

Code	Materials
Cd05	Afromosia elata, Diospyros virginiana, Gonystylus macrophyllum, Pterocarpus indicus, Afromosia, Amboyna, Basswood, Coachwood, Persimmon
Cd06	Calophyllum brasiliense, Guarea cedrata, white Guarea
Cd07	Abies procera, Agathis robusta, Betula pendula, Croton megalocarpus, Prunus avium, Agba, Birch( European), Cedar( west Indian), black Guarea, Kauri (queensland), Walnut(African), Cherry (european), Utile
Cd08	Chipboard, Paper
Cd09	Building, Wall, Concrete

**APPENDIX 2: Density-Code table (only for reference)**

Density Kg/m <sup>3</sup>	Code	Materials (Only for reference)
200	1	
220	2	
240	3	Foam
320	4	Soft wood,
400	5	Felt
440	6	Peat
480	7	Charcoal
520	8	Coke
560	9	White lime
600	10	Veneer
800	11	Timber, Chipboard
1000	12	Leather, Slag, Kerosene, Alcohol
1200	13	Polyethylene
1400	14	Soft coal, Bamboo, Paraffin
1600	15	ABS
1800	16	Clunch, Organic glass
2000	17	Asphaltum, lime
2200	18	Bakelite, fiberboard
2500	19	Rubber
3000	20	Stone, Sand (dry)
		Clayey brick
		Asbestine board
		Vitriol (87%)
		Sand (wet)
		Bricklaying, Firebrick
		Quartz glass
		Concrete, Asbestos, plaster
		China, Glass
		Marble, Granite, Magnetite

# MOISTURE METER (Pin & Search type)

This Moisture Meter is small in size, light in weight, easy to carry. Although complex and advanced, it is convenient to use and operate. Its ruggedness will allow many years of use if proper operating techniques are followed. Please read the following instructions carefully and always keep this manual within easy reach.

display. The meter is now zeroed.  
 4.4.2 Zero calibration in a search mode  
 Be sure the meter is in a pin mode. If not, change it to the search mode (See 4.5). Keep the search probe of the meter away from the surface of any material at least 50cm. And then press Minus/Zero key to make the meter display '0' if other digits on the display. The meter is now zeroed.

4.5 How to change the measurement mode?  
 Press the Select key and not release it until the letters 'CH' appear on the display. The mode has changed to the other mode after releasing the Select key. Which mode is in now, see 4.3.

### 5. ALARM LIMITS

5.1 There is a coded coloured LED indicating the status of moisture. It is controlled by 2 alarm limits. The factory settings are as follow.

AL1=13 and AL2=18

If the reading < AL1, the green LED is on.

If the reading > AL2, the red LED is on.

If the reading lies between AL1 and AL2, the yellow LED is on.

Users can change the alarm limits when as per their intention.

5.2 How to set the alarm limits

5.2.1 Depress Select key and not release it till 'AL1' 'AL2' appears on the Display. It is about 7 or 9 seconds from starting depressing Select key.

5.2.2 Such value can be changed to your intended Value by depressing the plus key or minus key. Depress the Select key to return to the state of measurement. If the second limit AL2 is less than the first limit AL1, the setting is invalid and the factory settings for AL1 and AL2 are restored to AL1=13 and AL2=18 automatically.

Auto power off after 5 minutes from last key operation

Operating conditions:

Temperature : 0-50 °C

Humidity : below 90% RH

Dimensions: 165x62x26mm or

6.5x2.4x1.0 inch

Weight: 175g (not including batteries)

Standard accessories included :

Carrying case .....1 pc.

Operation manual .....1 pc.

Separate probe .....1 pc.

### 3. FRONT PANEL DESCRIPTIONS



- 3-1 Pin probe
- 3-2 Search probe
- 3-3 Symbol for search mode
- 3-4 Display
- 3-5 Jack for RS232C interface
- 3-6 Color coded LED
- 3-7 Plus/Hold key
- 3-8 Minus/Zero key
- 3-9 Select key
- 3-10 Power key
- 3-11 Battery compartment/ Cover
- 3-12 Jack for the external pin probe

## 1. FEATURES

- \* Be a powerful and versatile instrument for measuring and diagnosing dampness in buildings and building materials. This product enables building surveyors and other practitioners to measure moisture levels of building elements such as walls, floors and other building materials simply by switching between the two different modes of operation. In this way, a detailed understanding of the moisture condition of the property can be obtained.
- \* Digital display gives exact reading with no guessing or errors while a colour coded light (LED) indicates the moisture condition of the material. This combined presentation of moisture measurement helps the user to map the extent of problems and monitor changes in condition precisely and reliably.
- \* Alarm values can be set by users.
- \* Automatic power off to conserve power.
- \* Can communicate with PC computer for statistics and printing by the optional cable and software for RS232C interface.

## 2. SPECIFICATIONS

Display: 4 digits, 10 mm LCD

With color coded LED indication

Green LED represents a safe, air-dry state.

Yellow LED represents a borderline State.

Red LED represents a damp state.

Measurement Range:

0~80% (when code=cd01 in a Pin mode)

Measurement codes:

10 codes in a Pin mode

20 codes in a Search type

Accuracy:  $\pm(0.5\%n+1)$

Whichever is the greater

Power supply: 4x1.5 AAA size(UM-4) battery

Power off: 2 modes

Manual off at any time

## 6. Considerations

- 6.1 This instrument is of very high input resistance.  
Every parts have good insulation. Please keep it in a dry, dustproof place.
- 6.2 The measurement result may be different if taking the measurement from different directions of the surface. That is because water in the material is not distributed evenly.

