



Device for measuring moisture content of paper and cardboard M121P



User's manual

Made in Ukraine

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Purpose and application

The METRINCO M121P is designed to measure the moisture content of paper and cardboard in a non-destructive manner. The device is based on the dielectric measurement method.

Technical characteristics

- Measurement method: dielectric, non-destructive.
- Moisture measuring range: 0–99.9 % (depending on the group).
- Number of paper groups: 5.
- Number of cardboard groups: 6.
- Accuracy: ± 2.0 %.
- Resolution: 0.1 %.
- Penetration of the high-frequency radiation field: 50 mm.
- Operation conditions: 0~60 °C, 0–90 % relative humidity.
- Power supply: 3 1.5 V AAA batteries.
- Dimensions: 145x68x25 mm.
- Weight: 150 g with batteries.

Device description

The device has four buttons and a graphic screen for displaying information. The appearance of the device is shown in Fig. 1.

1. Sensor.
2. Display.
3. POWER button.
4. SET button.
5. ▲ / HOLD button.
6. ▼ / LIGHT button.



Figure 1 — Device appearance

Buttons functions:

- Switch on/off (POWER) — switch on or off by holding down the button.
- Set (SET) — selection of the measurement group by paper type and cardboard structure.
- Button ▲ — moves upwards in the material group selection mode or the HOLD function in the measurement mode.
- Button ▼ — move down in the material group selection mode, switch on/off the LIGHT backlight in the measurement mode.

Operating modes of the device

The device operates in the following modes:

Measurement mode (SCAN) — the main mode of device operation, which provides display of measurement results, selected paper (cardboard) type, battery charge indicator, as shown in Fig. 2.

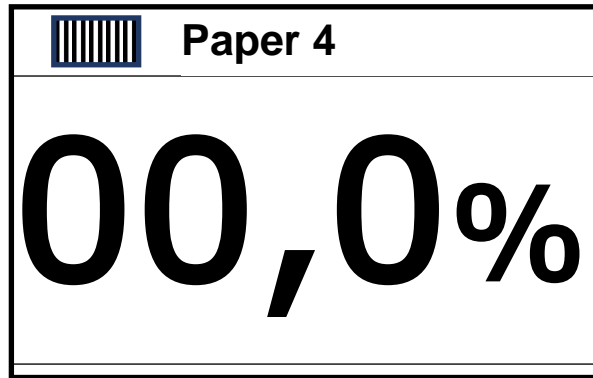


Figure 2 — Device screen in measurement mode

Material selection mode (SET) — allows to select paper group by the type.

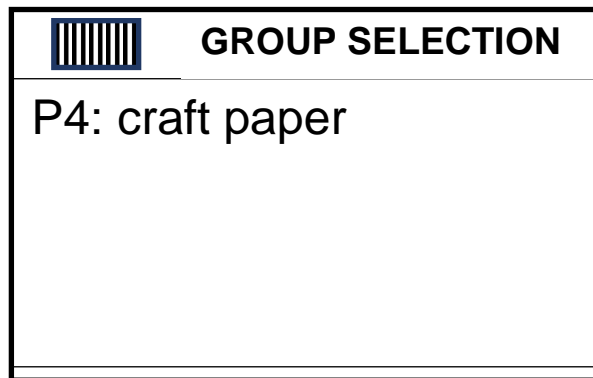


Figure 3 — Device screen in wood selection mode

Calibration mode (CAL) — is intended for calibration of the device at the zero point of the measuring range (Fig. 4). It is used when in the measurement mode the measurement result does not take a zero value in the absence of a test sample.

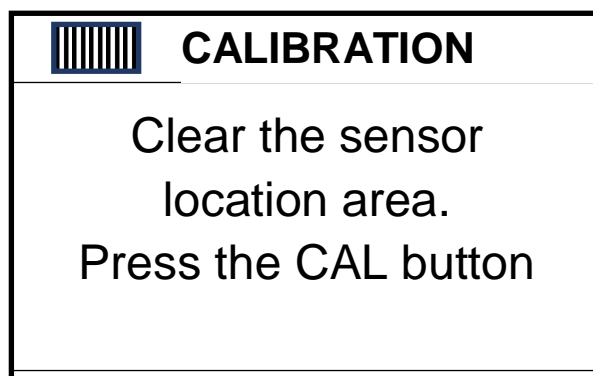


Figure 4 — Calibration mode screen

Calibration of the device should be performed only if the measurement result in the measurement mode does not reach zero in the absence of a test sample. To do this, when the instrument is switched off, hold down the “SET” button and switch on the instrument.

