User Instructions for pin-less Ligno-Scanner SDM

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Ligno-Scanner SDM - pinless

The SDM is a capacitance-type meter for wood, bamboo and building materials. The sensor plates on the back emit and pick-up very low-powered electromagnetic signals.

The readings generated by the Ligno-Scanner SDM are average values of the entire measuring field between the surface and the maximum depth of penetration. Moisture closer to the surface has a greater effect on the average than the moisture closer to the maximum depth of penetration.

All Lignomat meters internally check and adjust the calibration. Therefore manual recalibration is neither needed nor possible.

Wood

Range: 5*-60%. Readings above 25% fiber saturation point are less accurate. *To check the lowest possible reading, hold the meter in the air and push the READ key. The range for hardwoods with high specific gravity is lower than 5%. The range for softwoods with low specific gravity is higher than 5%.

Settings: 30-100.
Gravity Range 0.3 to1.0. For unlisted species the specific gravity can be used as species setting. For example, if the specific gravity is 0.42 the setting is #42. Values for the specific gravity can be found on the Internet by entering <specific gravity...> followed by the name of the wood. For calculations see section F1.

For unlisted species or new products Lignomat offers testing to determine the correct setting.

Sheetrock: # 15, range 0-2%. Moisture values are in percent.

Bamboo: Check green card for code#. Range same as for wood.

Concrete: Code# 25, reference scale only 0-99. See section F4.

Reference scales:
Code# 0: Sensitivity level for laminates and products out of wood.
Code#10: Sensitivity level for building materials lighter than concrete.

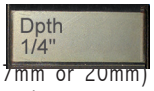
Selectable Measuring Depth:
1/4" (7mm) and 3/4" (20mm)

Check and Change Settings

Settings for wood species and building materials are listed on the laminated pocket guide included with each meter. To recall active settings push the SET/HOLD key repeatedly. Use ▲ or ▼ keys to change settings.

1 st: Active Material Setting for wood and non-wood materials

2 nd: Active Measuring Depth for 1/4" or 3/4" (7mm or 20mm) Use ▲ or ▼ key to change.



Change mm to inches: Disconnect battery and press SET key twice. Connect battery again. The display pictured below will appear, push ▼ key to change from inches to mm and push ▲ key to change from mm to inches.

3.24 is the software version.

Take Measurements

After settings have been checked / changed, push the READ key to obtain moisture readings. The active setting appears briefly, followed by the default (lowest) reading, if the sensor plates are not in contact with any material.

For actual measurements, place the meter on the test sample (for wood in the direction of the grain). Press down slightly, holding the outer sides of the meter without touching sample with your hand.

The HOLD key is used to freeze the indicated value for one minute. Helpful when taking notes or when measuring in places, where the display cannot be read while measuring. At any time you can switch back to measuring by pushing the READ key again.

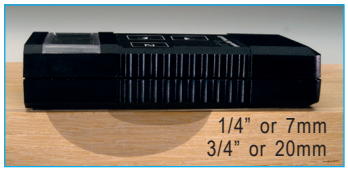
When the moisture is too low to measure, the default reading appears with "Min" in the lower left side of the display. When the moisture is too high, the highest moisture value is displayed with "Max" on the lower left side of the display.

For accurate readings:
- Sample should be big enough to cover both sensor plates
- Measuring depth has to be set according to sample thickness.
- Surface should be smooth and flat. For uneven surfaces take the highest value of several measurements.

To eliminate any possible influence from material underneath the sample board, it is recommended (if possible) to arrange the sample so that an open space is directly underneath the measuring area. If this is not possible, make sure the Ligno-DuoTec BW is set for the correct measuring depth.

Selectable Measuring Depths

Unique to Lignomat's meters.
Dual-depth feature allows measuring:
- All thicknesses from veneer to 1.5". See section B8.
- Hardwood top layer of laminates or engineered boards and floors.
- Wood floors thinner than 3/4" without including concrete or subfloor underneath.
- Moisture close to surface and deeper down to compare core and surface moisture.



The measuring depth is crucial. For samples thinner than the measuring depth, readings may not be accurate:
-If not enough test material is underneath the sensor plates, values may be too low.
- If material underneath the test sample is included in the measure ments, values may be too high.

Toggle between 1/4" and 3/4"

While measuring, you can toggle between the two measuring depths. Push the ▼ key to switch to 1/4" (20mm). Push the ▲ key to switch to 3/4" (7mm). One hand can hold the meter, the other hand can activate the up or down key. You do not have to move the meter at all.

A great way to compare surface with core moisture.

Veneer

We recommend placing a lightweight material such as Styrofoam under the veneer. It not only prevents inaccurate readings, but also helps to create a flat measuring platform for the veneer. To obtain accurate readings for very thin veneer it may be necessary to make a stack of several sheets.

Find Settings for Composite and Engineered Boards.

