Laserliner 082.390A MultiWet Master Compact Plus Universal Material Moisture and Humidity Measuring Device User Manual

Contents

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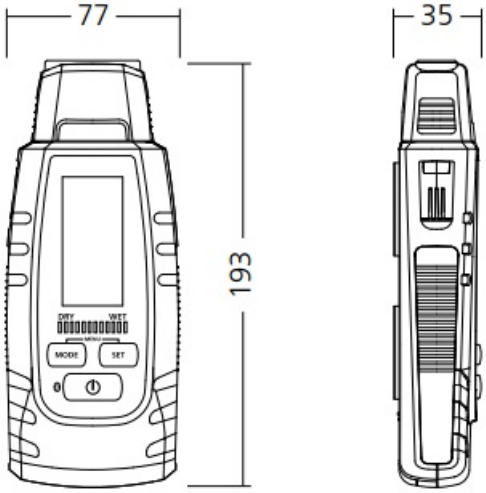
MultiWet-Master Compact Plus

Completely read through the operating instructions, the „Warranty and Additional Information“ booklet as well as the latest information under the internet link at the end of these instructions. Follow the instructions they contain. This document must be kept in a safe place and passed on together with the device.



Function / application

This material moisture measuring device operates in accordance with the re-sistance and capacitive measuring principle. Material moisture is measured by 2 conductive sensor pads on the underside of the device or by the integrated measuring probes and calculated in % with internal material-dependent characteristics. The displayed value shown in % refers to the dry mass. Example: 1 kg of material containing 500 g of water = 100% relative material moisture. The device is used to determine the moisture content in wood and building materials with the aid of the corresponding measuring method. An additional pop-out sensor on the side of the device determines the ambient temperature and relative humidity and calculates the resulting dew point temperature.

WARNING
The integrated building materials characteristics correspond to the specified building materials and their designation. Building materials of the same type but with different designation / composition / strength / density

can however affect the measurement result. Furthermore, building materials will vary from manufacturer to manufacturer due to the way they are produced. This is why, in the event of different product compositions or unfamiliar construction materials, a one-off comparative moisture measurement should be taken using methods that can be calibrated (e.g. kiln-drying method). If different measured values occur, they should either be viewed relatively or the index mode for moisture/drying behaviour should be used.

General safety instructions

- The device must only be used in accordance with its intended purpose and within the scope of the specifications.
- The measuring tools and accessories are not toys.
  Keep out of reach of children.
- Modifications or changes to the device are not permitted, this will otherwise invalidate the approval and safety specifications.
- Do not expose the device to mechanical stress, extreme temperatures, moisture or significant vibration.
- Do not use the measuring probe with an external voltage.
- The device must no longer be used if one or more of its functions fail or the battery charge is weak.

Dealing with electromagnetic radiation

- The measuring device complies with electromagnetic compatibility regulations and limits in accordance with the EMC Directive 2014/30/EU which is covered by the Radio Equipment Directive 2014/53/EU.
- Local operating restrictions – for example, in hospitals, aircraft, petrol stations or in the vicinity of people with pacemakers – may apply. Electronic devices can potentially cause hazards or interference or be subject to hazards or interference.
- The measuring accuracy may be affected when working close to high voltages or high electromagnetic alternating fields.

Dealing with RF radiation

- The measuring device is equipped with a wireless interface.
- The measuring device complies with electromagnetic compatibility and wireless radiation regulations and limits in accordance with the RED 2014/53/EU.
- Umarex GmbH & Co. KG hereby declares that the MultiWet-Master Compact Plus radio equipment complies with the essential requirements and other provisions of the European Radio Equipment Directive 2014/53/EU (RED).
  The EU Declaration of Conformity can be found in its entirety at the following address:
  http://laserliner.com/info?an=muwemacopl

Information on maintenance and care

Clean all components with a damp cloth and do not use cleaning agents, scouring agents and solvents. Remove the battery(ies) before storing for longer periods. Store the device in a clean and dry place.

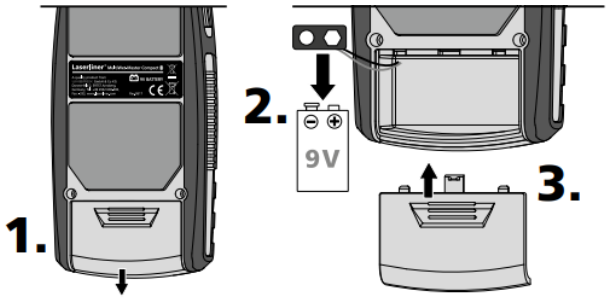
Calibration

The meter needs to be calibrated and tested on a regular basis to ensure it produces accurate measurement

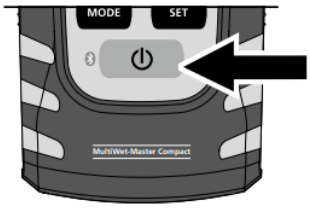
results. We recommend carrying out calibration once a year.

1 Insert battery

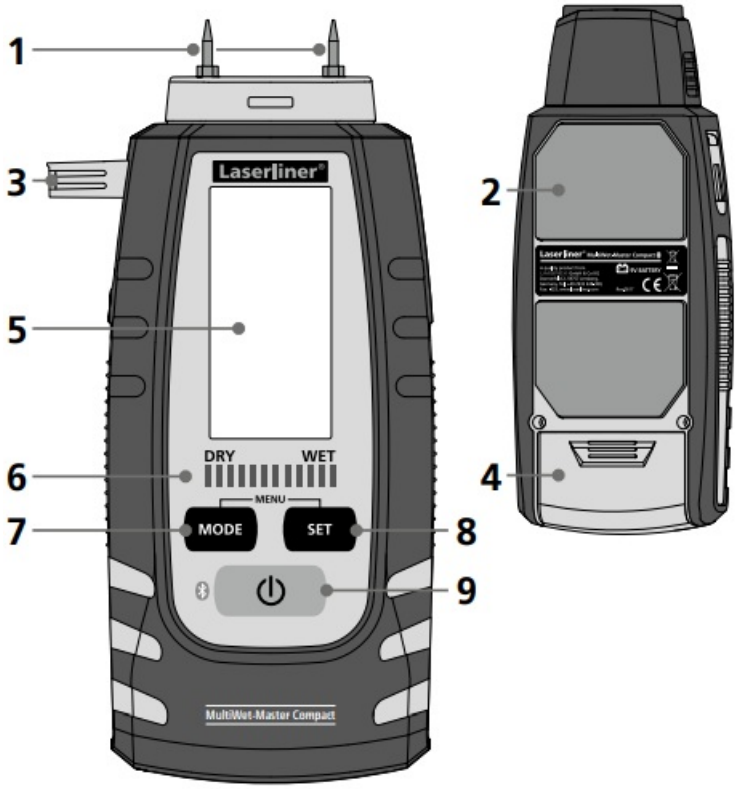
Open the battery compartment on the housing's rear side and insert a 9V battery (6LR61 9V). Correct polarity must be observed.