After that, release the buttons and, having released the sensor area, press the “SET” button again. When the calibration is complete, switch off the device.

Built-in functions

The function of holding the measurement result on the screen is activated and deactivated by pressing the button (▲/HOLD) and in the measurement mode ensures fixing the measurement result on the device screen until the button is pressed again.

Battery charge control function. The device signals about the battery discharge with the corresponding image on the display. When the battery level falls below a certain threshold, the device does not switch on, but signals the low battery by flashing the screen backlight.

The screen backlight function is switched on/off by pressing the button (▲/ LIGHT) in the measurement mode.

Auto-off function. If the device is inactive (no buttons were pressed or the measurement result was changed) for 5 minutes, it automatically switches off.

Operation of the device

To measure, switch on the device and, if necessary, change the measurement mode. Switch on the device by pressing the POWER button. To do this, hold it down for about 1 second. After switching on, the device will immediately enter the measurement mode (with the last settings saved). The number and type of the material group (paper, cardboard) is displayed at the top of the screen.

To select a material group, press the “SET” button. The screen displays a mode selection window, in which the buttons “▲”, “▼” should be used to select the desired material group by name or structure (in case of cardboard), which is indicated after the group description in brackets. Pressing the “SET” button again fixes the selected material group and switches the instrument to the measurement mode.

When selecting a paper group, consider its specific gravity. Group P3 is used for paper with a density of 80 g/m². For paper with a lower specific gravity, select Group P2 or P1, and for denser paper, select Groups P4-P5.

When measuring the moisture content of cardboard, select groups K1-K6, taking into account the structure of the cardboard, use the drawings in the material table of the device.

Layers of the material to be measured should be placed tightly, without air gaps between them. When measuring the moisture content of rotating rolls, remove electrostatic charge from them with a copper brush.

For measuring the moisture content of materials with a thickness of less than 10 mm, the sensitivity of the device is usually insufficient. However, it is possible to make a comparative measurement and identify areas of the material with high humidity.

To obtain more accurate measurement results, it is recommended to measure a bundle of at least 20 mm thick, folded without air gaps between the sheets.

If the thickness of the test sample is less than 50 mm, it is advisable to measure its moisture content in air or by placing a sheet of expanded polystyrene under it.

To perform the measurement, place the sensor plates of the device on the surface of the material to be measured and read the moisture value from the device screen.

If you need to fix the measured value on the screen, press the button (▲/HOLD), pressing it again will switch the device back to the measurement mode.




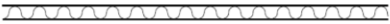


To switch off the device, hold down the Power/Mode button for about 2 seconds.

The device can measure the moisture content of materials under non-conductive coatings, such as screeds under linoleum, bulk materials in PVC bags, etc.

Attention! Make sure that the area where the electrodes of the instrument are located on the surface of the area to be measured is free of water or other substances that can cause an electrical circuit between the electrodes of the instrument's sensor. An electrical short circuit between the measuring plates will cause a distortion of the measurement result. Also, the presence of metal objects under the surface in the humidity measurement area can lead to a significant measurement error. The description of material groups of METRINCO M121 is given in the table.

Table of material groups of the METRINCO M121P moisture meter

Group	Material
Paper	
P 1	filter paper, tissue paper
P 2	semi-pulp, corrugated/stapled paper, multilayer waste paper
P 3	wrapping paper, corrugated paper 80 g/m ²
P 4	craft paper
P 5	offset paper

Cardboard		Structure
K 1	two-layer cardboard 3.6 mm	
K 2	three-layer cardboard 6.4 mm	
K 3	three-layer cardboard 2.8 mm	
K 4	six-layer cardboard 1.5 mm	
K 5	seven-layer cardboard 1.0 mm	
K 6	six-layer cardboard 2.0 mm	

The warranty for the device is 24 months from the date of sale.

The warranty for the probe is 12 months from the date of sale.

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Serial production of moisture meters complies with the basic requirements of the Electromagnetic Compatibility Directive 2014/30/EU. The full text of the declaration of conformity can be found on our website at metrinco.com or sent to you upon request to our email address.

Serial number: _____

Sale date: _____

Seller signature and stamp: _____