Moisture Meter
PCE-MMK 1
User Manual

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Please read this manual before switching the unit on.
Important safety information inside.

Contents **Page**

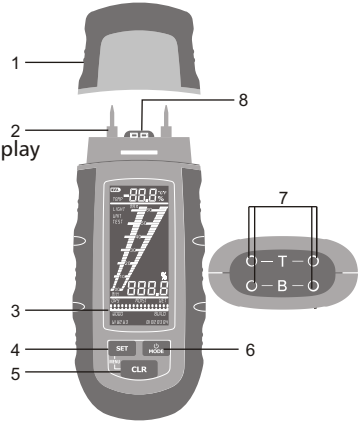
1. Function

Used to measure the moisture level in sawn timber (also cardboard, paper) and hardened materials (plaster, concrete and mortar)..in addtion, It measures the ambient Temperature & Humidity. The displayed value is material moisture in % with respect to dry mass. Example: 100% material moisture for 1 kg of wet wood=500g water.

2. Description

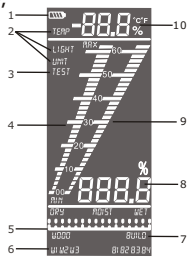
2.1 Overview

1-Protective cap
2-Test electrode
3-Digital and analog LCD display
4-SET switch
5-CLR switch
6-Power On & Mode switch
7-Self-Test point
8-Ambient Temperature
& Humidity Sensor



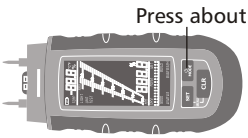
2.2 Display

1-Low battery charge
2-Set menu indicator:"LIGHT" for setting backlight mode,"TEMP" for setting compensate temperature, "UNIT" for setting ambient temperature unit.
3-TEST measure mode
4-Bar-graph display of measured MIN/Max values
5-DRY/MOIST/WET indicator (programmable)
6-Wood group (W1,W2,W3)
7-Building materials (B1,B2,B3,B4)
8-Digital display of materials moist
9-Bar-graph display of materials moist value
10-Digital Display of ambient Temperature
& Huimidity



3. Power On/OFF

Press the "**MODE**" for about 2s, the device will power on, when the device is actived, the display will show the ambient temperature for 2 seconds. Press the "**MODE**" for about 2s, the device will power off. the device will auto power off after 3 minutes.



(1)Power on

(2)Init Display

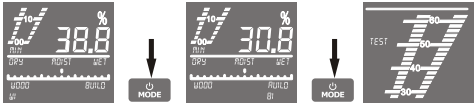
(3)start measuring

4. Measuring ambient Temperature & Humidity

The device measures the ambient temperature & huimidity while measuring moisture, and the ambient temperature is used as temperature compensation to increase the moisture accuracy. Press the "Set" key for about 2s, the display will switch between Temperature and huimidity. And you can change the temperature unit between °C and °F in setting menu, about the detail please refer to chapter 6.4.

5. Moisture Measure Modes Menu

There are four measure modes, you can switch among them by press “MODE" key.



Wood mode:W1,W2,W3

Building mode:B1,B2,B3,B4

Self-Test Mode

5.1 Select wood group in wood mode (A,B,C)

There are three wood groups selectable, you can switch among them by press **"SET"** key. Just which wood types are grouped under A, B and C can be found in the table 1.

