



INSTRUCTION MANUAL

MT960

TIMBER MOISTURE METER



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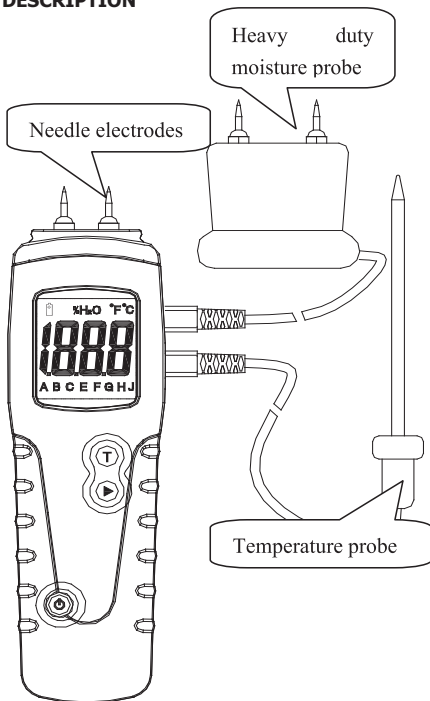
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1. USER INSTRUCTIONS

This instrument is a conductivity moisture meter specifically designed for the timber industry. The instrument has eight calibration scales, enabling the user to take accurate moisture measurements in 150 wood species. Moisture measurements can be taken using the integral pin electrodes, or using the heavy duty moisture probe. When used with the temperature probe, the moisture measurements are automatically corrected with respect to temperature. This instrument is switched on by pressing "⏻" momentarily and switched off by pressing "⏻" and holding for 3 seconds or more. The instrument will switch off automatically after 5 minutes, the default automatically switch off time can be setting range 1 to 9 minutes (see section 4).

2. METER DESCRIPTION



3. MEASURING INSTRUCTIONS

Remove the cap to expose the needle electrodes OR Connect the heavy duty moisture probe socket on the right hand side of this instrument and switch-on by pressing "⏻". Select the appropriate wood calibration scale (A, B, C, E, F, G, H or J) by referring to the enclosed wood calibration table and pressing "▶". Push into the wood and observe the reading.

4. USING THIS INSTRUMENT WITHOUT THE TEMPERATURE PROBE

The instrument is calibrated for wood at 20°C (68°F). In general, timber that is hotter than 20°C will give higher readings and timber colder than 20°C will give lower readings. An approximate manual correction of 0.5% moisture content per 5°C may be subtracted from timber that is above 20°C. For timber that is below 20°C, a manual correction of 0.5% moisture content per 5°C may be added to the measured value.

5. AUTOMATICALLY TEMPERATURE CORRECTED (ATC)

Switch the instrument on and select the appropriate wood calibration scale as detailed in sections 1. Using a hammer and nail of nominal 3 mm diameter, make a hole in the wood to be tested. Remove the nail and push the Temperature Probe into the hole until the tip is at the required depth. Connect the Temperature Probe into the instrument via the "Temp" socket. Then using this instrument to measure timber can obtain the automatically temperature corrected (ATC) moisture value. If you need to read current temperature of timber press "T" button, then LCD will display the temperature. Press "T" button the LCD will display either °C or °F temperature. Pressing "▶" button the LCD display moisture value again. (Temperature Range: -35°C ~ 80°C).

6. SET-UP AUTOMATICALLY SWITCH-OFF TIME

Combinatorial using "⏻" + "▶" button can change the default automatically switch-off time. Depress the "⏻" button don't release and press the "▶" button will automatically change the switch-off time (disable automatically switch-off or set from 1 to 9 minutes) by changing the code as detailed in the following table.

Code	Description
0	Disables automatic switch-off
1	Selects automatic switch-off at 1 minute
2	Selects automatic switch-off at 2 minutes
3	Selects automatic switch-off at 3 minutes
.....	And so on to.....
9	Selects automatic switch-off at 9 minutes

7. CALIBRATION CHECK

There are two checked calibration in the cap of the instrument. Use the needle touch the two poles of calibration cap. When checking the calibration, the A scale should be selected and the temperature probe must be disconnected. Correctly calibrated the instrument will register %H₂O values in the range 17.7 to 18.3 (at the "T" calibration) and in the range 25.5 to 26.5 (at "B" calibration). (If the tolerance is over +/-1 the instrument can't accurately measure the moisture of timber, then open the back cover, adjust the rheostat to adjust the tolerance to meet the range.)

8. CARE AND MAINTENANCE

When the instrument is not in use, keep it in its pouch together with its accessories. Store the kit in a stable, dust-free environment out of direct sunlight. Remove the batteries from the instrument if it is to be stored for periods of more than one month, or when the low battery power symbol appears on the display. Check the condition of accessories used with the instrument on a regular basis and replace them if they become worn or damaged.

