TOBOLIN

TOBOMETER HY

MANUAL

TOBOMETER HY

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ADVICE ABOUT THIS INSTRUCTION MANUAL

The TOBOMETER HY dampness testing device is an electronic device for analysing relative humidity in building material. This device works with the dielectric measurement principle and therefore allows the establishment of dampness differences in construction material of any kind, as well as the detection of leakage and the reasons for dampness in walls. Due to the measurement principle, only relative humidity values (0 to 100 digits) can be shown. Thanks to our reference table for common building material of different degrees of dampness and comparing measurements, you can draw conclusions about the dampness.

TOBOMETER HY

SECURITY INDICATIONS / PROPER USE

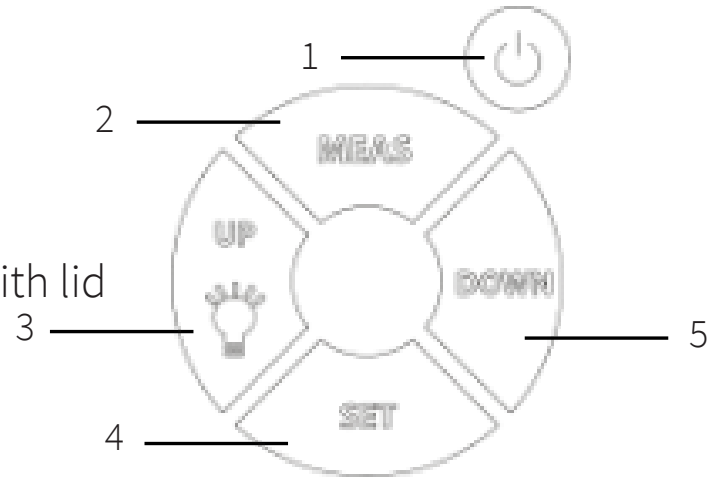
Please read the important product information carefully and keep the safety warnings and instructions for further reference.
Heed all warnings and follow all instructions.
Any usage other than described is not permitted and can damage the product and lead to associate risks such as short-circuit, fire, electric
shock, etc.
Only use the device for measuring the moisture content of building materials in compliance with the parameters stated in the technical data section.
Protect the device against vibrations and ensure to contact the sensor ball only to analysed building material surfaces.
WARNING: The metal ball causes a risk of injury, when contacted to live electrical parts. Maintain a sufficient distance to any cable and wires. Do not use the device in direct vicinity to older devices or devices equally sensitive to high frequency (e.g. medical device in use).
TOBOMETER HY is not a toy and should be kept out of reach of children! Have all servicing carried out by the manufacturer. Servicing is required when the device has been damaged in any way, liquid has been spilled or the device has been exposed to wetness or rain, does not operate normally, or has been dropped.

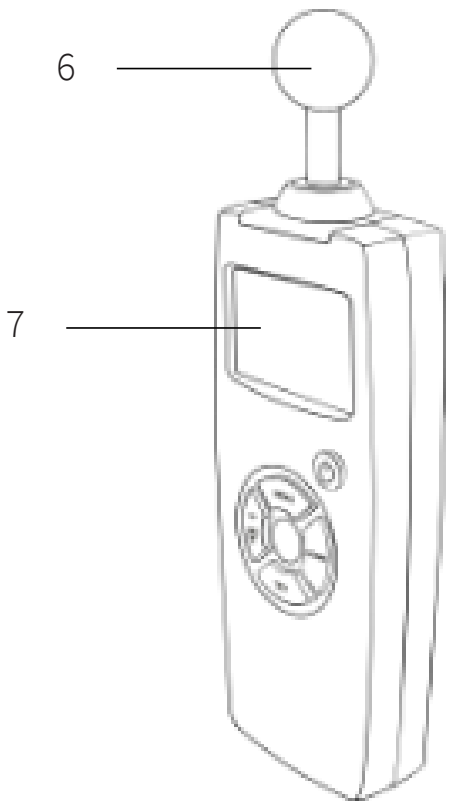
TOBOMETER HY

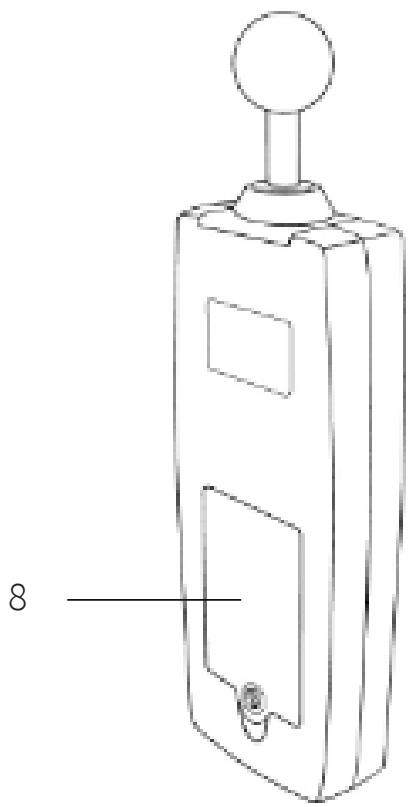
OPERATION

EXPLANATION OF THE DEVICE AND ITS OPERATION ELEMENTS

1. ON/OFF button
2. MEAS button
3. UP/light button
4. SET button
5. DOWN button
6. Measurement sensor
7. Display
8. Battery compartment with lid







