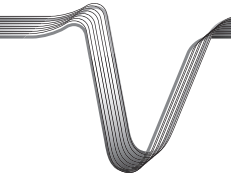


VOLTCRAFT®

MATERIAL MOISTURE METER

GB OPERATING INSTRUCTIONS PAGE 22-41

Best.-Nr. / Item no. /
N° de commande / Bestelnr.:
40 92 36

CE

VERSION 11/13

TABLE OF CONTENTS

GB

1. INTRODUCTION

Dear customer,

Thank you for making the excellent decision of purchasing this Voltcraft® product.

Voltcraft®This name stands for above-average quality products in the areas of measuring, charging and grid technology, characterised by technical competence, extraordinary performance and permanent innovation.

Whether you are an ambitious hobby electronics technicians or a professional user - a product of the Voltcraft®brand family will provide you the best solution for even the most sophisticated of tasks. Special features: We offer the sophisticated technology and reliable quality of our Voltcraft® products at a near-unbeatable price/performance ratio. We lay the groundwork for long, good and successful cooperation.

Enjoy your new Voltcraft® product!

If there are any technical questions, contact:

Germany: Tel. no.: +49 9604 / 40 88 80

Fax. no.: +49 9604 / 40 88 48

E-mail: tkb@conrad.de

Mon. to Thur. 8.00am to 4.30pm, Fri. 8.00am to 2.00pm

2. INTENDED USE

The battery-operated material-moisture meter measures the moisture in materials such as wood and building materials, plaster, screed, etc. For a high measuring accuracy, several material characteristic curves are available. A bar scale, indicator scale and direct value display facilitate reading on the LC display.

The circular connector with automatic lock can be used optionally to connect an external sensor.

The device must only be operated with the specified battery type.

The meter must not be operated when it is open, i.e. with an open battery compartment or when the battery cover is missing. Measurement sin moist rooms or under detriment ambience conditions such as wetness, dust, flammable gases, vapours, solvents, thunderstorm or strong electrostatic fields are not permissible.

For safety reasons, only use sensors or measuring accessories which are adjusted to the specifications of the meter when measuring.

Any use other than that described above damages the product. Moreover, this is linked to dangers such as short circuit, fire, electric shock, etc. No part of the product must be modified or converted!

Read the operating instructions carefully and keep them for later reference.

Always observe the safety information!

3. SCOPE OF DELIVERY

- Material moisture meter
- 3 x battery CR2032
- Replacement measuring prods
- Protective cap with test adapter
- Sensor adapter with round plug
- Operating instructions

4. EXPLANATION OF SYMBOLS

An exclamation mark in a triangle indicates important notes in these operating instructions that must be strictly observed.

The “arrow” symbol indicates special information and advice on operating the device.

5. SAFETY INFORMATION

a) General Information

The guarantee/warranty will expire if damage is incurred resulting from non-compliance with the operating instructions! We do not assume any liability for consequential damage!

We do not assume any liability for property damage and personal injury caused by improper use or non-compliance with the safety instructions! In such cases the warranty/guarantee will expire.

Dear Customer,

this safety information serves not only to protect the product, but also your own safety and the safety of other persons. Therefore, read this chapter very carefully before taking the product into operation!

This product left the manufacturer‘s factory in a safe and perfect condition. To maintain this condition and to ensure safe operation, the user must observe the safety information and warning notes in these operating instructions.

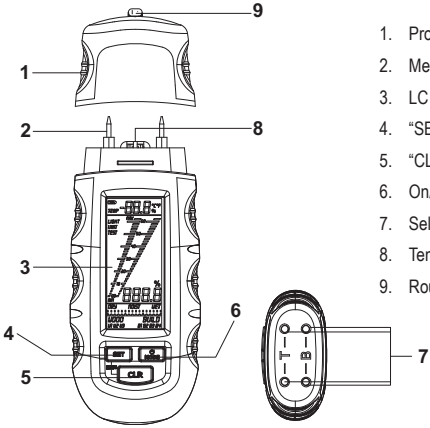
- The unauthorized conversion and/or modification of the product is inadmissible for safety and approval reasons (CE).
- The product is only suitable for operation in dry environments. The entire product must not become damp or wet. Never touch it with wet hands to avoid damage to it.
- This product is not a toy and not suitable for children!