9. CALIBRATION TABLES FOR WOOD

9.1. Timber Species Group Table

Common names of timbers as BS888&589:1973

Abura	E	Birch, Yellow	A
Afara	A	Bisselon	E
Aformosa	G	Bitterwood	F
Afzelia	E	Blackbutt	C
Agba	J	Bosquiea	A
Amboyne	G	Boxwood, Maracaibo	A
Ash, American	B	Camphorwood, E African	C
Ash, European	A	Canarium, African	B
Ash, Japanese	A	Cedar, Japanese	B
Ayan	C	Cedar, West Indian	J
Baguacu, Brazilian	F	Cedar, Western Red	C
Balsa	A	Cherry, European	J
Banga Wanga	A	Chestnut	C
Basswood	G	Coachwood	G
Beech, European	C	Cordia, American Light	F
Berlina	B	Cypress, E African	A
Binvang	E	Cypress, Japanese (8-18%mc)	J
Birch, European	J	Cypress, Japanese (18-28%mc)	C

Dahoma	A	Mansoia	B
Danta	C	Maple, Pacific	A
Douglas Fir	B	Maple, Queensland	B
Elm, Japanese Grey Bark	B	Maple, Rock	A
Elm, English	E	Maple, Sugar	A
Elm, Rock	E	Matai	E
Elm, White	E	Meranti, Red (dark/light)	B
Empress, Tree	J	Meranti, White	B
Erimado	F	Merbau	B
Fir, Douglas	B	Missanda	C
Fir, Grand	A	Muhuhi	J
Fir, Noble	J	Muninga	G
Greenheart	C	Musine	J
Guarea, Black	J	Musizi	J
Guarea, White	H	Myrtle, Tasmanian	A
Gum, American Red	A	Naingon	C
Gum, Saligna	B	Oak, American Red	A
Gum, Southern	B	Oak, American White	A
Gum, Spotted	A	Oak, European	A
Gurjun	A	Oak, Japanese	A
Hemlock, Western	C	Oak, Tasmanian	C
Hiba	J	Oak, Turkey	E
Hickory	F	Obeche	G
Hyedunani	B	Odoko	E
Iroko	F	Okwen	B
Ironbank	B	Olive, E African	B
Jarra	C	Olivillo	G
Jelutong	C	Opepe	H
Karpur	A	Padang	A
Karri	A	Padauk, African	F
Kauri, New Zealand	E	Panga Panga	A
Kauri, Queensland	J	Persimmon	G
Keruing	F	Pillarwood	F
Kuroka	A	Pine, American long leaf	C
Larch, European	C	Pine, American pitch	C
Larch, Japanese	C	Pine, Bunya	B
Larch, Western	F	Pine, Caribbean Pitch	C
Lime	E	Pine, Corsican	C
Loliondo	C	Pine, Hoop	C
Mahogany, African	J	Pine, Huon	B
Mahogany, West Indian	B	Pine, Japanese Black	B
Makore	B	Pine, Kauri	E

Pine, Lodgepole	A	Silky Oak, African	C
Pine, Maritime	B	Silky Oak, Australian	C
Pine, New Zealand White	B	Spruce, Japanese (8-18%mc)	J
Pine, Nicaraguan Pitch	C	Spruce, Japanese (18-28%mc)	C
Pine, Parana	B	Spruce, Norway (European)	C
Pine, Ponderosa	C	Spruce, Sitka	C
Pine, Radiata	C	Stringybark, Messmate	C
Pine, Red	B	Stringybark, Yellow	C
Pine, Scots	A	Sterculia, Brown	A
Pine, Sugar	C	Sycamore	F
Pine, Yellow	A	Tallowwood	A
Poplar, Black	A	Teak	F
Pterygota, African	A	Totara	E
Pyinkado	E	Turpentine	C
Queensland Kauri	J	Utile	J
Queensland Walnut	C	Walnut, African	J
Ramin	G	Walnut, American	A
Redwood, Baltic (European)	A	Walnut, European	C
Redwood, Californian	B	Walnut, New Guinea	B
Rosewood, Indian	A	Walnut, Queensland	C
Rubberwood	H	Wawa	G
Santa Maria	H	Wandoo	J
Sapele	C	Whitewood	C
Sen	A	Yew	C
Seraya, Red	C		

