

# PROTIMETER SURVEYMASTER

## Moisture meter – instructions for use

The Surveymaster moisture meter is a dual mode meter used for accurately measuring the moisture level of sawn and planed wood, and approximate values of wood based materials such as mdf, chipboard and porous non-timber construction materials. It has two modes of operation – Measure (resistance through pins) and Search (electric field) that when used together greatly enhance the users ability to identify the extent and profile of excess moisture and to diagnose the cause of moisture related problems.



The Surveymaster incorporates a digital display that is synchronised with a colour coded LED scale. When measuring wood in Measure mode the digital display quantifies the actual moisture level of the material. When measuring woodbased materials in Measure mode the LED scale indicates the material's very approximate moisture condition. For wood the green zone readings represent a safe, air-dry state, yellow zone readings represent a borderline state and red zone readings represent a damp unsafe condition.

### **Search Mode Operation (electric field)**

The Search mode utilises a radio frequency transceiver located in the sensor bulge on the underside of the Surveymaster to give relative readings within the material against which it is held to a nominal depth of 5-15mm. The depth of measurement is subject to the characteristics of the material under test.

1. Press O to switch on the Surveymaster, leave the needle cap in position as this should touch the measured object in Search mode.
2. Check which operational mode the instrument is in by looking at the letters in the digital display. REL indicates the Surveymaster is in *Search mode* and % WME indicates it is in *Measure mode*.
3. If the instrument is in Measure mode, press > to switch to Search mode and REL will appear in the display.
4. Ensure that your forefinger and thumb do not extend below the black grip band and hold the sides of the instrument, not below it.

5. Place the instrument against the surface of a wall, floor or point of measurement. Note that the Surveymaster should be held so that both the instrument needle cap and the sensor bulge are in contact with the surface. This positions the meter at a nominal 25° to the surface and helps to maintain repeatable readings.
6. Read the relative moisture level value from the display and note the moisture condition of the material from the colour coded LED scale.

When used in *Search mode* the Surveymaster is a moisture detector. Search mode readings give, in relative terms, the moisture condition beneath the surface of materials. This mode of operation is ideal for making rapid surveys of solid walls and floors and to pinpoint areas of concern that may justify a more extensive investigation. The Search mode may also be used as an alternative to the Measure mode when it is impractical or undesirable to push electrode pins into surfaces. Consider, for example, taking moisture readings behind ceramic tiles in shower cubicles or in walls covered by quality wallpapers where pinholes would not be acceptable.

Note that surface moisture (such as condensation on an otherwise dry wall) has little effect on Search mode readings. Conductors other than water such as steel or some minerals within the material may cause high Search mode readings.

### **Measure Mode Operation (resistance)**

In Measure mode the Surveymaster uses electrical conductance principles to measure the moisture level of the material between two electrodes. The instrument has integral pin electrodes that may be pushed into surfaces, or it may be used with various auxiliary moisture probes including Deep Wall Probes (supplied) or a Hammer Electrode (optional).

1. Remove needle cap from the top of the Surveymaster and press  $\text{O}$  to switch on. Check which operational mode the instrument is in by looking at the letters in digital display. % WME indicates the Surveymaster is already in Measure mode, REL indicates it is in Search mode.
2. If in Search mode, press > to switch to Measure mode, % WME will display then push the pins into the surface of the material at the required point of measurement.
3. Read the moisture level value from the display and note the moisture condition of the material from the colour coded LED scale. Note measurements taken in wood are actual % moisture content values for European redwood / Scots pine, other species require tables to convert. Readings taken in material other than sawn or planed wood are % Wood Moisture Equivalent (% WME) values – see Measure Mode Interpretation for more details or see [www.verus.co.uk](http://www.verus.co.uk)

### **Using Auxiliary Moisture probes in Measure Mode**

The Surveymaster is supplied with a loose Moisture Probe and lead for taking measurements at points that cannot be reached easily with the integral electrode pins. To use, connect the Moisture Probe jack plug to the socket on the right side of the instrument and push the Probe pins into the surface at the chosen point of measurement.

A pair of Deep Wall Probes is also supplied for taking readings at depth in walls and floors. To use, drill two clearance holes of 4mm diameter between 20 and 40mm apart to the required depth. Connect the Deep Wall Probes to the instrument and push the two probe rods into the clearance holes. Hold them firmly against the base of the holes and take the reading. Heat from drilling may reduce the true moisture level temporarily.

Deep Wall Probes may be used to investigate high readings that may have been obtained in Search mode. They may also be used to determine the moisture profile through a structure by increasing the drilled depth of the clearance holes incrementally.

Measure mode readings are precise and specific to the area between the electrode tips. Actual percent moisture content (% mc) values are measured in planed or sawn wood. Wood Moisture Equivalent (WME) values are measured in materials other than solid wood such as chipboard or MDF.

### **Instrument Calibration Check**

An optional calibration check device is supplied with the instrument for checking the Measure mode calibration. The calibration of the Surveymaster is for scale: European redwood most other species need correction tables, ask Verus if you need these.

Protimeter advise to check the **Search mode** operation by holding the instrument against a reference masonry wall that is assumed to be in a stable condition that does not have any pipes or wires running through it. Note the relative value that is displayed. Check the instrument at the same position on the reference wall at regular intervals. If the reading varies from the original Verus can calibrate against a traceable inductance reference.

### **User Set-up Options**

The Surveymaster is initially set-up to switch off automatically after 1 minute and to emit an audible beep beyond yellow zone readings. The user may change these default settings by entering the Set-up mode. With the instrument switched off, press and hold the lower button > and switch on the upper button Ó. Display will show the firmware version number (eg “4.02”) until both buttons are released. Information then scrolls across the display, starting with the part number (“bld5360”) and firmware date in the form yy-mm-dd (eg “03-03-24”) followed by the calibration code (eg E1-1).

Once the scrolling is complete, display shows “0 = 0” meaning that option 0 is set to 0. The Ó and > buttons may now be used to change the instrument options and settings respectively as detailed in the Set-up Table.

Ó When option No. is	> Setting Number is	Surveymaster Set-up is
0	0	Instrument settings are not changed from previous settings
0	1	Instrument default settings loaded – switches off automatically after 1 minute, beeper is activated
1	0	Beeper is switched off
1	1	Beeper beeps when switching from one operational mode to the other
1	2	Beeper beeps with increasing frequency from nominal 170 value in Search mode and 17% WME in Measure mode
2	0	Auto switch off is not active. Instrument can only be switched off by pressing Ó and holding for 3 seconds
2	1	Auto switch off is active. Instrument switches off after 1 minute
2	2	Auto switch off is active. Instrument switches off after 2 minutes
2	3	Auto switch off is active. Instrument switches off after 3 minutes

The instrument options can only be changed in numerical order (0 then 1 then 2). Save setting changes and exit the Set-up mode by pressing Ó again as shown eg. Switch instrument beeper off and set auto switch off to 3 minutes -

- Press and hold > followed by Ó to enter Set-up mode
- When display shows 0 = 0 press Ó once to select beeper options (1), then press > until the display shows 1 = 0.
- Press Ó once again to select auto switch off options (2), then press > until the display shows 2 = 3
- Press Ó to save settings, exit Set-up mode and return to operational modes

When not in use the Surveymaster should be stored in a dry environment. Remove the battery if not to be used for an extended period. Replace the battery when the symbol appears on the display. The battery cover is secured with a small Philips screw. The integral electrode pins may be replaced by unscrewing the retaining ferrules. Check the condition of the loose Probes on a regular basis and replace if worn or damaged.

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