- Do not leave packaging material unattended. It may become a dangerous toy for children.
- Always keep the meter with its accessories so that it cannot be reached by children. The measuring prods pose a danger of injury.
- Never touch the measuring prods during measurement. This may cause measuring tolerances.
- Observe during each measurement that no objects such as cables must be crushed or damaged.
- Check before each measurement that the meter or measuring prods are not damaged. If damaged, never perform a measurement.
- Never touch the measuring profs to cables or lines. Danger of electric shock! The product may be damaged.
- Never operate the product in direct proximity of:
  - Strong magnetic or electromagnetic fields
  - Transmitter aerials or HF generators.
- Handle the product with care. Impact, blows or falls from even a low height will damage the product.
- Never submerse the product in water. This may destroy the meter.
- Always keep the meter securely stored with the protective cap installed to avoid damage to the measuring profs and damage by them to anyone else.
- Clean the measuring tips thoroughly before using the adapter cap with circular connector to have a faultless contact.

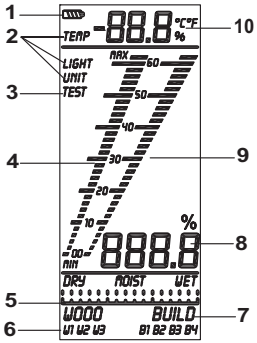
b) Battery Notes

- Keep batteries out of reach of children.
- Do not leave any batteries lying around openly. There is a risk of batteries being swallowed by children or pets. If swallowed, consult a doctor immediately.
- Leaking or damaged batteries may cause alkali burns if they come in contact with the skin. Therefore, use suitable protective gloves.
- Batteries must not be short-circuited, taken apart or thrown into fire. Danger of explosion.
- Do not recharge normal, non-rechargeable batteries; danger of explosion!
- Always observe the polarity (positive/+ and negative/-) when inserting the battery.

6. CONTROL ELEMENTS



1. Protective cap
2. Measuring prod
3. LC display
4. “SET” button
5. “CLR” button
6. On/off “MODE” button
7. Self-test adapter
8. Temperature and humidity sensor
9. Round plug



1. Battery display
2. Menu display
3. Test mode
4. Bar scale “MIN/MAX”
5. “DRY/MOIST/WET” indicator
6. Characteristic curve wood
7. Characteristic curve building materials
8. Digital display for moisture in %
9. Bar scale for moisture measurement
10. Digital display for temperature and humidity

7. INSERTING/REPLACING THE BATTERIES

1. The current battery capacity is displayed via the battery status display .
2. Switch off the meter before starting battery replacement.
3. Loosen the cross-head screw at the rear of the product with a small screwdriver.
4. Carefully remove the battery compartment lid.
5. If required, remove flat batteries from the housing and insert three new batteries of the same type (see technical data) into the battery compartment with the correct polarity.
6. Carefully replace the battery compartment lid on the meter and fasten it again with the screw.

8. COMMISSIONING

After insertion of the batteries, you can start with the desired measuring process.

Push the button “MODE” for at least 2 seconds. The LC display lights up and the meter is ready for operation.

To switch off the meter, push the button “MODE” again for at least 2 seconds.

➔ To save energy, the current injection meter off automatically after being inactive for 3 minutes.

9. SETTINGS

To get to the setting mode, push the buttons “SET” and “CLR” at the same time with the device activated.

Push the button “MODE” to choose between the following five options. Please observe the following chapters.

- Temperature compensation (“TEMP”)
- “Dry” indicator
- “Wet” indicator
- Lighting (“LIGHT”)
- Temperature unit (“UNIT”)

The setting mode is terminated automatically after the last function. All changed values are saved. If indicator values are changed, they are reset again to factory settings after the meter is activated again.

a) Temperature Compensation

The material moisture depends on the material temperature. The meter always measures the current ambience temperature and uses it for calculation. For a higher measuring accuracy, the material temperature can also be set manually on demand.