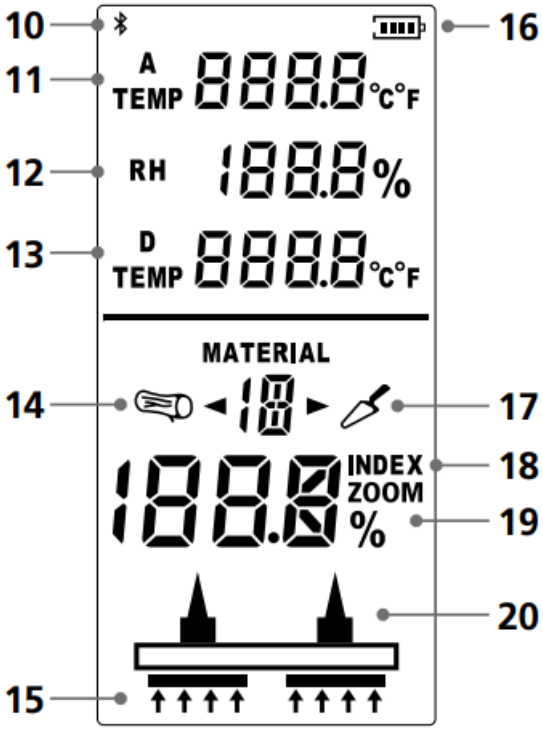
2 ON



3 OFF

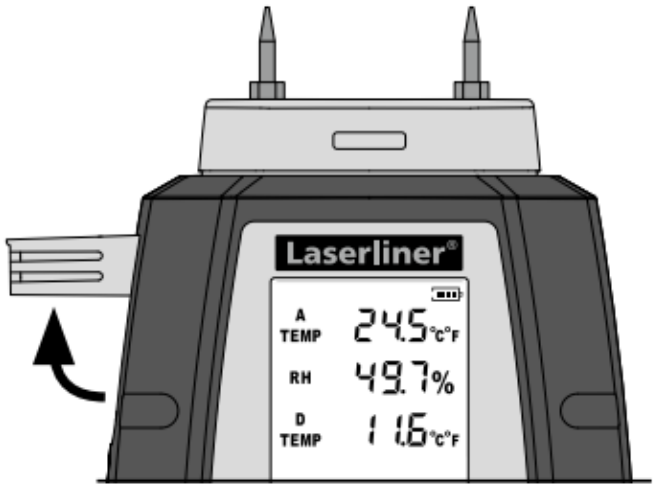


1. Measuring probes, resistance measuring principle
2. Sensor pads capacitive measuring principle
3. Pop-out sensor for measuring ambient temperature and humidity
4. Battery compartment
5. LC display
6. Wet/dry LED indicator
7. Measuring mode selection (Resistance measuring principle, Capacitive measuring principle)
8. Material selection
9. ON/OFF



10. Bluetooth active
11. Ambient temperature in °C/°F
12. Relative humidity in %
13. Dew point temperature in °C/°F
14. Material indicator for wood Resistance measuring principle: A, B, C Capacitive measuring principle: softwood (S), hardwood (H)
15. Capacitive measuring principle
16. Battery charge
17. Material indicator for building materials Resistance measuring principle: 1…8
18. Index mode / Index Zoom mode
19. Measured value in % of relative material moisture
20. Resistance measuring principle

Room climate – measured values



The measuring device features a fold-out sensor that measures the ambient temperature (A-Temp, 11) and relative humidity (RH, 12) while also calculating the dew point tempera-ture (D-Temp, 13). By folding out the sensor, the improved through-flow of air speeds up the measurement procedure.

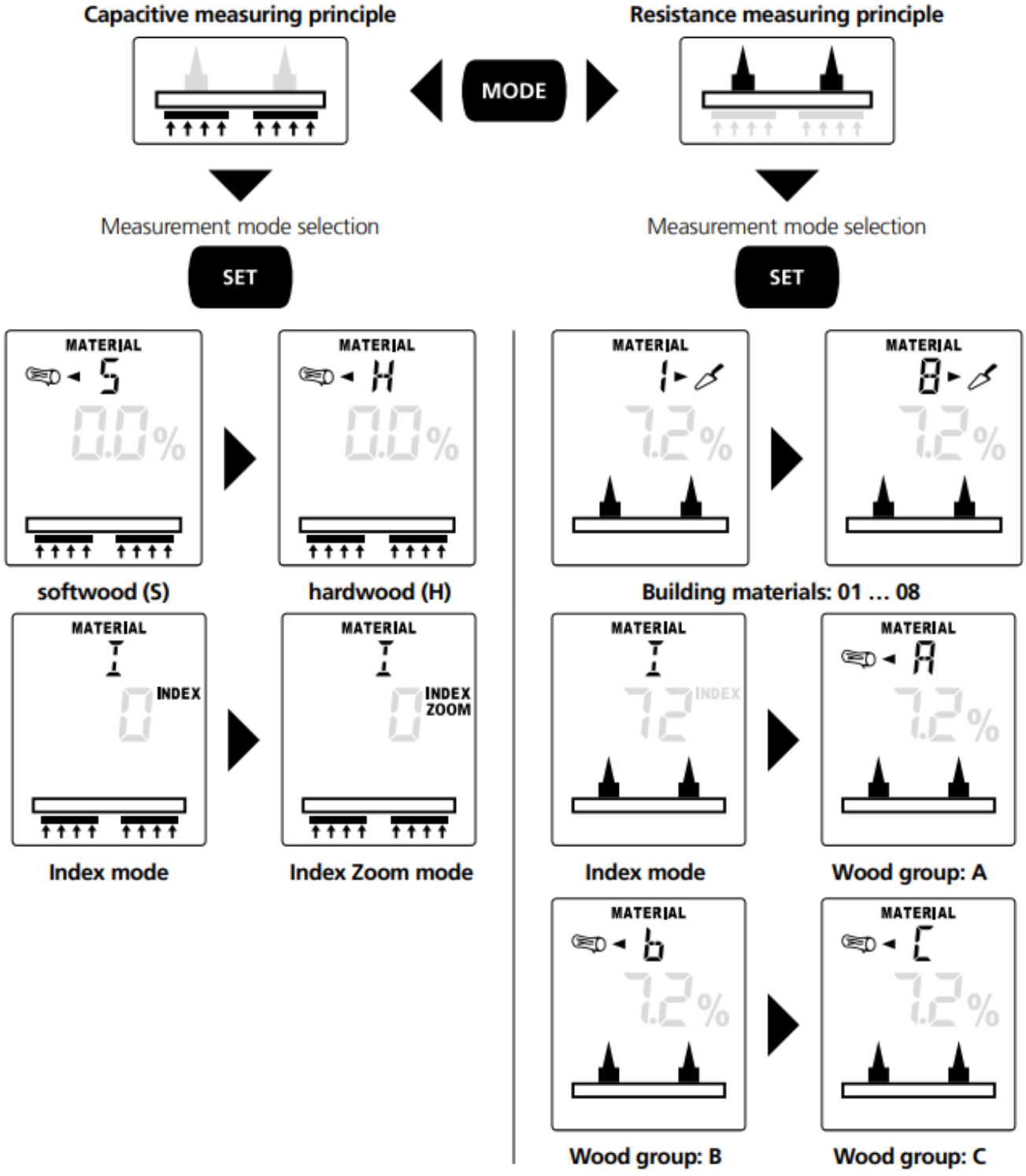
WARNING

When changing location and/or where there are large differences in the room climate, it is important to give the measuring device time to adapt until the measured values in the display have stabilized.

MultiWet-Master Compact Plus

Material moisture measurement – Measuring mode selection

The device features two different measuring modes. Resistance measurement uses the test prods whereas capacitive measurement uses the sensor pads on the underside of the device.