9.2. Botanical Names of Timbers

Abies alba	B	Araucaria bidwilli	B
Abies grandis	A	Araucaria cunninghamii	C
Abies procera	J	Berlinia grandiflora	B
Acanthopanax ricinifolius	A	Berlinia spp	B
Acer macrophyllum	A	Betula alba	J
Acer pseudoplatanus	F	Betula alleghaniensis	J
Acer saccharum	A	Betula pendula	J
Aetoxicon punctatum	G	Betula spp	J
Aformosia elata	G	Bosquiera phoberos	A
Afaelia spp	E	Brachylaena hutchinsii	J
Agathis australis	E	Brachylaena spp	B
Agathis palmerstoni	J	Calophyllum brasiliense	H
Agathis robusta	J	Canarium schweinfurthii	B
Amblygonocarpus andgensis	A	Cardwellia sublimis	C
Amblygonocarpus obtusungulis	A	Carya glabra	F
Araucaria angustifolia	B	Cassipourea elliotii	F

Cassipourea melanosana	F	Gonystylus macrophyllum	G
Castanea sutiva	C	Gossweilodendron balsamiferum	J
Cedrea odorata	J	Gossypiospermum proerox	A
Ceratopetalum apetala	G	Grevillea robusta	C
Chamaecyparis spp (8-18%mc)	J	Guarea cedrata	H
Chamaecyparis spp (18-28%mc)	C	Guarea thomsonii	J
Chlorophora excelsa	F	Guibortia ehie	B
Cordial alliodora	F	Hevea barsilensis	H
Corton megalocarpus	J	Intsia bijuga	B
Cryptomelia japonica	B	Juglans nigra	A
Cupressus spp	A	Juglans regia	C
Dacrydium franklinii	B	Khaya senegalensis	E
Dalbergia latifolia	A	Khaya ivorensis	J
Diospyros virginiana	G	Larix deciduas	C
Dipterocarpus (Keruing)	F	Larix kaempferi	C
Dipterocarpus zeylanicus	A	Larix leptolepis	C
Distemonanthus benthamianus	C	Larix occidentalis	F
Dracontomelum mangiferum	B	Liquidambar styraciflua	A
Dryobalanops spp	A	Lovoa klaineana	J
Dyera costulata	C	Lovoa trichiloides	J
Entandrophragma angolense	H	Maesopsis eminii	J
Entandrophragma cylindricum	C	Mansonia altissima	B
Entandrophragma utile	J	Millettia stuhimannii	A
Endiandra palmerstoni	C	Mimusops heckelii	B
Erythrophleum spp	C	Mitragyna ciliate	E
Eucalyptus acmenicoides	C	Nauclea diderrichii	H
Eucalyptus crebra	B	Nesogordonia papaverifera	C
Eucalyptus diversicolor	A	Nothofagus cunninghamii	A
Eucalyptus globules	B	Ochroma lagopus	A
Eucalyptus maculate	A	Ochroma pyramidalis	A
Eucalyptus marginata	C	Ocotea rodiaei	C
Eucalyptus microcorys	A	Ocotea usambarensis	C
Eucalyptus obliqua	C	Octomeles sumatrana	E
Eucalyptus pilularis	C	Olea hochstetteri	B
Eucalyptus saligna	B	Olea welwitschii	C
Eucalyptus wandoo	J	Palaquium spp	A
Fagus sylvatica	C	Paulownia tomentosa	J
Flindersia brayleyana	B	Pericopsis elata	G
Fraxinus Americana	B	Picea abies	C
Fraxinus excelsior	A	Picea jezoensis (8-18%mc)	J
Fraxinus japonicus	A	Picea jezoensis (18-28%mc)	C
Fraxinus mardshurica	A	Picea sitchensis	C