For this, push the button “SET” to increase the displayed temperature and the button “CLR” to lower the temperature.

b) Dry-/Wet Indicator

The pre-defined indicator values for building moisture measurements can be adjusted by you.

Use the button “MODE” to select “DRY” or “WET” mode.

Use the button “SET” to increase values, the button “CLR” to reduce them.

The meter can be set from 0 – 1000.

Observe the values from the following tables.

Conversion table for indicator values			
05	06	07	08
Anhydrite screed	Quick-drying cement screed	B25 cement	B35 cement
09	10	11	12
Elastizel screed	Plaster screed	Wood cement screed	Lime mortar
13	14	15	16
DIN magnesium oxychloride cover	Polystyrene	Wood soft-fibre plate, bitumen	Cement-bound chipboard
17	18	19	
Cement screed with bitumen addition	Cement screed with plastic addition	Cement mortar	

Indicator value		All values in % material humidity							
		05	06	07	08	09	10	11	12
Wet	863		2.9	2.8	3.0	13.4			
	802	5.8	2.4	2.3	2.9	11.7	6.4	16.0	19.2
	758	4.5	2.0	2.0	2.7	10.3	4.5	14.2	12.0
	711	3.1	1.9	1.8	2.5	8.7	3.0	12.8	9.5
	662	2.1	1.8	1.7	2.5	7.3	2.5	11.7	7.3
	608	1.5	1.6	1.7	2.4	6.4	2.4	11.0	6.4
	593	1.4	1.6	1.6	2.4	6.2	2.3	10.8	6.0
	564	1.2	1.6	1.6	2.4	5.8	2.0	10.5	5.5
	544	1.1	1.5	1.5	2.3	5.5	1.9	10.3	5.1
	522	1.0	1.5	1.5	2.3	5.3	1.8	10.0	4.5
	503	0.9	1.4	1.4	2.3	5.1	1.7	9.8	4.3

	486	0.8	1.4	1.4	2.2	4.9	1.6	9.7	4.0
	474	0.7	1.3	1.4	2.2	4.6	1.5	9.5	3.6
Moist	441	0.6	1.3	1.3	2.2	4.4	1.4	9.4	3.5
	416	0.5	1.3	1.3	2.1	4.2	1.4	9.2	3.1
	400	0.4	1.2	1.3	2.1	4.0	1.3	9.0	2.9
	384	0.4	1.2	1.3	2.0	3.8	1.2	8.8	2.7
	363	0.3	1.1	1.2	2.0	3.5	1.1	8.6	2.5
	345	0.3	1.1	1.2	1.9	3.3	1.0	8.4	2.3
	330	0.2	1.1	1.2	1.9	2.8	0.9	8.1	2.1
	304	0.2	1.0	1.2	1.8	2.7	0.8	7.9	1.9
	287	0.2	1.0	1.1	1.8	2.5	0.7	7.7	1.8
	265	0.1	0.9	1.1	1.8	2.3	0.7	7.5	1.6
	242	0.1	0.8	1.0	1.7	2.0	0.6	7.3	1.4
	219		0.7	1.0	1.7	1.9	0.5	7.1	1.3
	204		0.7	1.0	1.6	1.8	0.5	6.8	1.2
	185		0.6	0.9	1.6	1.7	0.4	6.7	1.0
Dry	161		0.6	0.9	1.5	1.6	0.4	6.5	0.9
	138		0.6	0.9	1.5	1.4	0.4	6.4	0.8
	120		0.5			1.4		6.2	0.7
	100		0.5			1.3		6.0	0.6
	85		0.5			1.2		5.8	0.5
	70		0.5					5.6	0.5