If the sample to be measured is composed of different wood species or different materials (linoleum glued on to wood, plywood, bamboo flooring with a wood core, etc...) or if no wood species setting exists a setting can be found by using a dry sample board.

The dry sample could come from your office or from an area that has already dried out or from a place where excess moisture never reached. Estimate the moisture... (continued section F1)

content. An acclimated sample from a home, office or show room should be at around 7.5%.

Start by selecting setting #50. Then take a measurement.
- If the reading is below 7.5%, choose a setting lower than #50.
- If the reading is above 7.5%, choose a setting higher than #50.

Then take another measurement. Change settings, until you find a setting, which gives a value of 7.5%. This setting can be used in the future for the same product.

Calculating Specific Gravity

The specific gravity can be calculated, if the Weight (W) in Ounces and the Length, Width and Heights in inches is available:

$$\frac{(\text{Weight} \times 1.73)}{(W \times L \times H)}$$

Once the specific gravity has been found (value between 0.3 and 1.00) the corresponding setting is between 30 and 100. See section B2.

For the Floor Installer

Moisture meters should be used throughout the installation process. First, when the floor is delivered, to make sure the floor is dry.

Next, before and after acclimation, to make sure the floor is acclimated to the ambient conditions at the place of installation. Best mark selected sample boards and take readings repeatedly.

The moisture condition of the floor should be documented at the time the customer signs off on the installation. Select several moisture sensitive areas. Take readings on both depth levels and document the readings with species setting, measuring depth and location. Maybe even taking a photo to pinpoint the location. If you ever have to go back to check out a complaint, you can measure the same areas again and compare with the original readings. Keeping track of moisture conditions may in the end protect you from unwarranted claims.

Comparing readings taken at 1/4" and 3/4" can also help to diagnose problems and indicate if moisture was absorbed from the down-side or the up-side of the floor.

Measuring Concrete and other Building Materials

Comparative readings can be taken in most building materials, where higher readings indicate more moisture. These qualitative test results can indicate problem areas. Test results from pin or pinless meters should not be used to decide whether or not to lay a wood floor over a concrete slab. An RH in-depth probe test is recommended. NWFA ruling. See section F6.

Moisture Problems

Nobody would worry about moisture if it would not be for shrinking and warping or mold and dry rot.

Assuming wood was dry initially, no problems will occur
- if the ambient conditions are kept between 35-50% relative humidity at a temperature of 60-80^{0}F.
- if the building is healthy and moisture from the outside cannot migrate through the concrete floor, the walls and roofs to the inside.

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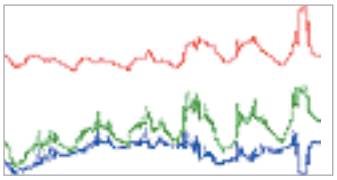
To help investigate moisture problems, Lignomat developed the new BL2 moisture tracker. With the BL2 you can simultaneously record moisture in wood, drywall and concrete and RH / temperature.



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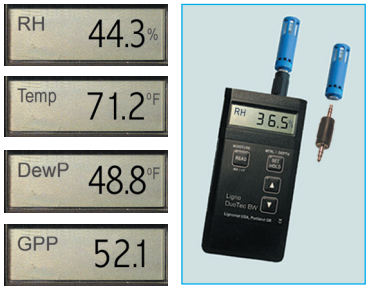
Relative humidity has a great impact on materials, which absorb and release moisture, such as wood and products made from wood, drywall and concrete.

Lignomat manufactures three handheld meters to measure relative humidity and temperature (Dewpoint T and GPP included):

Ligno-Tec RH: RH mode only

Ligno-DuoTec BW: RH mode plus pinless meter with the same features as the SDM.

Ligno-VersaTec: RH mode plus pin and pinless meter.



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Accessories are available for the RH meters to measure moisture in concrete slabs: RH BluePeg sensors, RH Cable and Sleeves. Lignomat's RH BluePeg system complies to ASTM F2170-09 standard.

Test methods such as the Calcium Chloride test or measurements with hand held pin or pinless moisture meter have proven to be unreliable. The in-depth RH test can detect excess moisture inside the slab, which will rise towards the surface, once the floor covering is installed. Just like wood moisture which can hide in the core of a board and cause problems after the board has dried out.

See separate RH BluePeg instructions on how to obtain measurements, which comply with the ASTM regulations.

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Specifications and Warranty

Ligno-Scanner SDM: For Measuring Range and Settings for wood species and materials see section B1, 2.

Size: 2"x 5.5" x 1" (12 x 6 X 2.5cm)
Sensor Plates:
2 1/2"L x 1 1/2"W (65 x 40mm)

Battery: One 9V battery (included). To exchange the battery, slide battery cover off on back of instrument. A low battery symbol will appear on the display, when the battery has been drained to 25% of its capacity.

Warranty: All Lignomat meters have a two year warranty. Accessories have a one year warranty. Battery excluded.