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USER MANUAL

PCE-WMH3

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1. General description

The Wood Moisture Meter PCE-WMH3 is a state-of-the-art electronic device for measuring wood moisture in a range from 6% to 60% of moisture contents. The whole device is fitted into a hammer electrode. The device can be used for measuring moisture contents in over 270 different wood types. The moisture meter is also equipped with a temperature compensation circuit.

Moisture Meter PCE-WMH3 is widely used in wood industry, forestry and other industries utilising wood.

2. Technical data

Range	6 % - 60 % moisture contents
Accuracy (at 20°C)	
within range 6 – 12%	± 1%
within range 13 – 28%	± 2 %
within range 29 – 60%	approx. 10 % of measured value
Number of wood types	12 (270)
Wood temp. range	-10° ÷ 60° C
Display	LCD
Power	1 battery 23A, 12 V
Auto power off	yes
Battery life	approx. 10.000 measurements
Size	180 x 80 x 42 mm
Weight	approx. 0.8 kG

3. Equipment

The standard Wood Moisture Meter PCE-WMH3 is equipped with 2 sets of needles 3.5 x 12 mm.

The following optional electrodes are available:

- needles 2.0 x 8 mm
- needles 2.5 x 10 mm
- veneer electrodes (no holes) (measuring range 6 % to 20 %)

4. Preparing the instrument

Use the "WOOD TYPE" button to select the appropriate wood type group and the "WOOD TEMP." button to set the wood temperature. The temperature setting step is 2°C. Pressing and holding the "WOOD TEMP." button "fast forwards" the setting. This can be used to quickly change the temperature setting e.g. from -10°C to 40°C. The most common European wood types are listed in a table on the instrument.

All exotic wood types (270 species) listed in the users manual (page 6 and next) are divided into 4 groups. During measurements of moisture contents of exotic wood types the "WOOD TYPE" should be set to:

- Group 1 - select 1
- Group 2 - select 2
- Group 3 - select 3
- Group 4 - select 4

5. Selecting needles

We recommend that the length of the needles you use should be about 25-30 % of the thickness of the timber. With this length of needles the device displays the average moisture contents.

6. The measurement

To conduct measurements:

- press and hold for a while the “ON/OFF” button to turn the instrument on.
- hammer the instrument into the wood, a line drawn between the needles should be perpendicular to the fibers (the resistance should be measured across the fibers).
- the strength used for hitting the wood should be appropriate to the hardness of the wood, do not use excess force, hitting the wood with the body of the device (when the needles have been completely inserted into the wood) may damage the device.
- wait until the result stabilizes.
- read the result on the LCD.
- the instrument can be turned off by pressing and holding the “ON/OFF” button or it will turn off automatically after approx. 5 minutes.

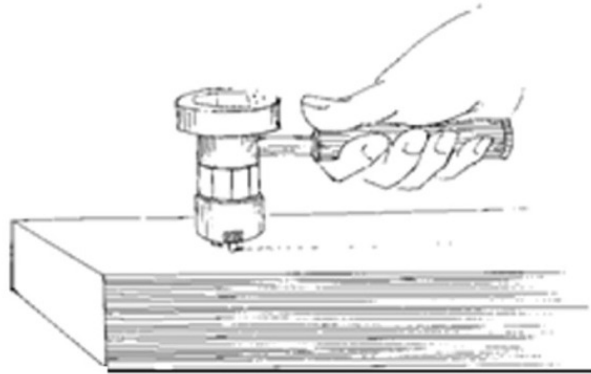


Fig. 1

While conducting the measurements you should observe the following rules:

- Conduct the measurement no closer than 0.3 m from each end of the timber or in the middle, if the planks are shorter than 0.6 m.
- Choose the spots for measurements at random.
- Do not take the measurements where defects in the wood occur.
- Make 3 measurements on each side of the timber.

7. Results

The measuring range of the Wood Moisture Meter PCE-WMH3 is 6% – 60% moisture contents. Moisture contents below 6% are indicated as “LO” on the LCD. All results over 60% are indicated as “HI”.

8. Measuring very dry wood

Measurements of moisture contents in a very dry wood (below 10%) are subject to interference. This can be observed when the result of the measurement becomes unstable. The sources of the interference are electrostatic charges and electromagnetic fields.

Often the measurements of very dry wood are conducted in a very dry environment (below 30% RH) and this additionally increases the problem.