Capacitive measuring principle

Tables of materials

S (softwood)	low-density woods: e.g. spruce, pine, limewood, poplar, cedar, mahogany
H (hardwood)	higher-density woods: e.g. beech, oak, ash, birch

Index mode
Index mode is used to rapidly locate moisture with comparative measure-ments, without a direct output of material moisture in %. The output value (0 through 1000) is an indexed value that increases as material moisture becomes greater. Measurements made in index mode are independent of material type and particularly useful with materials for which no characteristics are stored. When comparative measurements reveal strongly deviating values, the course of moisture in the material can be localized quickly.

Tip: Before using Index mode on hard building materials, first try out Index Zoom mode as this mode provides a higher resolution. Switch to Index mode when Index Zoom mode reaches the lower measuring range (measured value = 0).

Index Zoom mode
Index Zoom mode has been specially developed for hard building materials such as screed and concrete in order to track the drying progression of these materials. Index Zoom mode provides higher resolution in a specific measuring range.

Resistance measuring principle

Material characteristics
The material characteristics available for selection in the measuring device are listed in the tables below. The different types of wood are divided into Groups A … C. Please set the measuring device for the respective group in which the type of wood to be measured is found. A similar setting must also be made for measurements performed on building materials. Building materials are divided into groups 01 through 08. (refer Section 5)

Wood group A		
Abachi	Cypress Pine, Mexican	Niové
Abura	Ebony, African	Oak, Red
Afzelia	Gum, Manna	Oak, White American
Albizia falcatara	Hickory, Mockernut	Okoumé
Ash, American	Hickory Pecan	Pau amarello
Ash, Japanese	Hickory, Pignut	Pear
Ash, White American	Idigbo	Pine, Brazilian
Beech, American	Ilomba	Rosewood, Brazilian
Beech, European	Ipe	Rosewood, Indian
Beech, Red (Sapwood)	Iroko	Teak
Canarium, Grey	Lime, American	Willow
Canarium, (PG)	Lime, European	Willow, Black
Cedar, common	Mockernut	
Cypress, Alaska	Niangon	

Wood group B				
Agba	Cembra Pine	Mahogany, Cherry		
Alder, Black	Cherry, European	Maple Black		
Alder, Common	Chestnut, Horse	Maple, Great		
Alder, Red	Chestnut, Sweet	Maple Red		
Alerce	Cypress, Italian	Oak, European		
Andiroba	Douka	Pine, Common		
Ash, Common	Elm	Pine, Maritime		
Ash, Silver (Southern)	Emien	Pine, Ponderosa		
Aspen	Fir, Douglas	Pine, Western Yellow		
Balsa	Fréne	Plum, European		
Basralocus / Angelique	Hornbeam, common	Poplar, all		
Bean, Black	Izombé	Poplar, White		
Birch	Jacareuba	Purpleheart		
Birch, European White	Jarrah	Sandalwood, Red		
Birch, Yellow	Kapok	Scots Pine		
Bloodwood, Red	Karri	Spruce, European		
Box, Black	Kosipo	Tola branca		
Canarium (SB)	Larch, European	Tree heath		
Cedar, Incense	Limba	Walnut, European		
Cedar, Pencil	Logwood			
Cedar, Western red	Mahogany, African			

Wood group C		
Afrormosia	Kokrodua	Phenolic resin particle board
Cork	Melamine particle board	Rubber tree
Imbuia	Niové Bidinkala	Tola – real, red

Integrated building materials / measuring range	
01 Anhydrite screed (AE, AFE) / 0 … 29.5%	**06** Limestone, bulk density 1.9 / 0.5 … 18.7%
02 Concrete C12/15 / 0.7 … 3.3%	
03 Concrete C20/25 / 1.1 … 3.9%	**07** Cellular concrete (Hebel) / 2.0 … 171.2%
04 Concrete C30/37 / 1.4 … 3.7%	**08** Cement screed without additive / 1.0 … 4.5%
05 Gypsum plaster / 0.1 … 38.2%	

Index mode (refer to Section 6.2)
In addition to the material characteristics stored in the measuring device, index mode makes it possible to measure other building materials (09–31) using the resistance measurement method (see index mode conversion table). The displayed value (0 through 1000) serves as the basis.
Activate index mode in your measuring device (Section 5). In order to de-termine the degree of moisture in a type of building material, first find the material number for the building material to be measured. Following this, read the measured value from the scale displayed on the measuring device for index mode. Now determine the value for the corresponding material number in the table. If this value has a dark grey background, the material is to be classified as „wet“, values without coloured background are considered to be „dry“

Index mode conversion tables

Index mode, building materials				
09 Cement screed with bitumen additive		**12** Elastizell screed		**18** Polystyrene, Styrofoam
		13 Plaster screed		**19** Soft fibre board wood, bitumen
10 Cement screed with plastic additive		**14** Wood cement screed		
		15 Lime mortar		**20** Cement-bonded particle board
11 ARDURAPID cement screed		**16** Cement mortar ZM 1:3		
		17 Stone-wood, xylolite		**21** Clay bricks, bricks

Material moisture conversion table

Index mode value	09	10	11	12	13	14	15	16	17	18	19	20
1000	5,4	11,6	3,4	24,1	9,2	19,8	39,5	10,5	18,2	50,1	70,7	33,1
994	5,3	10,8	3,3	22,3	8,6	19,2	35,4	9,9	18,0	49,1	69,0	32,4
989	5,3	10,0	3,2	20,5	7,9	18,6	31,2	9,3	17,8	48,1	67,0	31,7
927	5,0	8,0	2,8	17,1	6,5	17,2	23,8	8,2	17,2	45,6	62,7	30,3
887	4,9	6,8	2,6	14,9	5,7	16,3	20,0	6,5	16,8	43,9	59,8	29,3
865	4,8	6,0	2,5	13,6	5,2	15,1	17,5	6,9	16,5	42,7	57,9	28,8
830	4,7	5,4	2,4	12,4	4,8	14,0	15,6	6,5	16,2	41,6	56,0	28,1
768	4,6	4,7	2,1	10,6	4,1	13,0	12,4	5,7	15,7	39,5	51,7	26,6
710	4,4	4,0	1,9	8,6	3,4	12,0	9,5	5,0	15,2	37,4	47,7	25,1
644	4,2	3,5	1,7	7,1	2,7	11,3	7,0	4,3	14,7	35,2	43,6	23,6
589	4,1	3,4	1,6	6,2	2,4	11,1	5,9	3,9	14,4	33,5	40,3	22,3
566	4,0	3,4	1,6	6,0	2,3	10,2	5,6	3,8	14,3	33,1	39,5	22,0
491	3,9	3,2	1,4	4,9	1,9	9,7	4,1	3,2	13,8	30,8	35,2	20,2
448	3,8	3,1	1,3	4,4	1,7	9,2	3,5	3,0	13,6	29,7	33,4	19,4
403	3,7	3,0	1,2	3,8	1,5	8,8	2,9	2,7	13,2	27,8	30,8	17,7
375	3,6	3,0	1,1	3,4	1,3	8,4	2,4	2,5	12,9	26,4	28,9	16,6
345	3,5	2,9	1,1	3,0	1,1	8,2	2,0	2,2	12,7	24,8	26,9	15,3
327	3,5	2,9	1,0	2,8	1,1	8,0	1,8	2,2	12,5	24,0	25,8	14,8
306	3,5	2,8	1,0	2,7	1,0	7,9	1,7	2,1	12,4	23,4	24,9	14,4
295	3,5	2,8	1,0	2,6	1,0	7,8	1,7	2,0	12,4	23,0	24,4	14,2
278	3,4	2,8	1,0	2,5	1,0	7,7	1,6	2,0	12,3	22,3	23,4	13,8
269	3,4	2,8	1,0	2,4	0,9	7,6	1,5	1,9	12,2	21,9	22,8	13,6
265	3,4	2,8	1,0	2,3	0,9	7,5	1,5	1,9	12,2	21,6	22,3	13,4
260	3,4	2,8	1,0	2,3	0,9	7,4	1,4	1,8	12,1	21,1	21,7	13,2
248	3,4	2,8	0,9	2,1	0,8	7,2	1,3	1,8	12,0	20,5	20,7	12,7
229	3,3	2,7	0,9	2,0	0,8	7,0	1,2	1,7	11,9	19,7	19,7	12,4
209	3,3	2,7	0,8	1,9	0,7	6,8	1,1	1,6	11,8	17,7	17,2	11,2
189	3,2	2,7	0,8	1,8	0,7	6,6	1,0	1,6	11,6	16,0	15,2	10,2
180	3,2	2,6	0,8	1,7	0,6	6,6	0,9	1,5	11,5	15,1	14,2	9,7
174	3,2	2,6	0,8	1,7	0,6	6,6	0,9	1,5	11,5	14,9	13,9	9,6
164	3,2	2,6	0,7	1,6	0,6	6,5	0,8	1,4	11,4	13,9	12,9	9,0
150	3,1	2,6	0,7	1,5	0,5	6,3	0,8	1,4	11,3	12,5	11,6	8,3
112	3,0	2,5	0,7	1,3	0,5	6,0	0,6	1,2	11,0	9,8	8,0	6,7
105	3,0	2,5	0,7	1,3	0,5	5,9	0,6	1,2	11,0	9,2	7,2	6,4
96	3,0	2,5	0,7	1,2	0,4	5,9	0,6	1,2	10,9	8,6	6,2	6,0
88	3,0	2,5	0,6	1,2	0,4	5,8	0,6	1,2	10,9	8,0	5,4	5,7
80	2,9	2,5	0,6	1,2	0,4	5,8	0,5	1,1	10,7	7,4	4,5	5,4
71	2,9	2,5	0,6	1,2	0,4	5,7	0,5	1,1	10,7	6,6	3,3	4,9
46	2,9	2,5	0,6	1,1	0,4	5,7	0,5	1,1	10,7	5,9	2,3	4,2