Indicator value		All values in % material humidity							
		13	14	15	16	17	18	19	
Wet	863					4.8	6.0		
	802					4.6	4.5	7.0	
	758	16.5				4.5	4.1	5.5	
	711	15.5			24.0	4.4	3.7	4.7	
	662	14.9			23.6	4.2	3.5	4.0	
	608	14.4			23.3	4.0	3.4	3.7	
	593	14.2			22.8	4.0	3.4	3.6	
	564	14.0			22.4	3.9	3.4	3.4	
	544	13.8			22.0	3.9	3.3	3.4	
	522	13.5			21.5	3.9	3.3	3.2	
	503	13.4			21.0	3.9	3.3	3.1	
	486	13.3			20.5	3.8	3.2	3.0	
	474	13.2			20.0	3.8	3.2	2.8	
Moist	441	13.0			19.5	3.8	3.2	2.7	
	416	12.9			18.8	3.7	3.1	2.7	
	400	12.7			18.0	3.7	3.1	2.6	
	384	12.7		30.1	17.5	3.7	3.0	2.5	
	363	12.6		29.1	17.0	3.6	3.0	2.4	
	345	12.5		28.0	16.3	3.6	2.9	2.3	
	330	12.4	25.0	27.0	15.5	3.6	2.9	2.3	
	304	12.3	24.5	26.0	14.8	3.5	2.8	2.2	
	287	12.1	23.8	25.0	14.2	3.5	2.8	2.1	
	265	12.0	23.0	23.0	13.4	3.4	2.8	2.0	
	242	11.9	21.0	21.0	12.8	3.4	2.8	1.9	

	219	11.8	18.5	19.0	12.0	3.3	2.7	1.7	
	204	11.7	17.3	17.0	11.0	3.3	2.7	1.6	
	185	11.6	16.0	15.4	10.2	3.2	2.7	1.5	
Dry	161	11.5	13.2	13.1	8.7	3.2	2.6	1.4	
	138	11.4	12.0	10.7	8.0	3.1	2.6	1.3	
	120	11.3	9.5	8.9	6.5	3.1	2.5	1.2	
	100	11.1	7.9	7.0	5.9	3.0	2.5	1.1	
	85		7.5		5.4	3.0	2.5	1.1	
	70		6.5		4.8	2.9	2.5	1.0	

c) Lighting

Use the button “MODE” to choose the mode “LIGHT”.

Push the button “SET” to choose between the following functions:

“AUTO”: Lighting goes out after 5 seconds of inactivity and activates automatically by pushing of a button.

“ON“: Lighting is permanently on once the meter is on.

“OFF”: Lighting is permanently off.

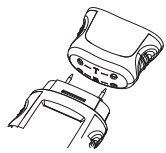
d) Temperature Unit

Use the button “MODE” to choose the mode “UNIT”.

Push the button “SET” to choose between the unit °C and °F.

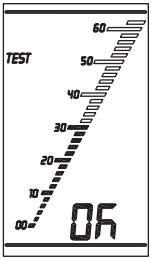
10. SELF-TEST

- Push the button “MODE” twice after activation. The meter is in test mode.
- Touch the meter‘s measuring prods “2” to the self-test adapter “7”, contacts “ – T – ”, first
- Then perform another test with the contacts “ – B – ”.

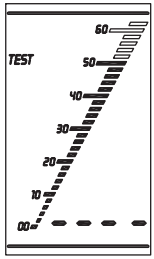


If a value appears in the LC display after each test as described in the following figures, the meter is ready for operation.

If the value displayed is “- - - - ”, no measuring result is present. Check the measuring prods for cleanliness and good contact with the meter. Replace the measuring prods “2” with new ones if required.



Test OK



Mo measurement possible

11. MEASURING PROCESS

To measure humidity in materials, push the two measuring prods “2” into the material carefully. During measurement, the symbol “%” flashes. If the symbol remains lit permanently, the precise measuring value is available in the digital display for humidity “8”.

The bar scale “9” symbolically illustrates this value.

Additionally, the bar chart “4” saves the min and max values.

To delete these values, briefly push the button “CLR”.

To set the materials, follow the instructions in the next chapters.

a) Air Temperature and Humidity Measurement

After activation of the meter, the LC display shows the currently measured humidity “10”.

Push the button “SET” for at least 2 seconds. The display switches to the currently measured humidity “10”.

b) Wood Moisture Measurement “WOOD”

After activation, the LC display automatically shows “WOOD” for wood moisture measurement. There are three different pre-set characteristic curves (“W1” – “W2” – “W3”). Select the right characteristic curve by pushing the “SET“ button.