## 7. BATTERY REPLACEMENT

When the battery symbol appears on the display, it is time to replace the battery. Remove the batteries and install new ones paying careful attention to polarity.

### Appendix 1 : Code table for a Pin mode

Code	Materials
Cd00	Abies grandis, Acer macrophyllum, Maple, Acer saccharum, Pine(scots), yellow Pine, Dalbergia latifolia, Dipterocarpus zeylanicus, Eucalyptus microcorys, Fraxinus excelsior, Cupressus spp, Pinus contorta, Pterygota bequaertii, Quercus robur, Pinus sylvestris, Balsa, Boxwood (maracaibo), red Gum(American), Gum spotted, Gurjun, Birch, Cypress(African) Karri, Oak(European), Oak(Japanese), black Poplar, Redwood(Baltic European), Rosewood (Indian), Pine(lodgepole), Tallowwood, Walnut (American), Kapur
Cd01	Araucaria bidwilli, Eucalyptus crebra, Eucalyptus saligna, Flindersia brayleyana, Fraxinus Americana, Intsia bijuga, Podocarpus dactyloides, Sequoia sempervirens, Pinus pinaster, Gum(southern), Mahogany (west Indian), Douglas fir, Maple (queensland), red (light or dark) Meranti, white Meranti, Redwood(Californian), Walnut (new guinea), white Pine (new Zealand), Araucaria angustifolia
Cd02	Distemonanthus benthamianus, Jarrah, Endiandra palmerstonii, Erythrophleum spp, Abies alba, Fagus sylvatica, Grevillea robusta, Juglans regia, Larix deciduas, Larix occidentalis, Podocarpus spicatus, Picea abies, Pinus caribaea, Pinus nigra, Pinus palustris, Pinus ponderosa, Pinus radiata, Taxus baccata, Thuja plicata, Tsuga heterophylla, red Cedar (western), Chestnut, Greenheart, Hemlock (western), Larch ( European), Larch (Japanese), Queensland walnut, red Seraya, Spruce, Silky oak( African), Silky oak( Australian), Pine (Corsican), Pine, radiata, Walnut(European), Walnut (queensland), Whitewood, Yew, Pine(ponderosa), Stringybark, Oak (tasmanese)
Cd03	Khaya senegalensis, Podocarpus totara, Quercus cerris, Ulmus American, Ulmus procera, Ulmus thomasii, Afzelia, Kauri (new Zealand), Lime, Elm( English), white Elm, Matai, Oak( Turkey), Pyinkado
Cd04	Acer pseudoplatanus, Carya glabra, Sycamore, Cassipourea elliptoi, Dipterocarpus (keruing), Teak, Cordia alliodore, Larix occidentalis, Pterocarpus soyauxii, Hickory, Padauk( African)

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## 4. MEASURING PROCEDURE

- 4.1 Depress the power key and release to power on the meter.
- 4.2 To check if the material code is right by pressing and releasing the Select key. Such code can be changed by the Plus/Hold key or Minus/Zero key when the `cdxx` is on the display. Here `cd` is the abbreviation for `code` and `xx` is the material no. If keep depressing the Plus/Hold or Minus/Zero key, the material code will step into next code about every second and releasing until the material code is right.
- 4.2.1 Code selection for the Pin mode  
The material code for the Pin-type mode is listed in the table on page 7. Please select the standard code `cd00` if the material to be measured is not listed in the table or to ascertain its material code by the standard oven-drying method.
- 4.2.2 Code selection for the search mode  
The standard material code for the search mode is `cd10` which is suitable for measuring the material whose density is like that of pine, fir, oak etc. The user can carry out the accurate measurement by selecting one material code between `cd01` and `cd20`. The greater the density of the material to be measured, the larger the material code to be selected. For measuring moisture in concrete wall, the user can select the code around `cd18`.
- 4.2.3 Factors affecting the choice of material code  
There are many factors to affect the material code, for instance, different places, different soil even if in a same place will lead to different code for a same material. The better way to ascertain the material code is based on standard tests by oven-drying of commercial samples of the material to be measured. The code by which the

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measuring results are closest to those of oven-drying method is the right code. Write down the code for such material for later uses.

### 4.3 Moisture measurement

Check which operational mode the instrument is in by looking at the symbol `(●)` in the display. It is in a Search mode if the symbol `(●)` shows on the display. And it is in a Pin mode if without this symbol on the LCD.

#### 4.3.1 Measurement if in a Pin mode

Push pins firmly into the surface of the material about 6mm deep at the required point.

#### 4.3.2 Measurements if in a Search mode

Place the search probe against the surface of the material such as wall, floor etc. at the point of measurement.

#### 4.3.3 Read the moisture level value from the display and note the moisture condition of the material from the colour coded LED.

#### 4.3.4 To hold the max. value during measurements, just depress the ▲/HOLD key till the symbol `max` appears on the display. To display instant values, just depress the ▲/HOLD key again till the symbol `max` disappears on the display.

### 4.4 Zero calibration

The zero feature enable the user to compensate for the effect of changes in both temperature and humidity. Zero calibration should be carried out independently in different modes.

#### 4.4.1 Zero calibration in a pin mode

Press the Power key to switch the meter on. Be sure it is in a pin mode. If not, change it to the pin mode (See 4.5). Let the pins of the meter touch nothing except air. And press Minus/Zero key to make the meter display `0` if other digits on the

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