Index mode, building materials					
22 Aerated concrete, Ytong PPW4, bulk density 0.55		**27** Glued-laminated timber, spruce, Picea abies Karst.		**31** Permoxx board	
23 Asbestos cement board		**28** Wood chip, softwood with probe			
24 Gypsum					
25 Limestone		**29** Hay, flax			
26 MDF		**30** Straw, grain			

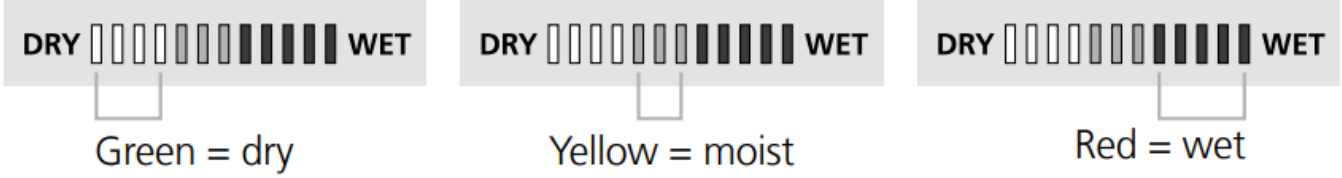
Material moisture conversion table

Index mode value	21	22	23	24	25	26	27	28	29	30	31
1000	40,2	55,6	34,6	75,8	28,8	51,9	97,3	OL	103,8	110,3	16,3
994	39,0	54,1	32,8	67,9	26,1	50,7	94,9	OL	101,3	107,6	15,6
989	37,8	52,4	31,3	59,1	23,2	49,6	92,3	OL	98,7	105,0	13,6
927	35,1	48,9	27,9	43,5	18,1	46,7	86,7	OL	92,5	98,5	11,0
887	33,1	46,2	25,8	35,3	15,2	44,6	82,5	OL	88,3	93,9	9,8
865	31,8	44,5	24,4	29,8	13,4	43,2	97,9	OL	85,4	91,0	9,2
830	30,3	42,1	23,1	25,9	12,1	41,8	77,0	OL	82,5	87,7	8,8
768	27,7	36,5	20,7	20,1	9,8	38,9	71,1	OL	76,0	81,0	8,2
710	25,0	30,9	18,5	14,5	7,7	35,9	65,3	OL	70,0	74,5	7,6
644	22,2	25,4	16,3	10,0	5,8	33,1	59,0	132,7	63,2	67,5	7,1
589	19,9	20,9	14,9	8,1	4,9	30,8	53,5	112,8	57,3	61,2	6,4
566	19,4	19,9	14,6	7,7	4,7	30,3	52,2	108,7	56,0	59,9	6,0
491	16,5	14,1	12,8	5,3	3,6	27,2	45,2	83,3	48,7	51,9	5,3
448	15,1	11,5	12,0	4,2	3,1	25,8	42,1	71,8	45,3	48,4	4,8
403	12,7	9,2	11,0	3,4	2,6	23,4	39,0	55,3	40,5	43,2	4,2
375	11,2	7,6	10,3	2,9	2,3	21,7	37,0	49,6	37,2	39,9	4,0
345	9,5	5,7	9,4	2,2	1,9	19,9	34,6	43,3	33,6	36,0	3,7
327	8,6	5,1	9,1	2,0	1,7	18,9	33,3	41,1	31,4	33,6	3,4
306	7,9	4,9	8,9	1,9	1,6	18,2	32,0	39,7	29,5	31,7	3,1
295	7,4	4,7	8,7	1,8	1,6	17,8	31,3	38,9	28,3	30,5	3,0
278	6,7	4,4	8,5	1,7	1,5	17,0	30,2	37,4	26,7	28,7	2,8
269	6,3	4,2	8,3	1,6	1,4	16,6	29,7	36,5	26,2	28,1	2,5
265	5,9	4,1	8,2	1,5	1,4	16,2	29,4	35,8	25,6	27,7	2,4
260	5,5	3,9	8,0	1,5	1,3	15,8	28,9	35,0	25,2	27,1	2,3
248	4,7	3,5	7,7	1,3	1,2	14,9	28,1	33,4	24,2	26,1	2,2
229	4,0	3,2	7,5	1,2	1,1	14,2	27,3	31,9	23,2	25,0	1,9
209	2,9	2,7	7,1	1,1	1,0	13,0	24,3	28,4	20,8	22,4	1,6
189	1,9	2,4	6,8	0,9	1,0	11,9	21,6	25,3	18,7	20,2	1,3
180	1,3	2,2	6,7	0,8	0,9	11,3	20,3	23,6	17,7	19,2	1,2
174	1,1	2,2	6,6	0,8	0,9	11,1	19,9	23,2	17,4	19,8	1,1
164	0,8	2,1	6,4	0,8	0,8	10,4	18,3	21,3	16,5	17,9	0,8
150	0,3	1,9	6,2	0,7	0,8	9,5	16,1	18,8	15,1	16,5	0,5
112	0,0	1,8	5,7	0,6	0,6	7,6	11,5	11,7	11,2	12,3	0,0
105	0,0	1,8	5,6	0,6	0,6	7,2	10,9	10,1	10,3	11,4	0,0
96	0,0	1,7	5,5	0,5	0,6	6,7	10,2	8,3	9,2	10,2	0,0
88	0,0	1,7	5,4	0,5	0,6	6,3	9,7	6,8	8,4	9,3	0,0
80	0,0	1,7	5,3	0,5	0,5	5,8	9,1	5,8	7,3	8,2	0,0
71	0,0	1,7	5,3	0,4	0,5	5,3	8,5	4,9	6,2	7,0	0,0
46	0,0	1,7	5,2	0,4	0,5	4,8	8,3	4,5	5,2	5,8	0,0