The correct characteristic curve for your material can be taken from the following table.

Wood characteristic curve			
W1		W2	W3
Obeche	Ilomba	English oak	Afrormosia
Abura	Ipe	Aspen	Rubber tree
Agda	Iroko	Fibre boards	Imbuia
Maple	Izombe	Hard fibre board	Kokrodua
Andiroba	Jarrah	Wood fibre insulation board	Cork
Balsa	Karri	Kauramin	Melamine chipboard
Birch	Lime tree, small	Pine	Phenol resin chipboard
Pear tree	Niangon	Cherry	Tola red
Black Afara	Niove	Cherry mahogany	
Beech	Hornbeam	Kosipo	
Campeche	Hickory	Larch	
Dabema	Hickory	Limba	
Douglas fir	Okoume	Mahogany	
Douka	Rosewood	Meleze	
Dumast English	Parana pine	Paper	
Ebony	Red chestnut	Poplar (all)	
Oak	Holm oak	Plum	
Red oak	Teak	Red cypress	
White oak	Juniper	Red sandalwood	
Emien	Willow	Chipboard	
Alder	Cedar	Textiles	
Ash	Cypress C.Lusit	Tola	

American ash tree		Elm	
Japanese ash tree		Walnut	
Aspen		White birch	
Spruce		White beech	
Yellow beech		White maple	
Yellow pine		Cedar	

c) Building Moisture Measurement “BUILD”

After activation, push the button “MODE” briefly once to switch to building material moisture mode “BUILD”. There are four different pre-set characteristic curves (“B1” – “B2” – “B3” – “B4”). Select the right characteristic curve by pushing the “SET“ button.

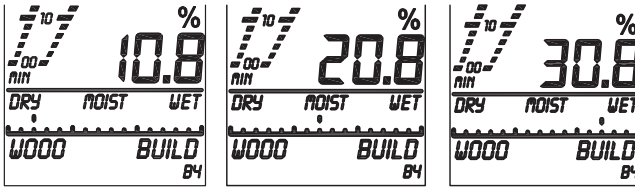
The correct characteristic curve for your building material can be taken from the following table. For more building materials and the associated indicator value, see chapter 9, b.

Building material			
01	02	03	04
Plaster	Aerated concrete	Screed	Concrete

d) “Wet/Moist/Dry” Indicator

The LC display additionally shows an indicator scale “5”.

This permits quick measurement if no precise % values are required.



The indicator values can be changed via the setting mode.

For the values, see chapter 9, b.

We recommend a value of 70 for “DRY” and 850 for “WET”.

12. MAINTENANCE AND CLEANING

The meter requires no servicing apart from replacing the rechargeable battery.

Never clean the product while it is switched on.

A slightly moist, soft and clean cloth is sufficient for cleaning.

Clean the measuring prods at once after each use. This may cause measuring tolerances otherwise.

Do not use any aggressive cleaning agents. Do not push the surface and LC display too much when cleaning the housing to avoid scratches.

13. DISPOSAL

a) General Information

Dispose of the product according to the applicable statutory provisions at the end of its service life.

Remove any batteries inserted in the meter and dispose of it separately from the product.

b) Batteries

You as the end user are required by law (Battery Ordinance) to return all used batteries. Disposing of them in the household waste is prohibited.

Batteries containing hazardous substances are marked with the adjacent symbol to indicate that disposal in the household waste is prohibited. The descriptions for the respective heavy metals are: Cd = cadmium, Hg = mercury, Pb = lead. You may return your used batteries free of charge to collection points in your municipality and anywhere where batteries/rechargeable batteries are sold.

14. TECHNICAL DATA

Power supply .....3 x battery CR2032

Temperature measuring range .....-40 °C to +70 °C

Humidity measuring range.....0 to 100 %

Wood moisture measuring range .....0 to 30 %vol (± 1 %)

30 to 60 %vol (± 2 %)

Building moisture measuring range....0.1 to 24 %vol (± 0.5 %vol)

Measuring type .....Invasive

Dimensions.....139 x 47 x 25 mm (L x W x H)

Weight .....100 g