<i>Picaenia excelsa</i>	C	<i>Quercus</i> spp	A
<i>Pinus caribaea</i>	C	<i>Ricinodendron heudelotti</i>	F
<i>Pinus contorta</i>	A	<i>Sarcocephalus diderrichii</i>	H
<i>Pinus lampertiana</i>	C	<i>Scottellia coriacea</i>	E
<i>Pinus nigra</i>	C	<i>Sequoia sempervirens</i>	B
<i>Pinus palustris</i>	C	<i>Shorea smithiana</i>	G
<i>Pinus pinaster</i>	B	<i>Shorea</i> spp	B
<i>Pinus ponderosa</i>	C	<i>Sterculia rhinopetala</i>	A
<i>Pinus radiata</i>	C	<i>Swietenia candollei</i>	A
<i>Pinus spp</i>	B	<i>Swietenia mahogany</i>	B
<i>Pinus strobus</i>	A	<i>Syncarpia glomulifera</i>	C
<i>Pinus sylvestris</i>	A	<i>Syncarpia laurifolia</i>	C
<i>Pinus thunbergii</i>	B	<i>Tarrietia utilis</i>	C
<i>Pipadeniastrum africanum</i>	A	<i>Taxus baccata</i>	C
<i>Piptadenia africana</i>	A	<i>Tectona grandis</i>	F
<i>Podocarpus dactyloides</i>	B	<i>Terminalia superba</i>	A
<i>Podocarpus spicatus</i>	C	<i>Thuja plicata</i>	C
<i>Podocarpus totara</i>	E	<i>Tujopsis dolabrata</i>	J
<i>Populus</i> spp	A	<i>Tieghamella heckelii</i>	B
<i>Prunus avium</i>	J	<i>Tilia americana</i>	G
<i>Pseudotsuga menziesii</i>	B	<i>Tilia vulgaris</i>	E
<i>Pterocarpus angolensis</i>	G	<i>Triploëhinton scleroxylon</i>	G
<i>Pterocarpus indicus</i>	G	<i>Tsuga heterophylla</i>	C
<i>Pterocarpus soyauxii</i>	F	<i>Ulmus americana</i>	E
<i>Pterygota bequaertii</i>	A	<i>Ulmus procea</i>	E
<i>Quercus cerris</i>	E	<i>Ulmus thomasii</i>	E
<i>Quercus delegatensis</i>	C	<i>Xylia dolabriformis</i>	E
<i>Quercus gigantea</i>	C	<i>Zelkova serrata</i>	B
<i>Quercus robur</i>	A		

NOTES:

The calibration data in this table are based on standard tests by oven-drying of commercial samples of the various wood species, between 7% and fibre saturation. Above fibre saturation point (25%-30%) readings are approximate only and generally apply to wood that has dried and been re-wetted.

The instrument is calibrated for wood at 20°C (68°F). If the temperature of wood varies by more than 5°C, the meter reading can be corrected approximately by adding 0,5% for every 5°C below 20°C or subtracting 0,5% for every 5°C above 20°C.

Readings higher by 1%-2% may be obtained where wood has been impregnated with a water-borne preservative. High readings obtained with some ply-woods of peculiar composition must be treated with caution.

Building material measuring: selected scale A and measure building material, referring the following table can obtain the building material moisture value.

Std Scale A	Build	Species Group							Chip -
		B	C	E	F	G	H	J	board
%H2O									
6	3								
7	4.8	9.2	9.4	8.6	6.8	6.7	11.0	10.1	
8	7.0	10.0	10.3	9.3	7.4	7.4	11.5	11.0	
9	8.7	10.8	10.9	9.7	7.9	8.1	12.1	11.6	8.5
10	10.5	11.7	11.5	10.4	8.6	8.8	12.7	12.2	9.4
11	12.2	12.7	12.6	11.3	9.5	9.7	13.4	13.4	10.5
12	13.3	13.6	13.7	12.1	10.5	10.5	14.0	14.3	11.5
13	14.8	14.5	14.5	12.7	11.2	11.2	14.5	15.1	12.5
14	16.2	15.3	15.5	13.4	11.8	11.8	15.0	16.0	13.5
15	16.6	16.3	16.7	14.1	12.5	12.6	15.6	17.0	14.4
16	17.2	16.9	17.5	14.8	13.0	13.2	16.0	17.7	14.9
17	18.8	17.7	18.8	15.7	14.3	13.9	16.6	18.5	15.3
18	19.6	18.2	19.7	16.3	15.0	14.5	17.0	19.1	16.1
19	20.2	19.0	21.0	16.9	15.9	15.2	17.6	20.0	16.7
20	20.6	20.0	22.6	17.8	16.9	16.1	18.4	21.3	17.2
21	20.9	20.8	23.5	18.5	17.6	16.8	19.1	22.3	18.3
22	21.5	21.5	24.5	29.3	18.3	17.4	19.7	23.2	19.1
23	22.1	22.9	26.4	20.2	19.8	18.6	21.2	24.5	19.9
24	22.7	23.5	27.4	20.8	20.4	19.0	22.0	25.8	20.5
25	23.2	24.2	27.8	21.2	21.0	19.4	22.7	26.3	23
26	23.6	25.3	29.0	22.4	22.3	20.1	23.9	27.3	
27	24.0	26.6	30.0	23.3	23.5	20.8	24.9	28.2	
28	24.2	27.9	31.2	24.2	24.6	21.6	25.7	29.2	
29	24.4	29.3	32.5	25.6	26.0	22.9	26.9	30.2	
30	24.6	30.8	33.7	26.8	27.5	24.1	28.2	31.1	
32	25.0								
37	25.8								
39	26.1								
40	27.2								
46.5	33.0								



MAJOR TECH (PTY) LTD

South Africa

 www.major-tech.com

 sales@major-tech.com

Australia

 www.majortech.com.au

 info@majortech.com.au