dry moist wet OL = Outside measuring range

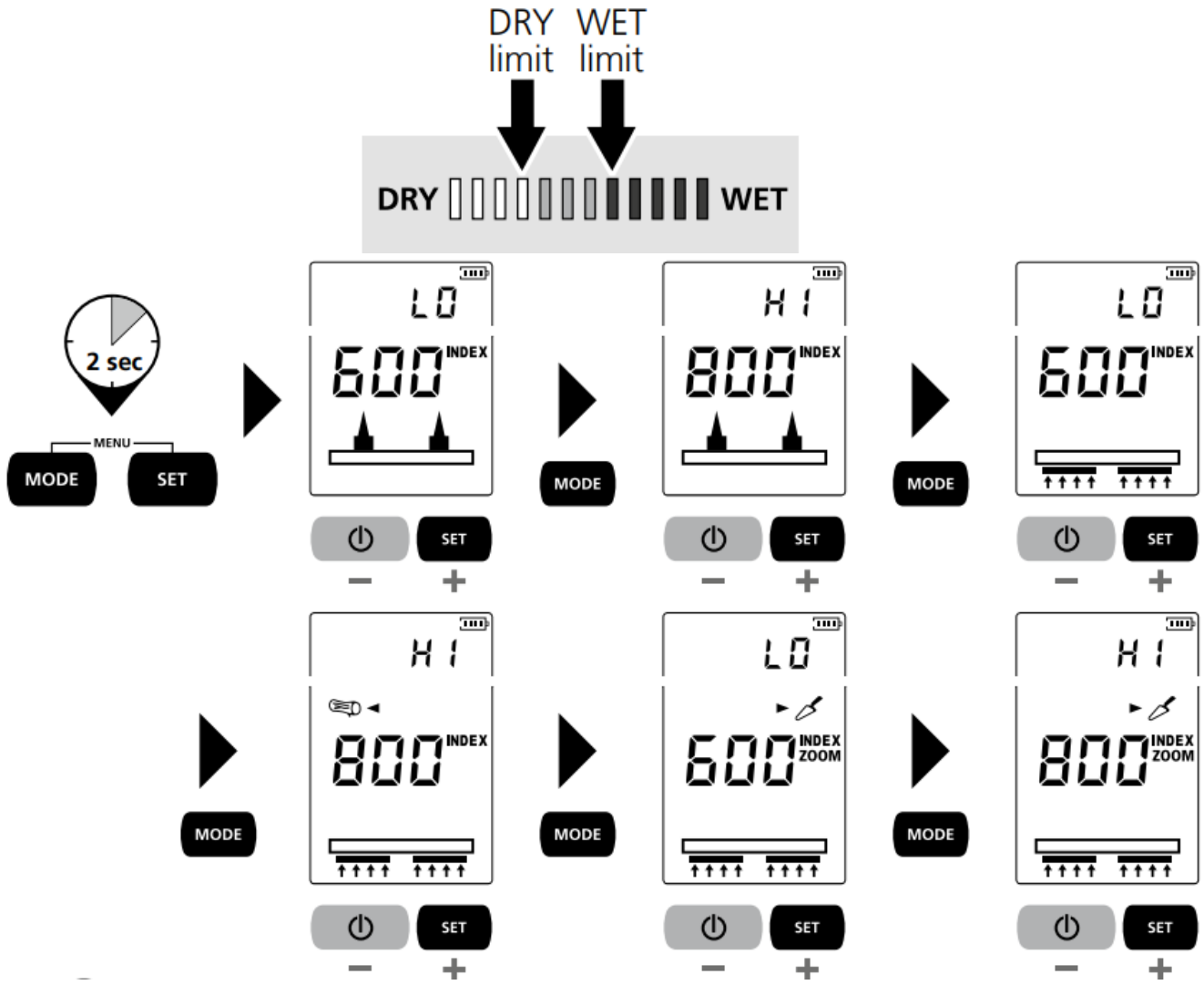
Wet/dry LED indicator

In addition to numeric measurement display in % of relative material moisture, the LED display also provides a material-dependent evaluation of moisture. The LED display bar becomes larger, from left to right, with increasing moisture content. The 12-position LED display is subdivided into 4 green (dry), 3 yellow (moist) and 5 red (wet) segments. Wet material causes an additional acoustic signal.

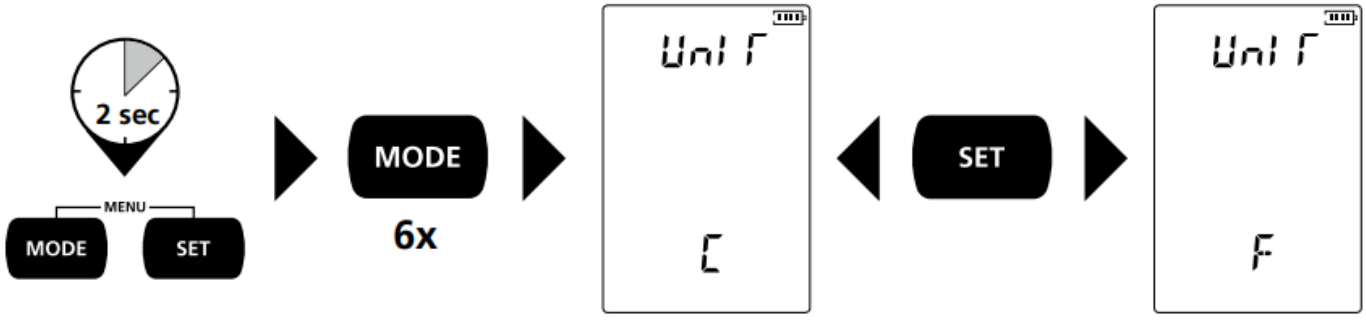


WARNING
The classification „dry“ means that materials in a heated room have reached a balanced moisture level and are thus suitable for further processing.

Setting the wet/dry threshold values in index mode and Index Zoom mode
The wet/dry LED indicator is programmed in line with the relevant material characteristics so the LEDs also provide information about whether the material should be classified as dry, moist or wet. However the values in index mode and Index Zoom mode, which is independent of the material type, are output on a neutral scale whose value increases as the moisture level rises.
The LED indicator can be specifically programmed for index mode and Index Zoom mode by defining the end values for „dry“ and „wet“. The difference between the value set for „dry“ and that set for „wet“ is converted and displayed by the 12 LEDs.

