



# user guide



## PROFESSIONAL

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### PTM 2.0

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## INTRODUCTION

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Thank you for selecting the Tramex Professional PTM 2.0 meter for moisture measurement and detection in wood, wood by-products, drywall and other building materials.

To get maximum benefit from your Professional PTM 2.0 meter it is suggested that you read these instructions to familiarize yourself with the operation and capabilities of this instrument before taking moisture readings.

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## SUMMARY OF FEATURES

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The Professional PTM 2.0 is a hand-held, digital, pin-type resistance moisture meter designed to take precise measurements of moisture content in wood, to test the moisture conditions of drywall and give comparative WME (Wood Moisture Equivalent) readings in wood by-products and other building products. The Professional PTM 2.0 has built-in calibration for over 500 wood species and settings for temperature correction.

The Tramex Professional PTM 2.0 Features include:

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- Wood mode with 500+ pre-set Wood Species or standard calibration selection
- WME (Ref) Wood Moisture Equivalent mode
- Drywall mode
- Temperature correction
- Stores up to 100 readings
- Min/max, average & standard deviation statistics of stored readings.
- C° / F° selection
- Backlight brightness adjustment
- Eco Mode
- Automatic calibration check
- Clear Memory

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## HOW IT WORKS

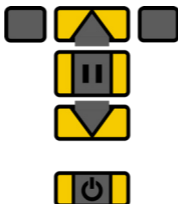
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The Professional PTM 2.0 moisture meter works on the principle of DC resistance. When the electrode pins are pressed or driven into the wood, the electrical resistance between the electrodes is measured. If the wood is dry, the resistance is high. If moisture is present in the wood the electrical resistance between the pins changes. The higher the moisture content the greater the reduction in resistance. The level of resistance is accurately measured by the instrument, which translates it into a moisture value. This is a percentage of dry weight moisture content for wood, a relative scale for drywall, and a WME wood moisture equivalent value for many other building materials.


## OPERATING INSTRUCTIONS


### Keypad Controls


Below is an overview of the keypad functions.





 To select options on the left of the screen.

 To select the options on the right of the screen.

 To scroll up through the settings menu, the saved readings list, the list of species (see 'Species Mode' below). To save a reading (having held the reading with the Hold key first. See 'Saving Readings' below).

 To Hold a reading; to select an option; or to return to main screen.

 To scroll down through the settings menu, the saved readings, the list of species. To enter species list from main screen when in Wood mode.

 To power on or off.

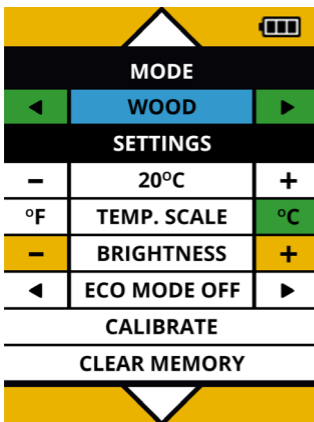
## MAIN SCREEN



Below is an explanation of the Main Screen.



1. Last Saved & Average Readings
2. Max & Min Readings
3. Current Reading
4. Temperature setting
5. HOLD Indicator
6. Mode/Species
7. Settings (left key)
8. Saved Readings (right key)

## MODE & SETTINGS MENU



From the Main Screen use the   key to select the Mode and Settings menu page.

The Mode and Settings menu page is colour-coded. On scrolling through the Mode and Settings menu, the selected item will be highlighted in blue.

### - MODE SELECTION



- Wood Mode
- WME (Ref) Wood Moisture Equivalent Reference Mode
- Drywall Mode



## WOOD MODE

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From the Main Screen use the   key to select the Mode and Settings menu page.

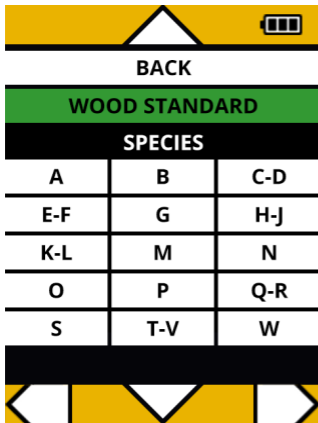
Then press the   or   key to scroll through the 3 Modes.


Press the  key to select the chosen mode.

Having selected WOOD Mode the Professional PTM 2.0 will display the main screen and moisture readings can be taken and saved.

From this screen a Wood Standard calibration setting for different regions may be chosen or a wide variety of species can be selected.

In order to choose your required regional or species settings, press the  key.




In the Wood menu page scroll down to select your region or species, pressing the  key to enter the selection pages, or select BACK to return to the Main page without making any changes.

