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Apéndice:

Nota:
Nota:
Seleccione el grado "0" para densidades inferiores a 0,35

Tabla de densidad seca absoluta de la madera

Madera	Densidad	Grado	Madera	Densidad	Grado
Abeto de Douglas / Pseudotsuga	0.45	2	Quercus	0.78	6
Pino	0.45	2	3LQREODQFRSLQRSD}FDU	0.35	1
Cedro	0.50	2	ĐDPR	0.45	2
Alder	0.47	2	0DSUDSUDGDFLyQ	0.37	1
Álamo	0.42	2	3LFHD	0.43	2
Ceniza de Manchuria / ceniza china	0.60	3	Shadlock	0.60	3
Tilo	0.37	1	1RJDOQHJUR	0.60	3
Abedul	0.57	3	1RJDOPDQFKXLDQR	0.47	2
Cerezo	0.50	2	+DĐ	0.65	4
ĐDPRS9LUJLQLD	0.40	1	Ormosia henryi	0.82	7
&SUpV	0.40	1	0DSUDSDODSSROOR	0.80	6
2OPR	0.58	3	ĐEROSJRPD	0.65	4
6HFRĐ	0.35	1	2OLYR	0.75	6
&FWD	0.45	2	Hard firmiana	0.35	1
+Lckory	0.75	6	Ipe	1.00	9
6HUFH	0.58	3	Iroko	0.60	3
&REDILOLSLQD	0.50	2	Jatoba	0.80	6
&REDDIULFDQD	0.50	2	Keruing	0.60	3
Khaya	0.50	2	Keruing	0.65	6
&REDDXWUDOLDQD	0.85	6	Merbau	0.72	5
6FH	0.55	3	Okume	0.40	1
Eucalyptus saligna	0.55	3	Ramin	0.55	3
(ucalyptus saligna HVFDUODWD	0.75	6	Cumaru	0.90	8
5REOHURMR	0.65	4	Faber oak	0.70	5

Olive tree

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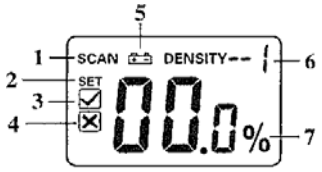
Funciones:

1. Tecla para encender / apagar y ajustar el límite superior
2. Tecla para ajustar la lectura del límite superior
3. Tecla para establecer el cambio de límite superior
4. Tecla para el ajuste de grados de densidad de madera
5. LCD

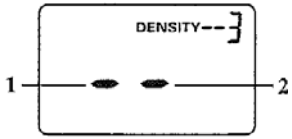
Nota:
Las descripciones de las funciones de las teclas sólo son una introducción simple, por favor lea la parte de instrucciones de operación en este manual para más detalles.

Indicación de medición (Fig 1):

1. Mensaje de medición
2. Ajuste del límite superior
3. Sin exceder el límite superior establecido
4. Exceder el límite superior establecido
5. Indicador de bajo voltaje
6. Selección del grado de densidad de la madera
7. Lectura



(Fig 1)



(Fig 2)

Indicación de calibración (Fig 2):

1. Calibración rápida a cero
2. Calibración rápida de temperatura

Introducción:

Le invitamos a utilizar nuestro producto. Antes de usarlo, lea la descripción cuidadosamente. Le dirá cómo usarlo correctamente e inspeccionarlo de una manera simple de modo que la durabilidad del instrumento que adopta ondas electromagnéticas de HF para medir la proporción del contenido de la humedad sin dañar el objeto bajo prueba. Puede ajustarse dependiendo de los tipos de árbol para aumentar su precisión de medición.

Características:

- Medición mediante detección electromagnética de ondas decamétricas
- 10 opciones diferentes densidades de madera
- Compensación automática de la temperatura
- Ajuste del límite superior de la relación de contenido de humedad, indicación de sobrecarga
- LCD ultragrande que garantiza lecturas claras
- Indicación automática de baja tensión

Especificaciones técnicas:

Rango de medición:	4~80%
Error Max.:	+- (1% Rh +0.5)
Resolución:	0.5%
Temperatura:	-10°C~60°C
Humedad:	0~70% Rh
Fuente de alimentación:	3 x 1.5V AAA
Peso:	95g (no incluye batería)
Medidas:	132x67x25 mm

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Operational description:

1. Switching on/off

Keep “MODE” key pressed for 2 seconds, the meter will be switched on to enter its measurement status and the screen will display “SCAN”. Upon completion of measurement, the meter will be switched off after “MODE” key is kept pressed for 2 seconds. The instrument will auto-turn off if there is not any operation within 5 minutes.

2. Setting of upper limit of moisture content

Touch “MODE” key after the meter is switched on, and the meter will enter the mode for setting upper limit of moisture content. The screen will display “SET”, and a digit will blink at the display position. Press “ ▽ “ key to adjust the blinking figure or press “ △ “ key to adjust the position of the blinking figure. Touch “MODE” key for confirmation to retreat from the set status and “SET” will disappear on the screen and “SCAN” will be displayed to enter the measurement status. During measurement, on the left side of the display screen will appear prompt “ ☑ “ meaning not exceeding upper limit or “ ☒ “ meaning exceeding upper limit. If no upper limit has been set before measurement, neither “ ☑ “ nor “ ☒ “ will appear during measurement.