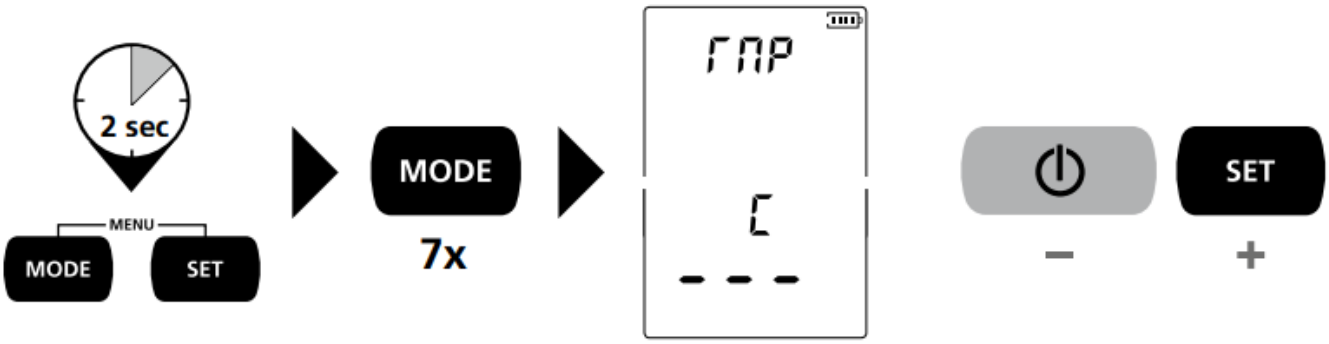


Temperature units of measure setting
The units of measure for ambient temperature and material compensation can be set to either °C or °F. The setting is stored and remains in effect until it is changed manually.

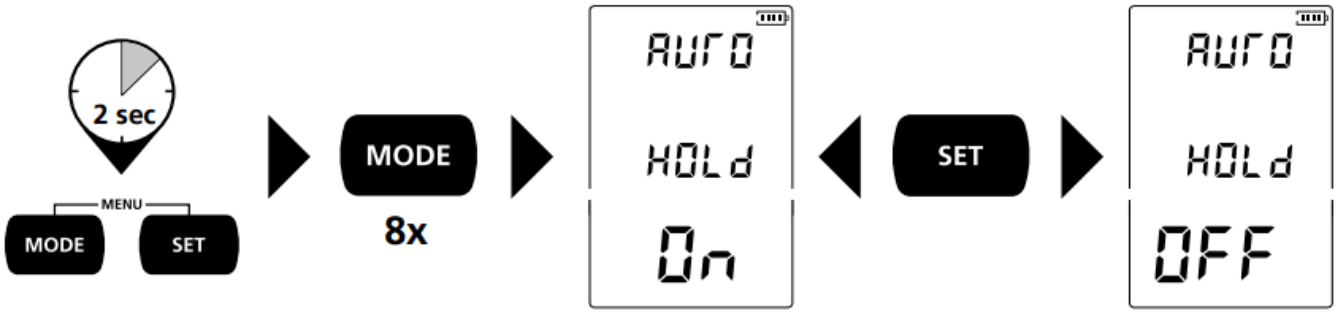


Wood moisture/temperature compensation

The relative material moisture of wood is dependent on temperature. The device automatically compensates for different wood temperatures by measuring the ambient temperature and using it for the internal calculation. To increase measuring accuracy, however, the measuring device also offers an option for setting the temperature manually. This value is not stored and must be set again each time the device is switched on.



AutoHold
The AutoHold function is activated as standard and can be deactivated in the menu. With AutoHold activated, as soon as the measured value is stable it is automatically held on the display. This status is signalled acoustically. With AutoHold deactivated, the measured value is continuously updated on the display.



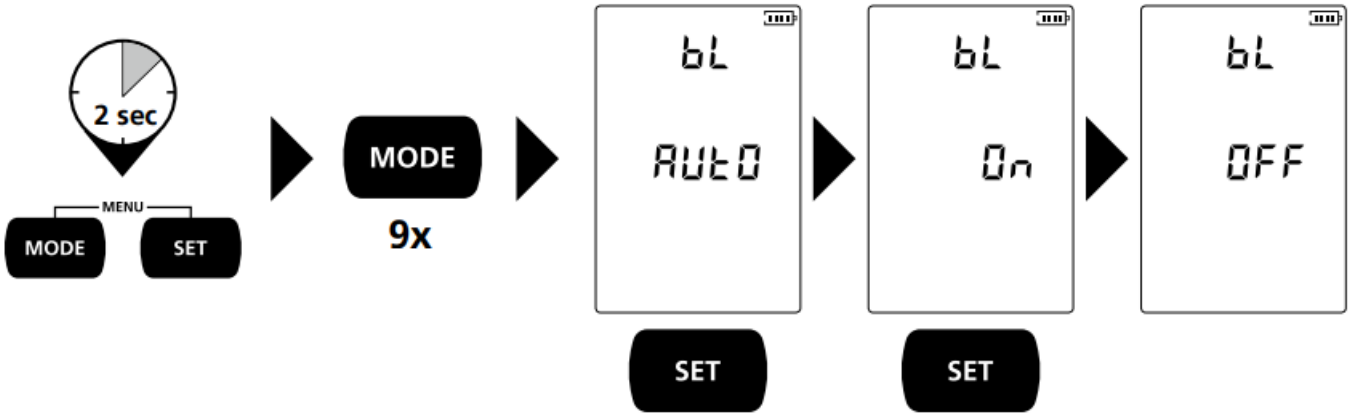
Tip: The AutoHold function is suitable for measurements with no movement. Switch off the AutoHold function for scanning walls.

LCD backlight

LED display illumination can be varied with 3 different settings:

- **AUTO:** Display illumination switches off during periods of inactivity and switches on again automatically for measurement procedures.
- **ON:** Display illumination remains on permanently.
- **OFF:** Display illumination remains off permanently.

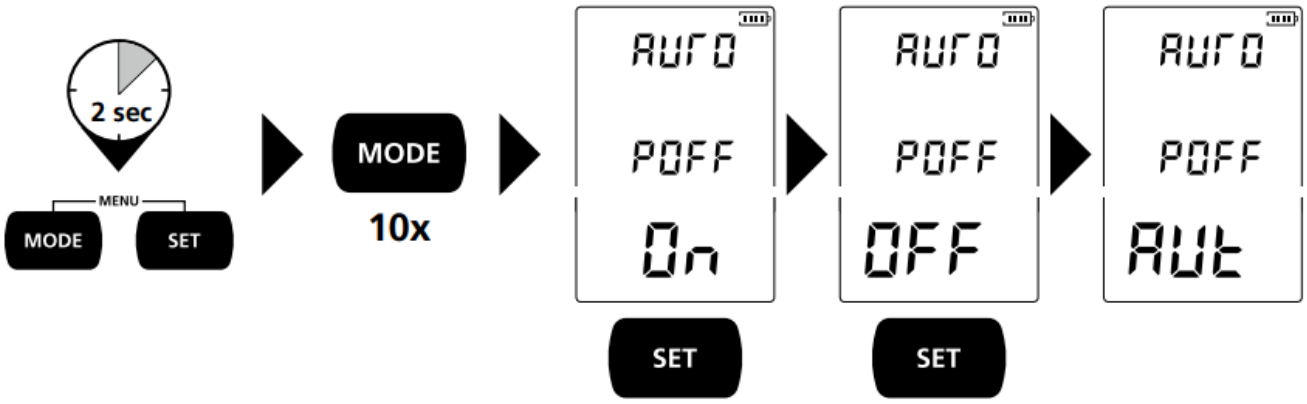
The setting is stored and remains in effect until it is changed manually.