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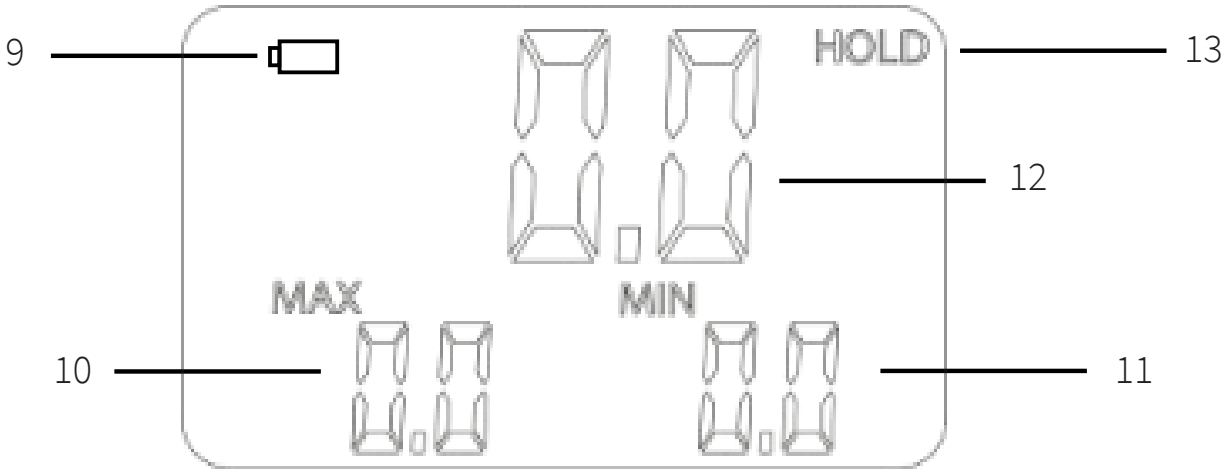
DISPLAY

9. Display battery warning
10. Maximum measured value since the last HOLD activation
11. Minimum measured value since the last HOLD activation
12. Display measurement
13. Display HOLD mode/measurement value fixation



USING THE DEVICE

OPERATION AND BRIEF INSTRUCTIONS

1. Open the battery lid, unpack the included batteries and put the batteries into the device according to the markings. Close the battery lid again.
2. Push the ON/OFF button to start the TOBOMETER HY.
3. Push the MEAS button to start the calibration. When the TOBOMETER HY stops bleeping and the display shows 0.0, you can analyse the dampness of building material.

TURNING ON/OFF / DISPLAY ILLUMINATION

Push the purple ON/OFF button (1) to turn the device on or off. On the display (7), you can then see 0.0 and HOLD as well as 0.0 for the maximum and minimum values respectively. If needed, you can turn on or off the background lighting by pushing the left, green UP/light button (3).

AUTOMATIC CALIBRATION

Because of the dielectric measurement principle, the surroundings of the measurement electronics have an influence on the measured result. Please avoid the use of the device directly after changing the position from cold to warm surroundings, as this can meanwhile lead to condensation of humidity in the measurement electronics and therefore to a falsification of the measured values. In this case, please wait some minutes until the device's temperature has adapted to the surroundings and then turn on the device or reset it by pushing the ON/OFF button. After every start of the device and before the measurement, there will be an automatic calibration. During the TOBOMETER HY's development, the influence of the surroundings on the device could be reduced significantly by the integration of a special shielding. For ideal measurements, it is nonetheless important that the measurement sensor points away from your body during the calibration and that it is not near other objects (please guarantee a distance of 8 to 10 cm to other objects). Even the position of your hand has an influence on the measured results. This is why you should hold the device only in one hand and do not change its position during subsequent measurements. When you change the position of your hand or in general the site, please realise a new calibration by turning the device shortly off and then on again.