3. Selection of timber density grades

After the meter is switched on, press “DENSITY” key to select 0-9 according to the table of timber absolute dry density.

4. Calibration status

With the meter switched off, take off the battery, keep pressed “MODE” key while installing the battery and then release “MODE” key. The meter will automatically enter its calibration status. While holding the two sides of the meter in the air, press “ △ “ key to calibrate zero point. When the first “ ⬭ “ blinks, zero point calibration is completed. Press “ ▽ “ key for temperature calibration. When the second “ ⬭ “ blinks, temperature calibration is completed. After calibration, keep “MODE” key pressed to switch off the meter. When the meter is switched on again, it will enter its measurement status.

Note:

Meter must be calibrated when the following conditions occur:

1. Install battery and use meter for the first time.
2. The meter has not been used for a long time.
3. Usage environment temperature have greater changes.

5. Measurement

After the meter is switched on, keep its bottom in complete contact with the object under test (Keep a flat side of a small object in complete contact with the sensor at the meter bottom), and the display screen will show “SCAN”. Select a proper grade according to the absolute dry density of the timber under measurement (grade 3 is the default). The figure displayed at this time is the moisture content ratio of the measured timber. If the upper limit has to be set, refer to VI. 2 setting upper limit of moisture content.

6. Measured timber

If the measured timber is not included in the table of timber absolute dry density, you may make the measurement by yourself using the following method:

Weight unit: gram | Volume unit: cubic cm

$$\text{Density} = \frac{100 \times \text{weight/volume}}{100 + \text{timber moisture content}}$$

Exmaple:
If the timber is 100cmx12cmx2.5cm, then its volume is 3000 cubic cm. The measured weight of the timer is 1510g, its moisture content ratio is 12% (acquired in the baking method), and then the timber absolute dry density is:
Density= (100x1510/3000) / (100+12)= 0.45

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Answers to technical questions:

1. How many methods are there for measurement of moisture content rate?

Answer: They are drying method, electrometric method, dry distillation method, titration method and moisture method. Drying method and electrometric method are normally used in the production test. In the drying method, the moisture content ration is obtained by measuring the difference of moisture content of timber specimen before and after drying (absolute dry). Having a high accuracy and being time-consuming and tedious, it is usually used in laboratories. In the electrometric method, the moisture content ratio is measured according to some electrical properties of timber. It is quick and convenient, having an accuracy below that of the drying method, but it can meet the production and technological requirements, and is thus applicable to manufacturing of timber and bamboo products on a large scale.

2. What is the difference between inductive type and probe type moisture meters?

Answer: The electrometric method is mainly divided into DC resistance type (probe type) and AC dielectric type (inductive type). In the probe type, a probe is inserted into the inner layer of the timber to measure the resistance between the two electrodes within the measurement range of 2-70%. Among the influential factors are: tree type, texture direction, temperature and insertion depth. Normally, the displayed figure is smaller in the horizontal direction than in the texture direction, latter being taken as the basis in most cases. The density of the tree type does not influence moisture content to a great extent. For instance, Chinese fir (a softwood) and oak (a hardwood) differ greatly with respect to density, but equilibrium moisture contents are about the same. Inductive type meter is the AC dielectric type meter. Such meters adopt tabular electrodes or punch electrodes. During measurement, the polar plate clings to the timber surface. Such meters allow quick and each operation, but their measurement accuracy is not as good as that of probe type.

3. Why do the measurement results of moisture meters differ from different manufactures and of different types?

Answer: Different tree types, different temperatures and timber from different regions influence electric parameters to a great extent, and most of the miniature meters can not offer corrections on tree type and humidity. Instead, they can only be based on a certain tree type and humidity. Different bases of different meters will certainly lead to difference in measurement results.

Maintenance and warranty:

Replacement of battery:

a. When the battery voltage is too low, the display screen will show “ 🔋 “, meaning that it is necessary to replace the battery. If it is not replaced in time, the measurement accuracy will be affected.
b. Open the battery door and take off the battery.
c. Install the battery correctly according to the marks on the battery compartment.
d. If the meter is not to be used for a long time, take off the battery to prevent liquid leakage and damage to the meter

Points for attention:

1. This meter has a temperature compensation function. Before using it, keep it at the same temperature as the object to be tested for at least 5 minutes.
2. Keep the meter away from water or any corrosive liquid to avoid damage.
3. Keep the meter away from any electrified object to avoid damage.
4. This meter will be influenced by the electric field. Do not make measurements in the vicinity of any electric wire whenever possible.

⚠ **Please note:**

Please prepare measuring very carefully. The device should de regularly cleaned with cotton-cloth.
Do not use petrol. Do not expose the device direct to the sun light, ultraviolet rays or extreme temperatures.
Prevent it from any shock and do not immerse the device in any liquid.

Electric etching or engraving by high voltage can destroy the electronic chip, no guarantee will be given!
Never dismantle the calliper housing. The battery should be taken out, if no use for a long time.
Do not give batteries and devices in refuse. Please give it to a special collecting depot.

Declaration of conformity and confirmation of traceability:
We declare under our sole responsibility that this product is in conformity with standards and technical data as specified in our sales documents (operation instructions, leaflet and catalogue).
We certify that the measuring equipment used to check this product, and guaranteed by our Quality Assurance, refers to national standards. Thank you very much for your confidence in purchasing this product.

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