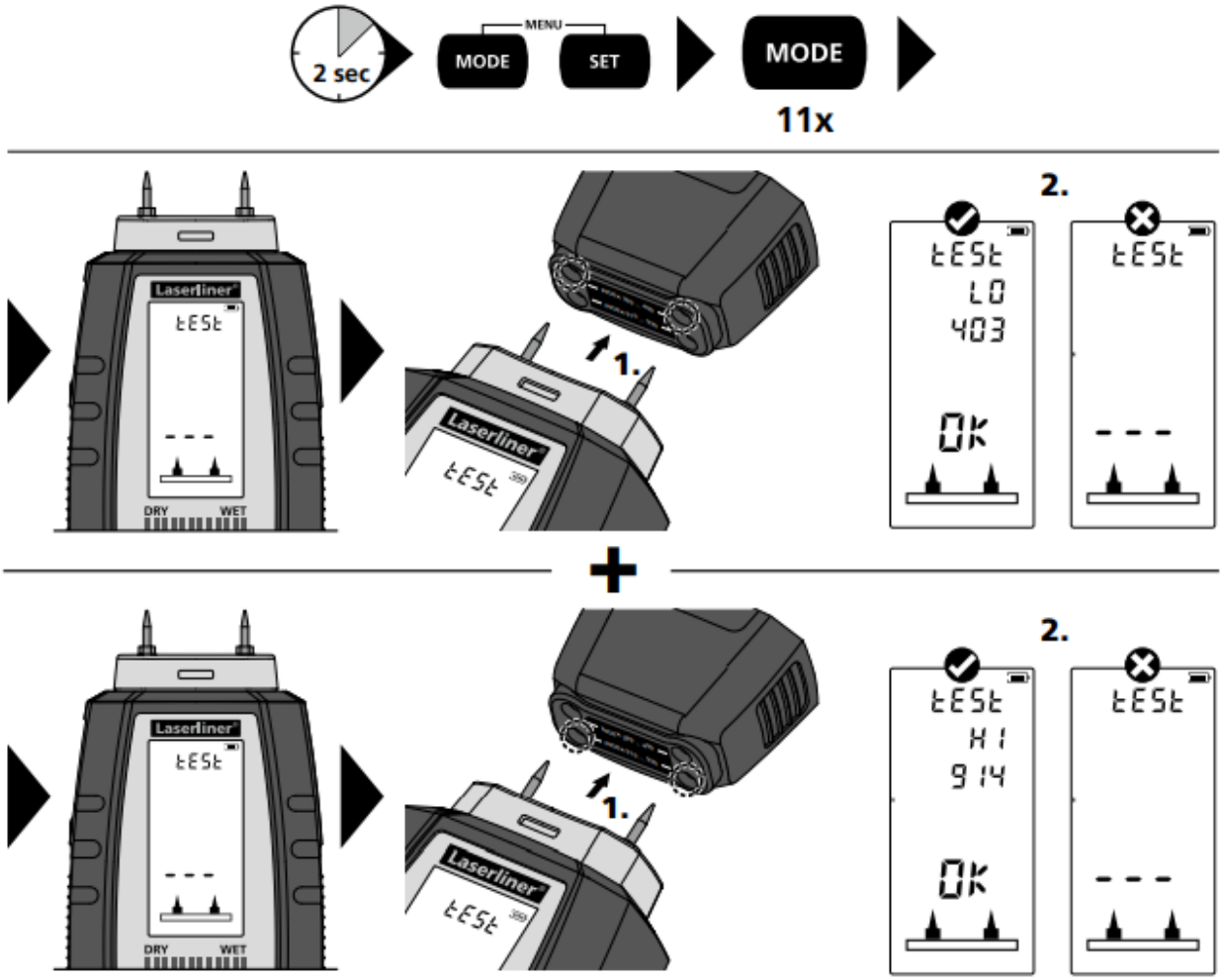
AUTO OFF function

The AUTO-OFF function has 3 different settings:

- **ON:** The device switches off automatically after 3 minutes
- **OFF**: The device does not switch off automatically
- **AUTO:** The device does not switch off automatically; after switching off manually, this function is set back to „ON“ and, after switching on, the device again switches off automatically after 3 minutes.



Self-test function



Instruction for use – resistance measuring principle

Measuring material moisture
Be sure neither supply lines (electric lines, water pipes, etc) nor a metal subsurface is present at the location to be measured. Insert the electrodes as far into the material as possible but never use excessive or sudden impact

force as this could damage the device. Always pull the device out of the material with left/right twisting motion. Perform several comparative measurements at different locations to minimise measurement error. The sharply pointed electrodes present an injury hazard. Always put the safety cap on the device when it is not in use or being transported.

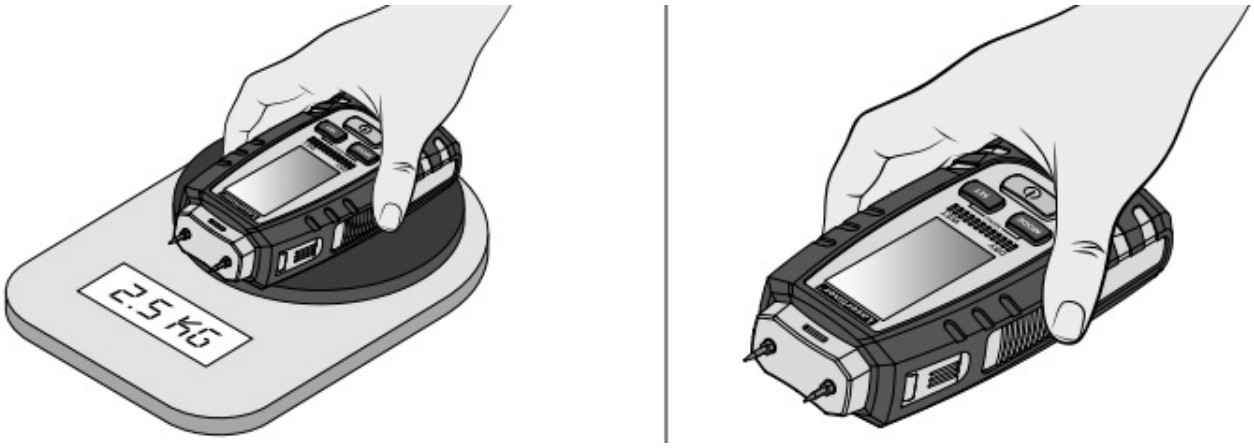
Wood

The location to be measured should be un- treated, free of knots, dirt and resin. Measure-ments should not be made on the end faces of wood because these areas dry particularly quickly such that they produce incorrect measurement results. Perform multiple comparative measurements. Wait until the % symbol stops blinking and remains constantly lighted. Only then are measurement values stable.

Mineral building materials

Be aware that walls (or surfaces) with differing material structures, or even variations in material composition, can cause measurement results to be falsified. Perform multiple comparative measurements. Wait until the % symbol stops blinking and remains constantly lighted. Only then are measure-ment values stable.

Instruction for use – capacitive measuring principle



1. Place the device such that the sensor pads fully rest on the material to be measured and exert a pressure of about 2.5 kg onto the surface to be measured.
   TIP: Use scales to test the contact pressure.
2. Always hold and press down the measuring device in the same way (see illustration).

- Make sure that the sensor pads make good contact with the material with no air inclusions.
- The contact pressure compensates for unevenness of the surface and small dust particles.
- Measured surface should be free of dust and dirt
- Always take spot measurements while exerting a contact pressure of 2.5 kg.
- For quick checks, while exerting light pressure, you can slide the device over the surface. (Look out for nails and pointed objects! Danger of injury and damage to sensor pads!) Measure again at the highest deflection point while applying 2.5 kg contact pressure.
- Keep at least a 5 cm distance from metal objects
- Metal pipes, electric lines and reinforcing steel can falsify measurement results
- Always measure at several different spots

Wood: The measured depth in wood is 30 mm maximum but does vary somewhat with differing wood densities. Measurements made on thin wood boards should, if possible, be made on a stack of these boards as otherwise the measurement will be too low. Measurements made on installed wooden structures are influenced by the structural conditions and their chemical treatments (e.g. paints) with various materials. Thus such measurements should only be viewed relatively.
Maximum accuracy is achieved between 6% and 30% wood moisture. In very dry wood (< 6 %) irregular moisture distribution can be detected, in very wet wood (> 30 %) saturation of the wood fibres begins.