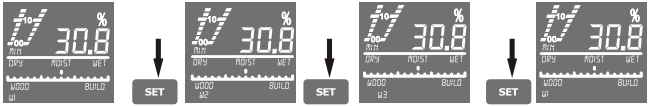


Table1: Wood group detail

Wood			
A		B	C
Abachi	Agda	mahogany	Afrormosia
Abachi	Maple	Pine	Rubber tree
Abura	Alder	Cherry wood	Imbuia
Pear wood	Patagonian cypress	Kosipo	Kokrodua
Black Afara	Purpleheart	Larch	Niove Bidinkala
Parana pine	Andiroba	Limba	Tola-real,red
Beech	Aspen	Mahogancy	Cork
Dabema	Balsa	Cherry mahogancy	Melamine partide board
Ebony	Basralocus	Meleze	Phenolic resin partide board
Oak,red	Tree Health	Poplar(all)	
Oak,white	Ebiara	Plum wood	
Ash	Birch	Pine	
Yellowheart	Logwood	Red sandalwood	
Ash-American	Juniper	Elm	
Ash-Japanese	Beech-European	Maritime pine	
	hombean		
Hichory-silver poplar	Hombeam-white	English oak	
Hickory-swap	Campeachy	Durmast oak	
Ilomba	Aiele	Tola	
Ipe	Kapok	Tola-branca	
Iroko	Douka	Walnut	
Small-leaved lime	Douglas fir	Westem red	
Small-leaved lime-American	Oak	Cedar	
Mockemut hickory	Oak-holm	White maple	
Niangon	English,dumast	White birch	
Niove	Emien	White beech	
Okoume	Alder-red,black	White poplar	
Rosewood	Ash	Swiss pine	
Rio rosewood	Yellow birch	Common aspen	
Common beech	Southem yellow pine	Damson wood	
Red oak	Hombeam	Cypress,red	
Teak	Hickory-silver poplar	Fibre board	
Willow	hickory-poplar	Wood fibre insulating board	
White oak	Izombe	Wood fibre hardboard	
Cedar	Guanandi	Kauramin partide board	
Cypress-C.Lusit	Jarrah	Paper	
Board	Elm	Textiles	
	Karri		
	Chestnut-sweet,red		
	African		

5.2 Select wood group in building mode (01,02,03,04)

There are four building material groups selectable, you can switch among them by press **"SET"** key. Just which building material are grouped under 01,02,03 and 04 can be found in the table 2.

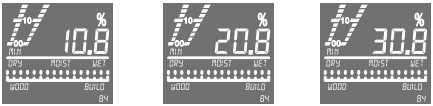
Table2 Building materials group

Building materials			
1	02	03	04
Gypsum plaster	Aerated concrete	Screed	Concrete
05	06	07	08
anhydrite screed	ardurapid cement screed	B25 cement	B35 cement
09	10	11	12
Elastizel screed	gypsum screed	wood cement screed	lime mortar
13	14	15	16
DIN magnesuim oxychloride flooring	expanded polystyrene	softboard(wood) with bitumen	cement bonded chipboard
17	18	19	
cement screed with bitumen additive	cement screed with plastic additive	cement mortar	

5.3 Wet/Moist/Dry indicator

In addition to the built-in material, a wet/moist/dry indicator is displayed for evaluating the moisture of other material (refer to table2). The moisture level is divided into DRY,MOIST,WET three grades, you can set the wet and dry threshold values in the setting menu, and then you evaluate the moisture level by the indicator.

The Dry/Wet index value of the indicator is programmable, about the detail please refer to chapter 6.2.



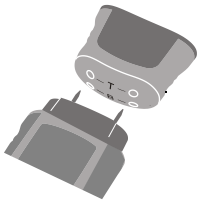
Almost Dry In Moist area In Wet area

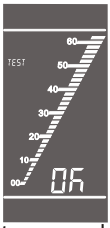
When measure build materials 5~19, The recommended DRY threshod value is 70 and WET threshold value is 850, and you can evaluate the moisture level by the following table:

	All values in material moisture %										
	5	6	7	8	9	10	11	12	17	18	19
WET	>0.9	>1.2	>1.8	>2.3	>2.8	>1.2	v>10	>2.5	>3.6	>3.2	>2.8
MOIST	0.9~0.5	1.2~0.9	1.8~1.4	2.3~1.8	2.8~1.6	1.2~0.6	10~6.2	2.5~1.6	3.6~3.2	3.2~2.8	2.8~1.5
DRY	<0.5	<0.9	<1.4	<1.8	<1.6	<0.6	<6.2	<1.6	<3.2	<2.8	<1.5

5.4 Self -Test mode

(1) Connect electrodes with "T" contacts to the protective cap.