MEASURING BUILDING MATERIAL

In order to start measurements with a calibration, please push the upper green MEAS button (2). The device will realise the calibration automatically and inform you about this procedure with an acoustic signal and the display of the letters CAL. After successful calibration, the display first shows the value 0.0, and then you can read the measured values directly and continuously.
In order to now examine the building material's dampness, hold the device still as you did for calibration and put the spherical measurement head vertically on the surface of the material to be tested. Read the measured value on the display (7) or push optionally the MEAS button (2) to fixate the value. By pushing the MEAS button (2) again, the max- and min- values (10 + 11) are reset automatically to the current value and you can go on with the measurement. Please always guarantee a good contact between the sensor sphere and the surface of the building material during the measurement. Bad contact or uneven surfaces result in values that are too low. Metallic surfaces or underground metals cause abnormally high values in otherwise dry surroundings. These phenomena are normally locally limited, so please vary the measures point in such cases to not establish the influence of the metal. Hold a distance of at least 8 to 10 cm to metallic objects or cables. In corner- or angular zones, a distance of 8 to 10 cm between the sphere and the bordering component is to be held.

CONFIGURATION OF THRESHOLD VALUES – DRY/RISK/WET

The TOBOMETER HY allows you to configure individual threshold values for the acoustic warning of high measured values. By pushing the set-button (4), you will see 30.0 on the display (7) and RISK is flashing. By pushing the set-button (4) again, you will see 60.0 on the display and WET is flashing.
Both limiting values for the acoustic warning of relatively or very high values can be configured permanently by pushing the UP (3)

or DOWN (5) buttons. When you push the SET button (4) again, 0.0 and HOLD will appear again on the display (7).

THIS IS HOW YOU ANALYSE THE DAMPNESS OF YOUR WALLS

Advice: No capacitive dampness measuring device establishes the water content directly in percent, but a physical figure depending on the dampness and the kind of building material. The measured values in our table for many common building materials offer you some orientation for the establishment of the dampness.
Capacitive measuring procedures establish the dielectricity constant of building materials. This value depends on the dampness of the respective material and therefore offers the basis for a comparative measurement of humidity, leakage detection or other causes of the wall's dampness. The dielectricity constant does however not only depend on the material's dampness, but also on the kind of building material. The material's bulk density for example influences the displayed value significantly. This is why it is essential to measure one spot that is most certainly dry and one spot that is as damp as possible. The values established by this can then be used as reference values for your analysis. To allow for better comparisons of your established values, we have collected values at different dampness degrees of frequently used materials for buildings. If you know your building material, you can establish the dampness using the measured values. To do so, just read the dampness values in the line that goes with your respective material and your digit-value.
As building materials are natural products, there may be deviations, even in case of normally identical product specifications.
Adhesions of mortar or plaster, as well as salinations have a significant influence on the measured values, so please try to compare surfaces/material of specifications as similar as possible. Locally strongly limited irregularities can be explained by the presence of plaster rails, expanded metal, cables, etc. Generally speaking, the measured results can only be used for qualitative dampness

measuring due to the walls' disturbance variables. Because of the big influence of the respective building material, no capacitive dampness indicator allows you an unambiguous conversion in water contents (%) – especially in case of already existing constructions. Our list of tables can give you a value for orientation in case of similar building material, but these values are only meant to be indicators. An internal comparison by using damp/dry values should be done.

REFERENCE TABLE

Saturation humidity: Water content after absorption of the maximum amount of water possible
The details in the following tables (weight-% or DFG) are non-binding reference points established in a laboratory at normal desiccation process and a regular humidity gradient between the surface and the material's inside. In practice, these values can deviate because of unnatural dampness distributions (e.g. by condensation on the surface or quick desiccation due to dehumidifiers) or different compositions of the building material.

$$\text{Water content (weight-\%)} = \frac{\text{mass (damp)- mass (dry)}}{\text{mass (dry)}} \times 100\%$$

$$\text{Dampness degree (DFG)} = \frac{\text{water content (weight-\%)}}{\text{saturation humidity (weight-\%)}} \times 100\%$$

Saturation humidity: Water content after absorption of the maximum amount of water possible.

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MATERIAL	VALUE	DRY									WET
		DISPLAY IN DIGITS									
		10	15	20	25	30	35	40	50	60	70
SOLID BRICK	WEIGHT -%		0,2	0,8	0,9	1,4	2,6	4,6	12,7		
	DFG		2	4	7	11	20	36	99		
HOLLOW BRICK	WEIGHT -%	0,1	0,3	0,9	1,7	2,9	4,3	5,8	9,2	12,6	15,4
	DFG	1	2	5	10	17	25	34	54	73	90
SAND-LIME BRICK	WEIGHT -%	0,4	0,6	1,1	1,9	2,8	4,1	5,6	9,4		
	DFG	3	5	8	14	21	31	42	71		
AERATED CONCRETE	WEIGHT -%	1,1	1,2	2,2	4,2	7,1	10,7	15	25,2	36,6	48,1
	DFG	1,7	1,8	3	6	11	16	23	38	55	73
HOLLOW CONCRETE	WEIGHT -%		0,4	1,1	2,2	3,4	4,6	5,8			
	DFG		5	13	26	40	55	69			

