

**Feuchtigkeitsmessgeräte
Moisture Meter
Humidimètre**



DS7 Operating Manual



The DS7 can be used for measuring moisture in veneer piles

Description:

The electronic moisture meter DS7 is used to determine in a matter of seconds the moisture in materials. The average moisture, down to a depth of approx. 1 cm is measured.

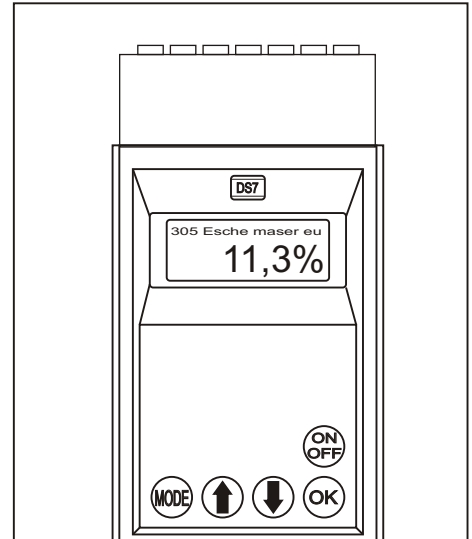
materials: veneers

measuring range: 0 - 20,0 % Wassergehalt

material temperature range: 5 - 40°C

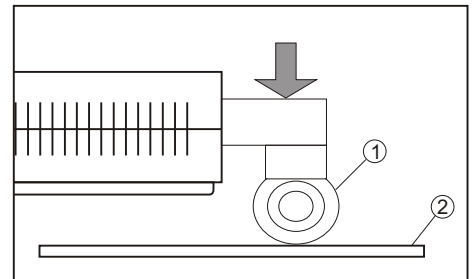
working temperature range: 5 - 40°C

storage temperature range: -20 - 70°C



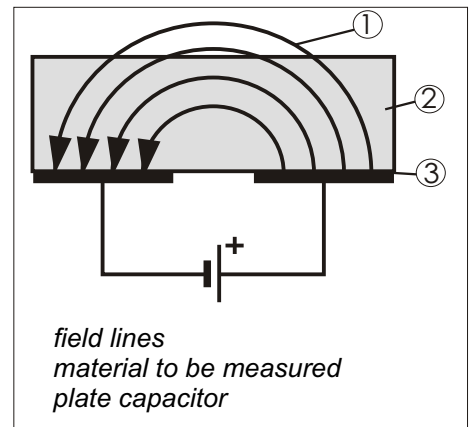
Method of Operation:

The measuring electrodes ① of the meter are pushed during the measuring process on the material to be measured, so that a high frequency electrical field is able to pass through the material. A micro processor receives the measured signals and determines from the measured value the percentage water content taking into account the material setting group.



Measuring Principle:

The meter works in accordance with the principle of an opened plate capacitor. The capacity of the capacitor depends on the material-(dielectric)-constant of the material in between the plates. Compared with air ($\epsilon_r = 1$), for example water has a very high dielectric-constant ($\epsilon_r = 80$). The water content of a wet material can therefore be determined by determining the dielectric constant of this material.



Safety Tips:

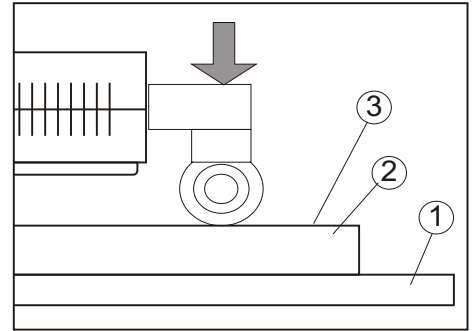
- follow the operating instructions
- only use the meter as directed (see page 1)
- keep the meter away from live and current electrical parts
- avoid impacts
- protect the meter from heat
- keep the meter dry and try to prevent dirt from entering the case
- protect the meter from electrostatic discharge.
- the meter must be repaired or serviced only by qualified specialists

Damages caused by failure to follow the above Safety Tips are not covered by the warranty !



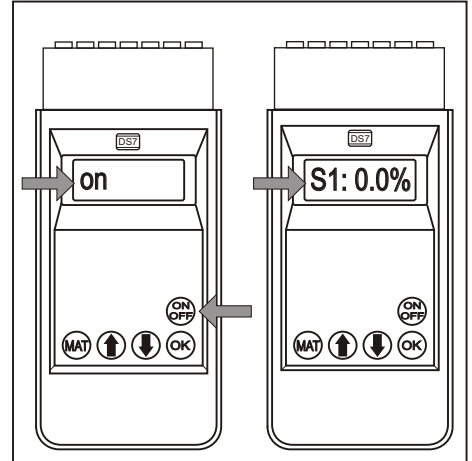
Measurement Preparation:

- **material thicknesses < 3 cm** ② :
use suitable bases ①
(for example: polystyrene or foamed plastic plates - no metal!) or even better: hold the material to be measured into the air
- **thin materials (< 1 cm)** ② :
measure on a pile (thickness at least 2 cm, avoid air gaps between the individual layers)
- **ebene, glatte Fläche** ③ für die Messung suchen
(Mindestgröße 4 x 10 cm)
- **Mindestabstand der Messelektroden vom Rand der Fläche** ③: >1 cm



