



**SATEKO FINLAND Oy**

**WALTTERI**

**USER MANUAL**

**VER 2.21**

**WINDOWS®**

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## TECHNICAL SPECIFICATION

### ACCURACY OF THE MEASUREMENT

Accuracy is  $\pm 1\%$ . Definition is 0,1%.

### MEMORY CAPACITY

It is possible to save 50 different packets and there can be 30 samples in each one. Memory type is nonvolatile RAM so in the case of an bad battery the samples are saved.

### OPERATING TIME

At least 12h with full charged battery. Condition of the battery is checked automatically every time Waltteri is switched ON. It will start up only if there is enough power to work at least half on hour.

### CONNECTIONS

Connection to PC-computer with COM-interface. Connector is 9-pole D-type connector. Connection between a hammer and Waltteri with UHF-type connector.

### DISPLAY

2-row, LCD-display. Automatic backlight, works 20 seconds after the last touch of any button.

### CONSTRUCTION AND MATERIALS

Casing material is ABS-plastic, display window is PVA-plastic and key plate is PVA-plastic, compactness is IP550.

### PC PROGRAM

It is possible to read and print documents separately of each packets. Checking of calibration of the Waltteri is also possible.

### PACKING LIST

Waltteri meter  
2-rail hammer, prevents harmful rotating, coaxial cable length 1.5m.  
Composite charging unit / data transfer cable.  
PC-program, system DOS 4.0 or later

### HAMMER

Completely made rustproof materials.

*WALTTERI METER FILLS EU DIRECTIVE EMC 89/336/EEC AND IS **CE**-MARKED.*

## GENERAL

## **Measuring the moisture of the wood by using electrical moisture meter**

Measuring with the needle-meter is based on conductance of the material.

All of the materials have own specific conductance. Purity, temperature and thickness of the material do effect the conductance.

Conductivity of water is much better than wood. If there is a good purity grade and wood is dry, it is a very good insulator, unlike water which is good conductor.

Resistant measuring by needle-meter is based on amount of water in the wood.

Measuring by needle-meter is very demanding action and it is recommended to do it as carefully as possible.

To get good results there has to be many measurements and then calculate the average and dispersion of the measurements.

### **Measuring technique**

Things to remember when measuring with Waltteri are: a right depth of needles, takeing enough samples and that all samples are taken with same direction of wood fiber.

General rules of right depth and position of needles are:

If taking samples from the side, needles must be directed as middle as possible. Right depth is about 20% of dimension. If dimension is 100mm the right depth of the needles is 20mm.

If taking samples from the flat side the right position of the needles is 1/3 of width from edge to center. Depth of the needles is 1/3% of dimension.

## **MEASURING WITH WALTTERI**

### **First step**

Push ON-button about 3 sec. The following text should appear:

SAMPL = XX > LOW  
 XXXXXX FIR 20°C

- SAMPL**
- Number of last sample of the packet.
  - Number sample grows with 1 when push button (E) is pressed (E=save sample).
  - Max amount of samples per packet is 30.
- > LOW**
- Value of the sample.
- XXXXXX**
- Packet number, 6 digits where first two can be alphabetical marks and the rest are numbers.
- FIR**
- Selection of wood FIR=Nordic fir, PIN=Nordic pine.
- 20°C**
- Selection of temperature of the wood.

### **Taking a sample, saving a sample and removing the last saving**

When measured, the value appears in display.

Pushing the E-button display value is locked and the sample is saved when button is released.

If it is necessary to remove the last saved sample push ↑ until “Ei poistoa” appears on display .After this push again ↑ until display appear ”Viim. lyönti”. Now pushing E-button last sample will be removed.

## DISPLAYING THE BIG NUMBERS

Change-over from *Big numbers-mode* is possible pushing  $\Leftarrow$  (LEFT) until display becomes empty and then release button. In this mode there is following information on the display:

In left edge on upper row appears "n= X". It means serial number of samples in valid packet.

In left edge on lower row appears "t= x". It means valid temperature.

In right edge of display You can see the value of the moisture. Integer value is showing by big number and a decimal is showing normal size.

If measured value is smaller than measuring range, display show "0".  
If measured value is larger than measuring range, display show "99".

On *Big numbers- mode* it is possible to use Walteri in normal mode.

Walteri will always start in normal mode.

## MAKING CHANGES TO SETTINGS OF WALTERI

⇒ By pushing RIGHT button until cursor starts to blink You can go to *editing-mode*.

All changes are accepted by pushing E-button.

### Selection of temperature

- ⇒ Push RIGHT button until You are in *editing-mode*
- ⇐ Pushing LEFT button once or two until cursor moves under the mark to be changed.
- ↑ or ↓ Pushing UP or DOWN you can add or reduce second digit.
- E Pushing E-button will accept changing.
- E Pushing E-button again to return measuring-mode.

### Selection of the timber species

- ⇒ Push RIGHT button until You are in *editing-mode*
- ⇒ Push RIGHT button again, shortly at this time, now cursor moves to timber species.
- ⇐ Pushing once LEFT button cursor stops blinking.
- ↑ or ↓ Push button UP or DOWN to change timber.
- E Pushing E-button change is accepted.
- E Pushing E-button again You can return to measurement-mode.

**Changing of the packet number**

- ⇒ Push RIGHT button until You are in *editing-mode*
- ⇒ Push RIGHT button again twice, shortly.
- ⇐ Pushing LEFT button once, cursor stops blinking.
- ⇐ or ⇒ Pushing LEFT or RIGHT it is possible choose to change mark.
- ↑ or ↓ Pushing UP or DOWN, You can change valid mark.
- E Pushing E-button change is accepted.
- E Pushing E-button again, return to measurement-mode.