weight-%: Water content in weight-% DFG: moisture penetration degree in %

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MATERIAL	VALUE	DRY									WET
		DISPLAY IN DIGITS									
		10	15	20	25	30	35	40	50	60	70
CEMENT PLASTER	WEIGHT -%		0,5	1,0	1,6	2,2	3,0	3,8	5,4	7,2	
	DFG		4	9	14	19	26	32	47	62	
LIME-CEMENT PLASTER	WEIGHT -%		0,3	1,0	2,0	3,2	4,6	6,3	9,9	13,6	17,1
	DFG		2	5	10	16	23	31	49	68	85
GYPSUM PLASTER	WEIGHT -%	0,2	0,5	0,8	1,0	1,3	1,6	2,1	3,5	5,9	9,8
	DFG	0,5	1,2	1,9	2,4	3	4	5	8	14	23
CONCRETE / SCREED	WEIGHT -%				0,6	1,4	2,1	2,9	4,5		
	DFG				11	26	38	53	82		
WOOD (SPRUCE)	WEIGHT -%	3,2	12,4	20,4	27	32,2	36,1				
	DFG	9	34	56	74	88	98				

weight-%: Water content in weight-% DFG: moisture penetration degree in %

TOBOMETER HY

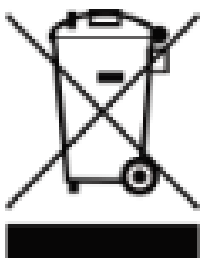
BATTERY/BATTERY CHANGE AND MAINTENANCE

This device includes four 1.5 V AAA-batteries. When the battery symbol on the upper left corner of the display appears or when the device cannot be turned on anymore, the batteries are exhausted and should be replaced. Please exchange the batteries in this case with four new ones.
To do so, please turn off the device and remove the battery compartment's fastening screw with a screwdriver. Take off the battery compartment's lid and replace the four AAA 1.5 V batteries. Then put on the lid again and fasten it with the fastening screw.

AUTOMATIC TURN OFF

The device turns itself off automatically after a maximum time of 10 minutes without pushing any button.

DISPOSAL



The icon with the crossed-out wheeled bin on electrical or electronic products indicates that you are obliged by law to dispose of these devices separately from the unsorted municipal waste collection system. Disposing in the residual waste bin or the yellow bin for recyclable materials is prohibited.Owners of waste electrical and electronic equipment are allowed to return them to those facilities for returning or collecting waste electrical and electronic equipment set up and provided by the public-sector waste disposal authorities, to ensure that the waste electrical and electronic equipment is disposed of correctly.If the product contains one-way batteries or rechargeable batteries that are not permanently installed, these must be removed before disposing of the product and be disposed of separately as batteries.

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The icon with the crossed-out wheeled bin on batteries and accumulators indicates that you are obliged by law to dispose of them properly at the end of their service life. The chemical symbols for the respective hazardous substances are Cd = Cadmium, Hg = Mercury, Pb = Lead. Disposal via domestic refuse is prohibited! You can return used batteries/accumulators free of charge to any collecting point of your local authority or at our shipping warehouse (MARAWE GmbH & Co. KG, Donaustaufer Straße 378 Geb. 64, D-93055 Regensburg, Germany).

TECHNICAL DATA

Sensor type: High frequency metal sphere sensor for the establishment of dielectric properties
Measurement range: 20 - 40 mm penetration depth, 0.0 - 100.0 digits
Working range: 0 ... 30 °C < 90 %rF, 30 ... 45 °C < 75 %rF
Power supply: 4x AAA batteries 1.5 V, Battery warning < 4.8 V,
Latest automatic switch-off after 10 minutes
Dimensions: 235 x 73 x 30 mm, 275g incl. batteries

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This product meets the legal, national and European requirements and in the version sold by us corresponds with the EG-directive on electromagnetic compatibility.
The indicated comparison values are supposed to be reference points and are not binding. This manual has been made by thoroughly using own application tests. We however do not assume any guarantee for correct measurements of the device. The user is responsible for the measured results with this device. We do not assume any responsibility for damages caused by the application of these results. We do not assume any liability for possible mistakes or missing indications.

The product or the content of this manual are subject to change without notice.

CE

TOBOMETER HY VSH.21.2_EN Rev A

Easy damp proofing with TOBOLIN

- Usable even at very high humidity
- Top price-performance ratio
- Only one row of holes needed
- Easy to use and customer support

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TOBOLIN IS A REGISTERED TRADEMARK OF

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