When measuring a very dry wood:

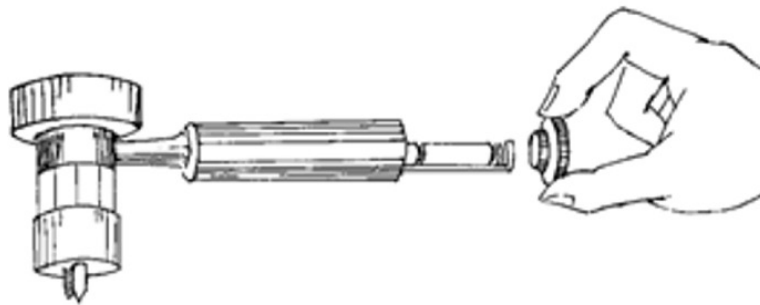
- do the measurements in a place where the electro-magnetic interference is minimal (away from electric engines, high voltage wires etc.).
- do not walk around the device.
- use thin needles because they provide a better contact with the wood.
- after inserting the needles, turn the device off and on again place your hands on the wood to discharge any electrostatic charges.
- in extremely difficult conditions place the timber on a grounded metal plate or wire mesh.

9. Replacing the battery

During normal operation the battery should last for at least 1 ar. The meter is equipped with an active power level control unit. When the power drops below acceptable level a pulsating sign "BAT" appears on the LCD. This indicates that the battery has expired and should be replaced with a new one. To replace the battery (Fig. 2):

- unscrew the plastic cork in the handle of the device (an internal spring will push the battery out).
- gently slide the battery compartment out of the handle (but no further).
- take out the old battery.
- put the new battery into the compartment (pay attention to correct polarization – minus towards the spring).
- push the battery compartment back in and screw the plastic cork back on.

Fig. 2



10. Additional Information

(a) The most common cause of bending or breaking the needles is an incorrect way of pulling it out of the wood. To prevent the needles from bending (especially long needles in a hard wood) slide something (like a screwdriver) between the electrode and the wood.

(b) Every several hundred measurements check if the needles didn't become loose. Loose needles bend or break more easily.

(c) When measuring a very thick timber you can use nails of appropriate length and 1.5-2.5 mm. (see 5. SELECTING NEEDLES). The distance between them should be 25 mm. A line drawn between them should be perpendicular to the fibers. Then touch the nail heads' with the needles of the device, turn on the moisture meter and read the result..

(d) When measuring moisture contents in narrow pieces of wood you can do it along the fibers. For moisture contents over 20% the result will be a little bit higher than the real moisture contents. Results below 20% will not be noticeably influenced by the direction of the measurement.

(e) Wood Moisture Meter PCE-WMH3 is an electronic device. The components used for production of PCE-WMH3 guarantee its reliable and long operation. The part that is most often subject to accidental damage is the LCD. Please pay special attention not to damage the LCD during the measurements.

(f) When a needle breaks use a small screwdriver to unscrew the broken part of the needle or remove the plastic part, unscrew the bolts with the springs and unscrew the broken needles from the inside.

11. Storage

Store the device in a chemically neutral atmosphere In temperature 5°C to 40°C and relative humidity 20% - 70% RH. If the electronic circuits become moist, dry the whole device. Unscrew the plastic part with the needles and heat the device up to 40 – 50°C (not more). The drying should last at least a few hours.

For example you can put the device on a radiator.

12. Exotic wood types

Group 1 (set "WOOD TYPE" to 1)

Chipboard (phenolic resin bonded)	Gonzales Alves Parana Pine	Zebrano
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Group 2 (set "WOOD TYPE" to 2)

Assegai	Iroko	Pillarwood
Avodiré	Jarrah	Pink Ivory wood
Box-tree	Karri	Pockholz
Brazilian-rosewood	Kempas	Pyinkado
Chipboard (urea bonded)	Kokrodua	Quebracho blanco
Cedar, white + red	Mahagony, Khaya	Quebracho colorado
Cocuswood	Mahagony, Sapelli	Ramin
Columbian pine	Massaranduba	Redcedar, western
Cypress, southern	Mecrusse	Sandalwood
Dahoma	Moabi	Sapele
Dogwood Douglasie	Mora	Sasswood
Ebony, afr.+ asiat.	Mucarati	Satinwood
Ebony, macassar	Muhimbi	Snake wood
Europen aspen	Muhuhu	Sucupira
Freijo	Mukulungu Mukusi	Tali
Goncalo	Niove	Teak
Groupie	Nyankom	Tulipwood
Greenheart	Obeche	Wacapou
Guaycan	Okoume	Wattle, black
Hardboard	Olive tree	Wenge
Idigbo	Ozouga	Zapatero
Indian-Rosewood	Pear	
	Persimmon	

Group 3 (set "WOOD TYPE" to 3)