Turn on the Meter:

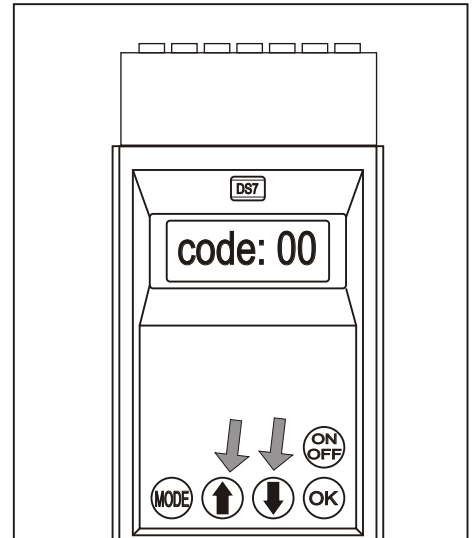
- Push ON/OFF-button, the display shows the adjusted material group. Hold the instrument into the air for automatic zero point measurement and correction, if the zero point is not in the valid range, the display shows "NP-ERROR".
- release the ON/OFF-button, the display shows e.g. "A1: 0,00%", the instrument is now ready for use (the first two characters always shows the adjusted material group and number).



Parameter Settings:

With code numbers parameter settings can be changed. Press both arrow buttons, the display shows "code:00", adjust the required code with the arrow buttons and confirm it with OK. The following parameters are changeable:

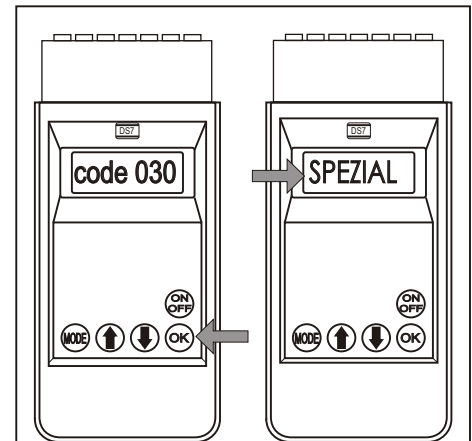
- code 13: number of measurements until automatic switching off (loops)
range 0 - 999, loops = 0: no automatic switching off
- code 14: delete storage, through changing the material setting the storage will be deleted too.
- code 21: attenuation (brake), range 0 - 99
- code 22: automatic maximum value measuring (automax)
no automatic maximum measurement (float)
- code 95: toggle between input and moisture measurement
- code 97: calibration



input measurement - moisture measurement

Code 95 can be used for toggling between input and moisture measurement. the instrument starts always in the setting as it was switched off.

The input measurement in combination with oven method measurements can be done for getting new calibration curves. For storing new calibrations into the instrument, the meter needs to be send to the manufacturer.

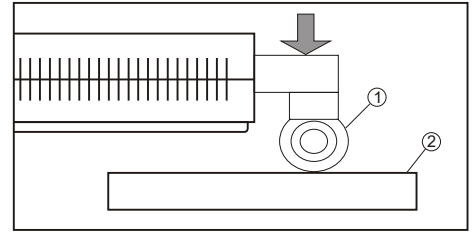


veneer selection

The arrow buttons can be used for selecting the wished veneer type. The changed number needs to be confirmed with the "ok" button. The name of the selected veneer will be displayed during the moisture measurement.

Material Moisture Measuring:

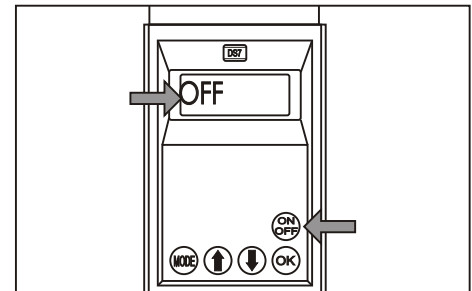
- press the meter on the material, if "automax" is activated, the maximum value is taken automatically and if the meter is pushed again with the sensors to a material, a new measurement starts.
- read off the moisture.



Turn off the Meter:

- push "ON/OFF" button until the display shows "OFF"
- release "ON/OFF" button, the meter is turned off

After an adjustable number of measurements (loops) the instrument switches off automatically. If loops is adjusted to 0, the automatic turning off is deactivated. In this case the instrument has to be turned off by pushing the ON/OFF-button



Checking Measuring Quality:

We recommend carrying out regular periodical controlling check measurements, as different local circumstances might need different material adjustments. (recommendation: controlling measurements by oven drying method ISO 3130-1975 for wood

Oven Drying Method:

The oven drying method is the most accurate way to measure the material moisture in wood (ISO 3130-1975).

We recommend this for testing and calibrating of all electronic moisture meters.