### Wood Standard:

The Professional PTM 2.0 incorporates a number of standard calibration settings:


- Fir, Douglas - USA
- Fir, Douglas - AUS
- Oak - Europe
- Furu (Pine) - SWE
- Gran (Spruce) - SWE
- European Redwood - UK
- Scots Pine - PTM 1.0


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Scroll down and press the  key to select your required Wood Standard. Once selected, you will automatically return to the Main page.





The selected wood standard is indicated on the bottom of the main screen.

### **Species:**

Having entered the Wood menu page, as above, scroll down to the alphabetical grid. From here you can scroll around the grid and enter the required alphabetical list by pressing the  key. Then scroll down through the list and select your required species by name.

On pressing the  key to select your species, you will automatically return to the Main page.

### **NOTE:**

Some of the alphabetical page lists may extend over multiple pages. These can be accessed by scrolling continually down through the list or using the   key to move to the next page. Press the   key to move back a page, and back to the Wood menu page. The page number for each alphabetical list is indicated on the top left of the screen.

Different species of wood can vary in density and conductivity, which can have an effect on the electrical resistance of the wood. The Professional PTM 2.0 has been programmed with 500+ species in order to give

precise moisture content readings for each selected wood species.

The selected wood species is indicated on the bottom of the screen.

**NOTE:**

Some of the wood species names in the list have been abbreviated. Please refer to the following key:

**Species Abbreviations Key**

E.	East
Is	Island
kaern	kaernbachiana
Msia	Malaysia
NZ	New Zealand
Noth	Nothofagus
Phil	Phillipines
Polys	polysperma
Qld	Queensland
l.red	light red
d.red	dark red
Sapw	Sapwood
S	Solomon
torri	torricellensis
Unt	Untreated
W.	Western

**NOTE:**

The Professional PTM 2.0 will give readings in wood of 6% to 46%MC moisture content. It should be noted that readings above 27% (nominal value of the fibre saturation point) are indicative only.

**THE IMPORTANCE OF DETERMINING MOISTURE CONTENT OF WOOD**

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When wood and wood by-products are installed at the correct moisture content for the environment in which they will be used, the risk of swelling or shrinkage is minimised. If it is installed too wet and dries in service the result will be shrinkage and distortion. If it is installed too dry it could gain moisture, which could result in swelling. Using a good quality moisture meter is the most practical way of ensuring the wood is at the correct moisture level for its intended use.


Knowing the actual moisture level also enables efficient processing to be carried out, such as milling, machining, gluing, laminating, spraying and hand painting. The Professional PTM 2.0 moisture meter will fulfill all these requirements.

## WME (Ref) MODE

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From the Main Screen use the   key to select the Mode and Settings menu page. Then press the   or   key to scroll through the 3 Modes.

Press the  key to select the required mode.

Having selected WME (Ref) Mode the Professional PTM 2.0 will display the main screen and moisture readings can be taken and saved.

The WME Wood Moisture Equivalent Reference scale can be used on a variety of building materials other than wood.




WME is the theoretical moisture content value that would be attained by a piece of wood in moisture equilibrium with the material under investigation at the point of measurement.


The Wood Moisture Equivalent reference scale will give comparative readings of 6 - 100. It matches the calibration for wood up to fiber saturation (27%MC)

## DRYWALL MODE

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From the Main Screen use the  key to select the Mode and Settings menu page. Then press the  or  key to scroll through the 3 Modes.

Press the  key to select the required mode.

Having selected DRYWALL Mode the Professional PTM 2.0 will display the main screen and moisture readings can be taken and saved.

The Drywall reference scale will give readings of 0.0 – 8.5 in line with the ASTM C1789 standard.

Drywall may also be known as gypsum board, gypsum panelboard or plasterboard.

## SETTINGS

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- Temperature correction
- Temperature scale °C / °F
- Brightness
- Eco Mode
- Check calibration
- Clear memory

The Mode and Settings menu page is colour-coded. As you scroll through the Mode and Settings menu, the selected item will be highlighted in blue.

## TEMPERATURE CORRECTION






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Meter readings can be affected by wood temperature.

When measuring the moisture content in wood at different temperatures, the appropriate temperature should be selected to correspond to the temperature of the wood.

The temperature correction ranges from 0°C / 32°F to 70°C / 160°F and can be chosen in increments of 5°.

Scroll to temperature setting in the Settings menu.

Choose the increment of 5° nearest to the temperature of the wood by pressing the   or   keys and select and return to Main screen by pressing the  key. The selected temperature correction will be shown in the 'Tset' indicator on the Main screen.

The surface temperature of the wood can be determined by using an infrared surface thermometer.






**NOTE:**

Temperature setting can only be adjusted in Wood, Species mode, not in WME (Ref) or Drywall mode.