## BROWSING OF THE PACKETS

↓ Pushing DOWN button until cursor starts blinking.  
Now in display appears information of active packet.

```
XXXXXX  FIR      20°C
K % = 19,7 %      S = 1,9
```

↓ Pushing once DOWN display scrolls and shows more information of active packet.

```
n = X      order number of sample
min        lowest value of samples
max        highest value of samples
```

Pushing DOWN-button again, shows all saved samples of active packet, on numerical order.

### Changing of the browsing packet

↑ Pushing DOWN button until cursor starts blinking.

← Pushing once LEFT button the cursor stops blinking.

↑ or ↓ Pushing UP or DOWN, You can change valid packet.

E Pushing E to choose displayed packet number.

↓ Push DOWN to browsing.

E Pushing E-button again, return to measurement-mode.

## REMOVING OF THE SAVED DATA

- ↑ Push UP until shows:
  - Removing data
  - No removing, this means: Return, when push E. Data not removed.
  
- ↑ Push UP again, display shows:
  - Removing data
  - Last sample, this means: Return, when push E. Last sample removed.
  
- ↑ Push UP again, display shows:
  - Removing data
  - Samples of pck., this means: Return, when push E. All samples of active packet removed.
  
- ↑ Push UP again, display shows:
  - Removing data
  - Whole pack., this means: Return, when push E. Last packet removed.
  
- ↑ Push UP again, display shows:
  - Removing data
  - All data, this means: Return, when push E. All packets removed.

*It is not possible to damage WALTTERI or program by pushing wrong buttons. Only saved samples or settings can be lost.*

**TIME AND DATE AND SERIAL NUMBER OF THE WALTTERI**

- E + ON/OFF until Waltteri starts up.
  - now there is time in display.
  
- ⇐ Push until cursor appear, then by pushing several times more, cursor moves under changed the number.
  
- ↑ or ↓ Pushing UP or DOWN to change the number.
  
- E Pushing E change is accept.
  
- E Pushing E again program moves to date-settings. Changes are made like in a time change.
  
- E Pushing E again program version is shown.
  
- E Pushing E again serial number is shown.
  
- E Return to measurement-mode.

## CHARGING OF THE BATTERY

Turn power OFF by pushing ON/OFF button until display disappears.

Connect data / charging cable to Walteri and then connect transformer to main supply.

Display appears: "WALTERI POWER ON". (Charging connect automatically after 3 minutes)

It will take about 1,5- 2h to charge up empty battery.

During the charging process display is running text:: C-H-A-R-G-E.

When fully charged displays: "Charging ready".

### Good to know

When battery is "LOW" will Walteri automatically cancel all functions and turn the power off.

All saved information is still in safe and available when battery is charged again.

Walteri checks the battery every time when turned ON, if there is enough power for half an hour use, Walteri will not start.

To maximize life of the battery, it is necessary to use battery as long as possibly before charging again.

***ATTENTION!***

*Check that main supply of Your computer is protective earth type. Otherwise Waltteri is in danger to be damaged.*

*Installing the PC-program to computer*

Make a new folder for example “C:/ Program Files/Waltteri” using normal Windows routine and copy all files on a 3,5” diskette to there. In addition is good to make another folder under this. There is good to save measurement files and calibrations check files.

Waltteri program start to clicking “Waltteri.exe” icon.

## **MENU OF THE CALIBRATION**

### **Checking the calibration of WALTTERI**

It is possible to check calibration of Waltteri and document it.

To make complete checking for calibration, You need calibration-resistor box. This resistor box is available from Valutec Oy.

PC-program guide tells You step by step what is needed to be done.

### **Opening of the saved data of calibration**

Saved calibration protocol is possible to load.

### **Reading a serial number of Waltteri**

Read serial number of Waltteri.

### **Main menu**

Return to main menu.

## *TRANSFERRING MEASURED DATA TO COMPUTER*

This operation copies measurement results from Waltteri to PC.

Data / charging cable has to be connected to Waltteri and Waltteri must be ON. Then press ENTER

When all data is transferred, display shows collated set of packets.



## SETTINS OF INTERFACE

You can choose communication ports between Waltteri and PC.

Printer        =        LPT1:  
RS 232        =        COM1:

Choose RS-232 port (1=COM1 2=COM2)

All document prints to LPT1





## TROUBLESHOOTING

<b>1.</b> Waltteri do not start up by pushing <b>ON/OFF</b> button about 3 sec.	<b>1.1</b> Connect charging cable to Waltteri and transformer to main supply.	<b>1.2</b> If <b>POWER ON</b> -text displayed, wait for 3 min. Then should appear running text <b>G-H-A-R-G-E</b> . After this wait about 1,5-2 hours until displayed <b>Charging ready</b>	<b>1.3</b> If there is no text, send Waltteri to service.
<b>2.</b> Waltteri starts up and then immediately stops.	Move to 1.1		
<b>3.</b> Display shows all the time for exp. <b>HIGH</b> or something else even if hammer spikes are on the air.	<b>3.1</b> Remove hammer, if situation do not change, send Waltteri to service.	<b>3.2</b> If display shows <b>LOW</b> without hammer connected, check the hammer condition or send it to service.	
<b>4.</b> Display shows <b>LOW</b> even hammer spikes are in the wet wood.	<b>4.2</b> Remove hammer and make electrical connection between inside and outside part of connector of the hammer in Waltteri.	<b>4.3</b> If Waltteri shows <b>HIGH</b> now, it is OK. Check the hammer condition or send it to service.	<b>4.4</b> If Waltteri still shows <b>LOW</b> send it to service.

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