



# C400-SR DIGITAL TIMBER MOISTURE METER

An affordable digital resistance type moisture meter suitable for timber handlers, kiln operators and the users who require a record of timber moisture readings.

This instrument is simple to use and is also capable of correcting readings for temperature and common NZ and Australian timbers.

The C400-SR timber moisture meter measures the moisture content of timber using the electrical resistance method specified in the AS/NZS 1080 Standard. It can record these readings and release them as and when required. Up to 169 readings can be stored in nonvolatile EEPROM memory. Two versions of this meter are available with stored data down loaded via an RS232 serial port in either MContent<sup>®</sup> kiln management format or comma separated variable (CSV) format for importing into spread sheets.



**C400-SR**

## Features

Calibrated to AS/NZS 1080 Standard (traceable)

Range: 10% to 100% moisture content

Optimum accuracy from 13% to 40% moisture content

Records up to 169 readings in nonvolatile EEPROM

Down load stored readings into MContent<sup>®</sup> or spread sheet

Compact size: 130 x 67 x 25mm, weight 160gm

Sealed water resistant case

Long battery life on low cost 9V battery

Low battery indicator

Ambient temperature measurement on built in sensor  
(external sensor available as an option)

Automatic temperature correction of reading (selectable)

Correction scales for Standard, untreated Radiata Pine, NZ H1  
& H3 treated Radiata Pine, Douglas Fir, Rimu, Macrocarpa etc.

Supplied with BNC connector for external slide hammer  
electrode

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## Setting up

The C400-SR is supplied with a BNC connector suitable for use with the CSH102 slide hammer electrode and is ready for use. It is initially set on the default setting which is no temperature correction and the standard scale (AS/NZS 1080 Standard Relationship). These settings can be changed on a four way DIP switch located in the battery compartment (see below).

## Taking readings

Attach the slide hammer electrode unit and insert the pins into the sample. Hold down the button in the middle of the meter. The meter will briefly show the temperature, then display the moisture content in %. If the reading is below 10% (very dry timber) the display will flash "0.0". If the reading is more than 100% the display will flash "100.0". When a reading is secured the button can be released and the display will hold the reading for 5 seconds. To display only the temperature give a very short press on the button.

## Recording readings

To record a reading keep the button pressed for 3 seconds. At this point the meter will beep, display "rXXX" and record the reading number (XXX), the current moisture reading, temperature, timber type and the reading block (group). If you attempt to record beyond 169 readings the meter will not record and will display "FULL". If you wish to change the current block number continue to hold the button down for a further 2 seconds till the display shows "bLX" where X is the new block number with the newly recorded current reading as the first in this block. The number of blocks is limited to 8 and when this number is reached all subsequent readings are in block 8 until the full 169 have been accumulated or the record reset. The temperature is recorded as a matter of course but if the temperature correction is active a marker is attached to the reading for identification. The readings will accumulate and can be down loaded whenever required without affecting the record. A reset will clear the entire record back to the start and can only occur after a down load.

## Down loading the readings

There are two versions of the meter. One will down load into the MContent<sup>R</sup> program, the other down loads as a .CSV file suitable for spread sheet programs such as Excell. The down load is done via an RS232 dumb terminal COM port set to 9.6kBd, 8 bits, no parity and 1 stop bit with all characters in ASCII. The COM port may be on a computer, printer or display terminal. Plug the data lead into the meter (3.5mm stereo plug) and connect the other end (9 pin D) to the serial port. Connecting the meter to an active RS232 port will activate the down load function on the meter. Hold down the push button until transmission is complete and the display no longer shows "Prnt". After the down load you can reset the memory by continuing to hold the button down. After 5 seconds the meter will start beeping and after a further 5 seconds will reset the memory and will display "rEST" when this has been completed.

## Settings

The meter can be set to automatically correct the readings for temperature and timber type. These options are selectable on a 4 way DIP switch located in the battery compartment. The positive switch polarity (1) is in the up position.

## Temperature correction

Putting switch 4 in the up position will activate the automatic correction of moisture readings for temperatures differing from the standard 20°C and place the figure "t" in the left hand side of the display. The recorded temperatures will be prefixed with the character "@" (#64 in ASCII).



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## Timber type

Automatic correction of moisture readings for various common timber types can be selected by the setting of switches 1 to 3. The relevant setting will alter the reading to correct for the chosen type of timber and will briefly show a name at the start of the reading and attach a code to the recorded readings. The table shows the required switch positions as well as the displayed name and the recorded code of the main timber type. Other timber types covered by the same corrections are also shown. The corrections are taken from the representative table in the AS/NZS 1080.1 Standard. Whilst these are used in good faith users must be aware that the behaviour of such timbers can be greatly affected by factors such as condition, density, age and the degree of exposure to salts, chemicals and preservatives.

S1	S2	S3	Main Timber	Display	Code	Other Timbers
0	0	0	Standard Relationship AS/NZS 1080	(None)	STD	Balsa Mahogany Maple Oak Philippine Mahogany Spruce Silver Beech
0	0	1	Untreated Radiata Pine	PineE	URP	Alpine/Mountain Ash (Eucalyptus) Kwila Meranti Red Beech Sapele Mahogany
0	1	0	Treated Radiata Pine	H1H2	TRP	Ash (European) Elm Tawa Teak (?)
0	1	1	LOSP	LOSP	LOS	Liquid organic solvent based preservative treated timbers in general (highly variable)
1	0	0	Douglas Fir	dFir	DFR	Jarrah (?)
1	0	1	Macrocarpa	CArP	MAC	Lawsen Cypress Redwood
1	1	0	Blackwood	bLAC	BWD	Blue Gum Kahikatea Matai Walnut
1	1	1	Rimu	rimu	RMU	Kauri Totara Huon Pine King Billy Pine

## Battery

The meter uses a common PP3 (6F22) type 9V battery. The meter automatically senses the battery voltage during a reading. If the battery needs replacing a message "Lo-b" will flash on the display whilst reading. Open the battery compartment by unscrewing the two (flat head) screws on the cover.

## Precautions

The meter will not work correctly if it is in a dirty or damp state. It should not be left in the kiln or outside nor be exposed to liquids or chemicals. This meter is specifically designed to work well in the range 13% to 40% moisture which is the range of interest for most users. It has a reduced resolution from 13% down to 10% and does not read below 10%. Such levels are relatively dry and only of interest to some timber processors. The values above 40% are very wet, are not specified in the AS/NZS 1080 Standard and are only an indication of the approximate moisture content. The ambient temperature is taken from a sensor inside the meter which may differ from the temperature of the timber. A version of the meter with an external temperature sensor is available and will overcome this difficulty.

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