**TEMPERATURE SCALE °C/°F SELECTION**

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Scroll to 'TEMP. SCALE' in the Settings menu and press the  or  keys to select the preferred scale, °C / °F. The selected scale will be highlighted in green. Press the  key to select and return to the Main screen.

**BRIGHTNESS**

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Scroll to 'BRIGHTNESS' in the Settings menu and press the  or  keys to choose one of the three brightness levels. The three brightness levels are colour-coded.

- Green = low
- Yellow = medium
- Red = high

Press the  key to select the brightness level and return to the Main screen.






**NOTE:**

To save battery life, the Professional PTM 2.0 has an automatic backlight dimming ECO MODE that comes into effect when the battery is low.

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## ECO MODE



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Eco Mode can be used to reduce battery consumption by functioning on the dimmest backlight level. Scroll to 'ECO MODE' in the Settings menu and press the   or   keys to turn Eco Mode on or off. Press the  key to select and return to the Main screen. Brightness level controls are disabled in Eco Mode.

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## CHECK CALIBRATION






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Scroll to CHECK CALIBRATION in the Settings menu and press the  key to carry out the calibration check. The three-point calibration values are compared with reference resistances traceable to standard oven drying tests, providing a reliable calibration check across the range of different wood standards. Press the  key to return to the Main screen.

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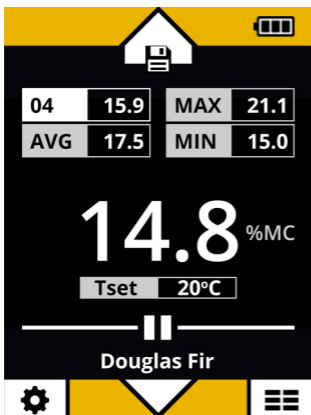
## CLEAR MEMORY

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In order to clear the Saved Readings, scroll to 'CLEAR MEMORY' in the Settings menu and press the  key to select the clear memory option. Press the   or   key to CONFIRM or not that you would like to clear the saved readings in the memory and return to the Main screen.

## TAKING MOISTURE READINGS

To take moisture content readings, choose the required mode, ensure the correct temperature adjustment is set, and push either the instrument mounted pins or the pins on the external electrodes into the material being tested. When taking readings in wood, align the pins parallel to the grain.







The Professional PTM 2.0 can save up to 100 readings in its memory from any of the 3 Modes – Wood, WME (Ref) or Drywall.

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## SAVING READINGS

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Take the reading by pressing the pins into the material being tested. Press the  key to Hold the reading. When the reading is on Hold, the  symbol (Save) appears on the top of the screen. Press the  key to Save the reading. The reading is saved into the memory. Press the  key to release the Hold on the reading and to take your next reading.

The Main Screen shows the last taken reading number and value, the maximum and minimum values saved and the average value of the readings saved.

### **NOTE:**

When saving readings from a different scale, it is recommended to clear the device's memory (in settings menu) so that the statistics shown are meaningful.

## SAVED READINGS LIST




To view all of the saved readings press the   key to enter the Saved Readings Memory.

READINGS			
SD	3.8	MAX	20.2
ADV	13.9	MIN	6.7
SAVED READINGS			
91	15.0	92	16.8
93	6.7	94	20.2
95	8.2	96	14.3
97	16.0	98	13.2
99	16.3	100	12.5

### Statistics

In the Saved Readings Memory the Professional PTM 2.0 shows the maximum and the minimum saved readings as well as the average reading the standard deviation of the saved readings.

### Saved Readings

The saved readings list shows all of the saved readings in a chronological order starting with the first reading saved. 100 readings can be saved and these can be viewed by pressing the  or  keys to scroll through the list. Press the  key to return to the Main screen.

## SELECTION OF PROBES AND PINS

### Probes

Code	Length	Pin Type	Penetration
SP - 200	200mm (8")	Straight insulated	175mm (7")
SP - 90	90mm (3.5")	Straight insulated	72mm (2.8")
SP - 52	52mm (2")	Straight insulated	36mm (1.5")
SP - 30	30mm (1.2")	Tapered	14mm (0.5)
SP - 20	20mm (0.7)	Tapered	7.5mm (0.3)

### Pin Code and Use

SP-200 & SP-90	Used for checking moisture in cavities etc. For use with HH-14, not for use with Hammer Electrode.
SP-52 & SP-42	Used with Hammer Electrode for reading moisture below the surface.
TG-30	Used with Hand Probe or Hammer Probe for general use.
TG-20	Instrument mounted

### Probe selection code

HH-14	Hand-held electrode with cable and plug.
HH-21	Hammer action electrode

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## BATTERY

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The Professional PTM 2.0 is fitted with 4 non-rechargeable AAA 1.5V alkaline batteries. Battery life is of approximately 40 hours of continuous use on Low brightness, 30 hours on medium brightness and 24 hours on High brightness (based on battery type supplied on purchase). This means that in normal intermittent use on Low brightness the battery should last up to a year. When the battery strength begins to weaken the battery icon will empty and the meter will go into the dimmest backlight level. It is then advisable to replace the battery as soon as possible.