Short description:

1. For measuring the weights we recommend a balance with an measuring range of 200g and an accuracy of 0,01g
2. For drying you need an oven with adjustable temperatures of 40, 100 and 104°C
3. Take a probe from wood with a sharp saw, avoid edge parts. For building materials take a probe with a sharp chisel to a depth of approx 3cm. the probe should be at least 20g
4. It is very important to take the weight of the first probe immediately, as air humidity may change the moisture content. Name of the first weight: wet weight (WW)
5. The probe must be dried in the oven until the weight is constant.
The maximum drying temperatures:
for wood: 104 °C (ISO 3130-1975)
7. The name of the dry weight is DW.
8. The moisture content is calculated with the formula:

wood moistue (ISO 3130-1975):

$$\text{MOISTURE} = \frac{(\text{WW} - \text{DW})}{\text{DW}} * 100 \%$$

Calibration:

The moisture meter can be tested and calibrated with the test module PE30-7.

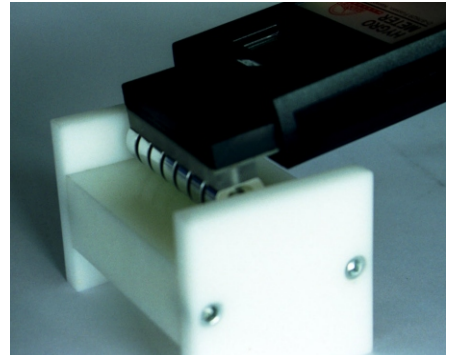
For calibration use code no. 97,
in the display the text "NPW UF" is shown shortly

1. test of zero point: the display shows e.g. "N16 15", then the zero point is 16 and the actual measuring value is 15. For testing hold the instrument free into the air, wait till the two values are equal. The zero point must be < 50! The optimum value is between 20 and 30. Press "OK" for the next calibration step.
2. first measurement on PE30-7:
the display shows shortly "CAL1HIGH", then e.g. "176 0189", the first value is the calibration factor, the second is the measuring value. Change with the arrow buttons till the measuring value is 210 ± 5 and press "OK"
3. second measurement on PE30-7:
the display shows shortly "CAL1LOW", the rated value is 210 ± 10

The calibration factors can be changed in the range between 150 and 255

By pressing the "OK"-button in the 5th step, the changed calibration factors will be stored. The instrument is then ready calibrated.

If the calibration is not able, please send the instrument for repair.



calibration:	
NP= 028<	UM= 031
WT= 000	GR= 000
TP= 000	KL= 000

cal. module 1:	
NP= 028	UM= 031
FG= 223<	GR= 199
FK= 000	KL= 000

cal. module 1:	
NP= 028	UM= 031
FG= 223	GR= 199
FK= 248<	KL= 198

Battery:

we absolutely recommend the lithium battery type U9VL. The using time is 10 times more than the alkaline one. The lithium battery is allowed to stay up to 10 years in the instrument, without the fear for running out.

Also the self discharging is neglectable.

If the battery is running low, the display shows "B" instead of the % in final position.

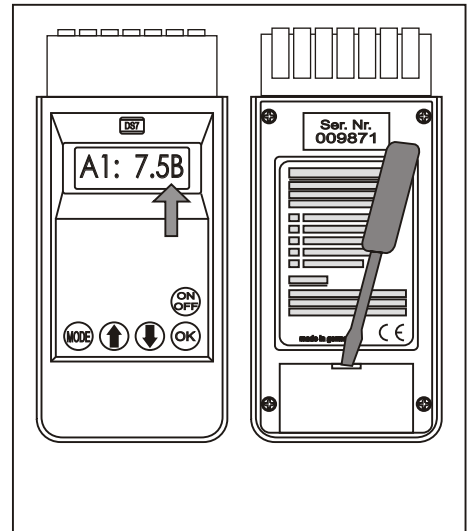
Change battery:

- open the battery box for example with a small screw driver
- take out the battery
- insert new battery **type 9V-Block alkaline**, observing the correct polarity

Attention!

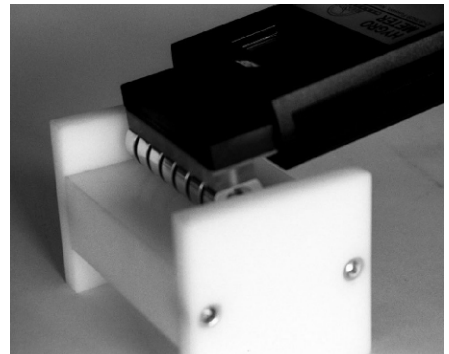
In accordance with battery legislation, all used batteries must be disposed off in special battery collecting bins.

The disposal of old or used batteries as part of normal waste is not allowed!



Optional Extras:

- test module PE30-7 for checking and calibrating the moisture meter
- plastic case for better protection
- different types of moisture meters
- special calibration of the moisture meter
- interface cable and PC software DS7-CON
- alkaline battery 9V block



Our operating instructions are intended for guidance and to provide information on our products and their uses. They should not be taken to imply special characteristics or suitability for any specific purpose, other than those stated.

We constantly work to improve our products and reserve the right to alter our products and operating instructions without advanced notification.

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