 digits	Dry
> 80 digits	Saturation threshold

Since, depending on the marginal conditions, the measured value display of the capacitative measurement procedure is subject to strong variations, a resistance measurement should always be chosen.

2. Assessment of measured values in the case of building materials

In the case of building materials, the measurement results of the capacitative procedure can be used exclusively for orientating humidity measurement. It is only possible to draw conclusions of absolute humidity in mass percent (M-%) in the case of measurements that have been taken under the same marginal conditions and building material compositions, as shown in the test structure in the adjacent diagram.

This diagram has been drawn up in collaboration with the ***Institute for Building Research of the RWTH Aachen (IBAC)***, and represents the correlation between the measured value and the mass-dependent humidity content of the examined building material.



Care must be taken that the spread of the recorded measurement results in the capacitative procedure is disproportionately larger than is the case with the resistance procedure. The capacitative measurement procedure is not suitable for quantitative humidity measurement but rather exclusively for qualitative humidity measurement in areas close to the surface.

The following indicators can be used for orientation:

Display [digit]	Building material humidity range
< 40 digits	Dry
40 - 80 digits	Damp
80 digits	Wet

The displayed measurement values are not a qualified humidity measurement in accordance with VOB or applicable professional regulations. The measured values are only to be interpreted as indicators (dry, damp, wet).