Access to battery can be gained by unscrewing the bottom cap.

To save battery life, the Professional PTM 2.0 has an automatic dimming function that comes into effect after 2 minutes of continuous non-use and automatic power down function that comes into effect after 4 minutes of continuous non-use. If within this 4 minute period a key is pressed or a measurement change detected, the brightness reverts to the current setting.

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## FACTORS AFFECTING MOISTURE READINGS

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The readings of all moisture meters are influenced by the characteristics of different species of wood as well as temperature and other factors listed below:

### **Species**

Different species of wood can vary in density and conductivity, which can have an effect on the electrical resistance of the wood. This can influence meter readings for the same moisture content and can also apply to similar species from different origins. The Professional PTM 2.0 allows the user to select the wood species being tested and automatically compensates for the differences in resistivity.

### **Temperature**

Meter readings can be affected by wood temperature. When measuring the moisture content in wood at different temperatures, the appropriate temperature should be selected to correspond to the temperature of the wood. The Professional PTM 2.0 will then automatically compensate to give more precise reading values.

### **Chemical treatment or contamination**

Readings may be affected by certain flame-retardants, preservatives, aluminium paint and by contamination by salt water. Treat all readings on such wood as qualitative readings only.



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## Surface Moisture

Surface moisture due to wetting or condensation can affect readings when uninsulated pins are used. It is recommended that insulated pins such as SP-52 are used in conjunction with HA-21 Hammer Action electrode. As the pins are driven into the wood, readings can be taken at different depths unaffected by moisture on the surface.

## Fibre Saturation Point

In relation to high moisture content readings in wood, it should be noted that readings above 27%, the nominal value of the fibre saturation point, are indicative only.

## Static Electricity

As the moisture content reduces, the resistance values increase drastically. At this range (typically below 8%MC) static electricity is an external factor to be considered by the user. Static charge from friction produces static electricity which in turn can cause inconsistent readings.

The user is advised to take the necessary steps to achieve stable readings, for example giving sufficient time for the meter to be steady or avoid unnecessary movement to the connection cable if using the hammer probe.

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## CALIBRATION

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The Professional PTM 2.0 calibration settings are a product of both in-house verification and information from published International codes, standards and articles from the USA, Australia and Sweden. This data is traceable and obtainable through the US Department of Agriculture, Australian/New Zealand Standard and Sweden National Research Institute and TRADA in the UK.

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## WARRANTY

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Tramex warrants that this instrument will be free from defects and faulty workmanship for a period of one year from date of first purchase. If a fault develops during the warranty period, Tramex will, at its absolute discretion, either repair the defective product without charge for the parts and labour, or will provide a replacement in exchange for the defective product returned to Tramex Ltd. This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care.

In no event shall Tramex, its agents or distributors be liable to the customer or any other person, company or organisation for any special, indirect, or consequential loss or damage of any type whatsoever (including, without limitation, loss of business, revenue, profits, data, savings or goodwill), whether occasioned by the act, breach, omission, default, or negligence of Tramex Ltd.,

whether or not foreseeable, arising howsoever out of or in connection with the sale of this product including arising out of breach of contract, tort, misrepresentation or arising from statute or indemnity. Without prejudice to the above, all other warranties, representations and conditions whether made orally or implied by circumstances, custom, contract, equity, statute or common law are hereby excluded, including all terms implied by Section 13, 14 and 15 of the Sale of Goods Act 1893, and Sale of Goods and Supply of Services Act 1980.

### **Warranty claims**

A defective product should be returned shipping prepaid, with full description of defect to your supplier or to Tramex at address shown on the back of this guide.

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## PRODUCT DEVELOPMENT

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It is the policy of Tramex to continually improve and update all its products. We therefore reserve the right to alter the specification or design of this instrument without prior notice.

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## SAFETY

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This Users Guide does not purport to address the safety concerns, if any, associated with this instrument or its use. It is the responsibility of the user of this instrument to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

All Tramex meters comply and conform with international regulations regarding health, safety and environmental directives and have undergone necessary laboratory testing by approved laboratories.

Tramex Ltd. declares that the components and the Professional PTM 2.0 were subjected to laboratory tests to comply to EU directives and FCC regulations.