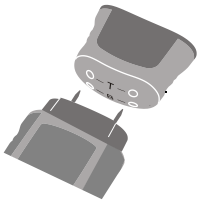




Test approved

Test not approved

(2) Connect electrodes with "B" contacts to the protective cap



Test approved

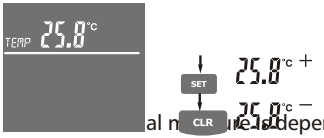
Test not approved

6. Setting Menu

Press SET CLR keys simultaneity, it will enter parameter setting menu, there are five setting menus, you can switch among them by press **MODE** key.

Set Temperature | set Dry index | set Wet index | set light mode | set temp unit

6.1 Set Material temperature compensation



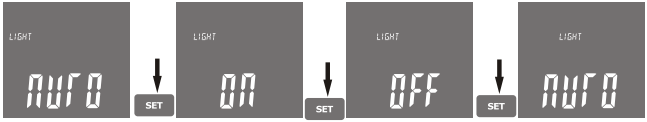
al measurement is dependent on the temperature of the material. The device automatically compensates different material temperatures in that it measures ambient temperature and use this measurement for its internal calculation.

In addition, the measuring device alse offer an option for setting the termperature manully to increase measuring accuracy. This value is not stored and must be set again each time the device is switched on.

6.2 Set Dry/Wet indicator

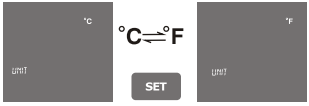
The dry/moist/wet indicator can be programmed to the already predefined values. This produces a new setting for the "Wet" and "Dry" threshold value. You can set the value from 0 to 1000.

6.3 Set LCD backlight mode



LED display illumination can be varied with 3 different settings:
AUTO: Display illumination switches off during periods of inactivity and switches on again automaticlly for measurement again.
ON: Display illumination remains on permanently.
OFF: Display illumination remains off permanently
The setting is no stored and default setted as "AUTO" mode each time the device is switched on.

6.4 Set Temperature units



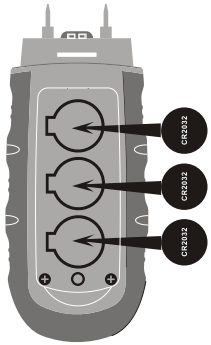
The units of measure for ambient temperature and material compensation can be set to either °C or °F. The setting is stored and remains in effect until it is changed manually.

7. Function Check

Select the "Index Mode" as section 5.4 descripted.
"O------T------O"
Connect electrodes with T contacts to the protective cap.
Reference display for index: 300±15
"O…… B……O"
Connect electrodes with B contacts to the protective cap.
Reference display for index: 600±15
Function error: Send instrument for servicing.

8. Replace Battery

When the batteries become exhausted or drop below the operating voltage, the battery warning symbol " " will appear in the LCD display. The battery should be replaced.
Unscrew the 1 screws at the back of the instrument.
Remove the battery housing. Change battery. Observe polarization!
Reconnect instrument.



9. Technical Data

Measuring principle: Electrical resistance
Electrode length: 8 mm
Electrodes: Integrated, replaceable
Measuring range: Wood: 1-75 %
Building material: 0.1-2.4 %
Ambient temperature: -40 to 70°C(-40 to 158°F)
Ambient Relative Humidity: 0 to 100%
Accuracy: Wood: 0…30%/±1 %
30…60%/±2%
60…75%/±4%
Other materials:/±0.5%
Ambient temperature: -40°C～ -10°C and +40°C～ +70°C/±2°C
-10°C～ +40°C/±1°C
Ambient Relative Humidity: 0～20% and 80°C～ 100%/±5.0%
20～80%/±3.5%
Auto power OFF: After approx. 3 minutes
Auto LCD backlight OFF: After approx 10 seconds
Battery: 3 × Cr 2032, replaceable
Housing material: Impact-proof plastic housing
Ambient temperature: 0 - 40°C
Ambient Relative humidity: 0-85 %RH
Dimensions: 139×47×25 mm
Weight: approximately 100g
Warranty: 1 year

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