General instruction for use
The operating principle of the device can only determine the material moisture measurement in % and show the moisture content on the LED display when the material matches the specified internal material characteristics.

Material relative moisture reference values, in %, for use with wood:

- Outdoor usage: 12% … 19%
- Use in unheated rooms: 12% … 16%
- In heated rooms (12 °C … 21 °C): 9% … 13%
- In heated rooms (> 21 °C): 6% … 10%

Warning

- This moisture measuring device is a sensitive tool. This means that the measurement results may be subject to slight deviations when someone touches the device with their hand or when contact is broken between the device and the material being measured. However, contact with the user's hand forms the basis for calibrating the measuring device, so we recommend holding onto the device whilst taking your measurements.
- Functional and operational safety is only warranted when the instrument is operated within the specified climatic conditions and is only used for those purposes for which it is designed. The assessment of measurement results and actions taken as a consequence lie in the user‘s scope of responsibility, depending on the given type of work.

Data transfer

- The device features a Bluetooth®* function that enables wireless data transfer to mobile devices with a Bluetooth®* interface (such as a smartphone or tablet).
- The system prerequisites for a Bluetooth®* connection are specified at **http://laserliner.com/info?an=ble**
- The device can set up a Bluetooth®* connection with Bluetooth 4.0 compatible devices.
- The range is set to a maximum distance of 10 m from the terminal device and greatly depends on the ambient conditions such as the thickness and composition of walls, sources of interference as well as the transmit / receive properties of the terminal device.
- Once it has been activated, Bluetooth®* remains switched on indefinitely as the radio system is designed with exceptionally low power consumption.
- A mobile device can link up to the active measuring device via an app.

Application (app)

An app is required to use the Bluetooth®* function. You can download the app from the corresponding stores for the specific type of terminal device:

Download on the App Store

ANDROID APP ON Google play

WARNING
Make sure that the Bluetooth®* interface of the mobile device is activated.

- After starting the app and activating the Bluetooth®* function, a connection can be set up between a mobile device and the measuring device. If the app detects several active measuring devices, select the matching device.
- This measuring device can be connected automatically the next time it is switched on.

* The Bluetooth® word mark and the logo are registered trademarks of Bluetooth SIG Inc.

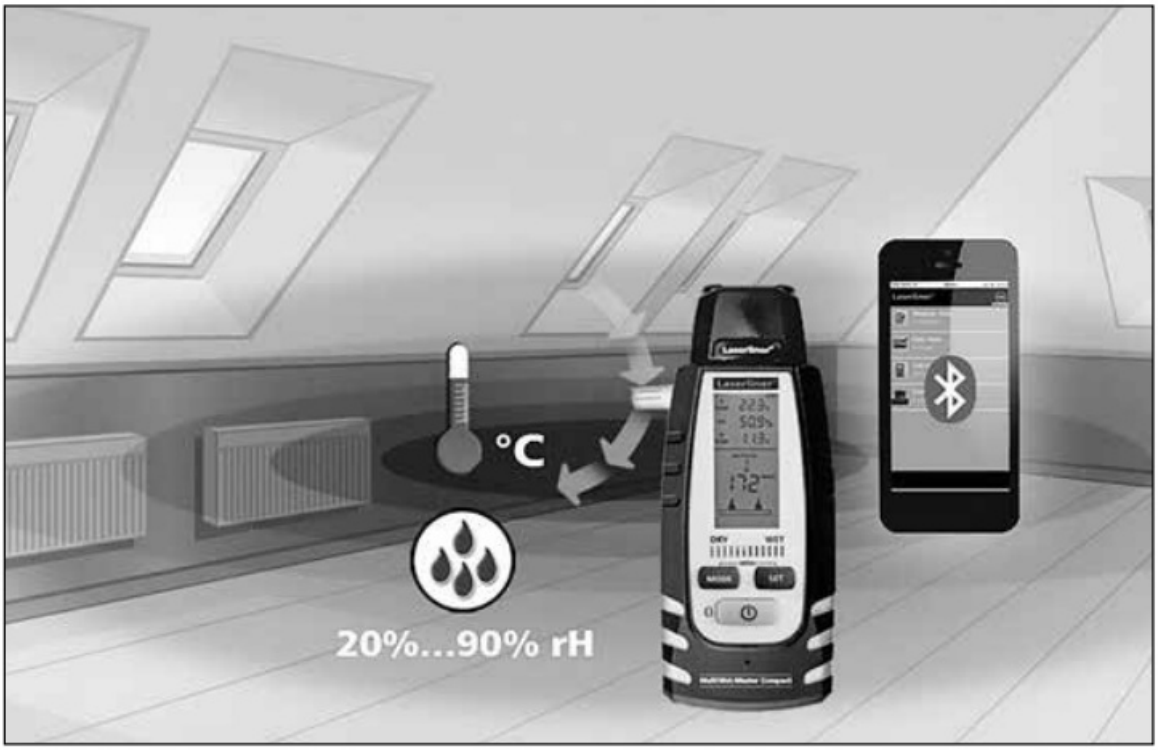
Technical data

Technical data	
Measurement principle / Sensor	Resistance measuring principle, Capacitive measuring principle, Humidity, Ambient temperature
Materials	108 types of wood, 31 types of building material
Accuracy (absolute)	**Resistance measuring principle:** Wood: ± 1% (5% … 30%) ± 2% (<5% and >30%) Building materials: ± 0.15% **Capacitive measuring principle:** Wood: ± 2% **Room climate measurement:** ± 2°C (-10°C … 60°C) ± 3% (20% … 90%)
Dew point display	-20°C … 60°C
Operating conditions	0°C … 40°C, Max. humidity 85%rH, no condensation, Max. working altitude 2000 m above sea level
Storage conditions	-20°C … 70°C, Max. humidity 80%rH
Radio module operating data	Bluetooth LE 4.x interface Frequency band: ISM band 2400–2483.5 MHz, 40 channels; Transmission power: max. 10 mW Bandwidth: 2 MHz; Bit rate: 1 Mbit/s; Modulation: GFSK/FHSS
Power supply	1 x 6LR61 9V
Dimensions	77 mm x 193 mm x 35 mm
Weight (incl. battery)	258 g

Technical revisions reserved. 09.17

EU directives and disposal

- This device complies with all necessary standards for the free movement of goods within the EU.
- This product is an electric device and must be collected separately for disposal according to the European Directive on waste electrical and electronic equipment.
- Further safety and supplementary notices at: **http://laserliner.com/info?an=muwemacopl**



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Documents / Resources

	Laserliner 082.390A MultiWet Master Compact Plus Universal Material Moisture and Humidity Measuring Device [pdf] User Manual 082.390A, MultiWet Master Compact Plus, Universal Material Moisture and Humidity Measuring Device, MultiWet Master Compact Plus Universal Material Moisture and Humidity Measuring Device, 082.390A MultiWet Master Compact Plus Universal Material Moisture and Humidity Measuring Device

References

- Info - Laserliner
- Info - Laserliner