Abura	Andiroba	Azobé
Afcelia	Andoung	Baboen
Agathis	Angelin	Bahia
Agba	Angelique	Baitoa
Alder	Antiaris	Balau
Alstonia Amazokoue	Ash, americ.	Balsa
Amendoim	Ash, jap.	Balsamo
American – mahagony	Ash, meanness	Banga Wanga
Birch, yellow Birch, meanness	Aspe	Basswood
Blackwood, afr.	Assacu	Berlinia
Blackwood, austr.	Guatambu	Merawan
Blue Gum	Gum-tree	Merbau
Bomax	Haldu	Mersawa
Borneo	Hemlock	Moringui
Camphorwood	Hickory	Muninga
Brushbox	Hornbeam	Musizi
Bruyere	Horse-cestnut	Mutenye
Boire	Ilomba	Myrtle
Cabbage-bark, black	Izombe	Nyatch Oak, jap.
Campeche	Jacareuba	Oak, red
Campherwood, real	Jelutong	Oak, stone
Campherwood, afr.	Juniper	Oak, white
Canarium, afr.	Kauri	Oak, grape
Cativo	Keruing	Oak, haft
Chengal	Koto	Okan
Cherry	Landa	Okwen
Chickrasy	Larch, europ.	Olivillo
Cocobolo	Larch, jap.	Opepe
Coigue	Larch, sibir.	Ovangkol
Cypresse	Laurel, Chile	Ozigo
Daniellia	Laurel, Indian	Padouk, afr.
Danta	Limbali	Padouk, burma
Diambi	Lime	Padouk, Manila
Douka	Louro, vermecho	Paldao
Elm	Madrono, Pacific	Partidge
Esia	Magnolia	Pencil-wood, afr. + virg.
Eucalyptus	Mahagony, Kosipo	Pencil-wood, calif.
Europen-plane	Mahagony, Tiama	Pernambuc
Evino	Makore	Pine, black + red
Eyong	Manbarklak	Pine, weymouth + stone
Fraké	Manio	Pine, pitch + insignis
Gerongang	Maple, Mountain	Plum-tree
Gedu Nohor	Maple, soft	Podo
Guarea	Maple, sugar	Ponderosa Pine
Port-orfordcedar	Menkulang	Tupelo
Purpleheart	Meranti, yellow	Umbrella-tree
Quaruba	Meranti, white	Walnut, americ.
Rauli	Seraya, white+red + yellow	West-indian-locust
Red peroba	Sikon	Whitewood
Redwood, calif.	Spruce Western	White-afara
Rengas	White	White-peroba
Robinie	Shore-pine	Willow
Roble	Sucamore	Wood-fiber insulating panels
Safukala	Sugi	Yang
Saligna Gum	Sweet-chestnut	Yemane
Sapo	Sweetgum	Yew
Sen	Tchitola	
Sepetir	Thuya-Maser	
	Tangile	
	Toosca	

Group 4 (set "WOOD TYPE" to 4)

African walnut Akatio Aniegré Aningori	Bubinga Brasilian walnut Lauran, white + red Mahagony, Sipo	Mahagony Mansonia Meranti, dark red Meranti, light red
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13. Guarantee and service

TANEL Electronic warrants the Moisture Meter PCE-WMH3 to be free from malfunction and defects in both materials and workmanship for two years (24 months) from the date of purchase. If the Moisture Meter PCE-WMH3 does not function properly during the warranty period due to defects in either, materials or workmanship, our company will, at its option, either repair or replace the instrument without charge, subject to the conditions and limitations stated herein. Such repair service will include any necessary adjustments and replacement part.

Limitations

This warranty does not cover damage that may occur if you use excess force (in variance with instructions of this users manual) to hammer the device into the wood.

This warranty becomes null and void if you fail to pack your PCE-WMH3 in a manner consistent with the original product packaging and damage occurs during product shipment.

This warranty does not cover: circumstance beyond our company's control; service required as the result of unauthorized modifications or service; misuse, abuse; failure to follow our company operating or maintenance instructions.

Repair or replacement without charge is our company's only obligation under this warranty. Our company will not be responsible for any special, consequential or incidental damages resulting from the purchase, use, or improper functioning of this equipment regardless of the cause. Such damages for which our company's will not be responsible include, but are not limited to, loss of revenue or profit, downtime costs, loss of use of the equipment, cost of any substitute equipment, facilities of services, or claims of your customers for such damages.

Important

We recommend to prevent faulty result in measurements please check your meter reading results within a adequate time period by the dry oven test according DIN 52 183 Standard.

In this direction will find a vision of the measurement technique:
<http://www.industrial-needs.com/measuring-instruments.htm>

NOTE: "This instrument doesn't have ATEX protection, so it should not be used in potentially explosive atmospheres (powder, flammable gases)."