

ELECTRONIC HAMMER

Manual

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IML

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1. Introduction

1.1 Instructions as to Application

1.1.1 Materials

The ELECTRONIC HAMMER has been designed for use at wooden materials (trees, beams, poles). Inappropriate utilization may cause damages to the measuring system and / or the material to be examined.

1.1.2 Certainty of Reading

The measuring results gained by utilizing the ELECTRONIC HAMMER are not self-explanatory, they require qualified interpretation. Any conclusions with respect to the examined object (e.g. tree) will be left to the sole responsibility of the user. The manufacturer of the instruments will not be responsible for wrong interpretations and conclusions, he recommends the user to attend special seminars and training.

1.1.3 Electric Lines

Prior to starting a measurement, please make sure that the connection cables will not get in contact with electric lines or other live parts and that they are protected against humidity.

1.2 General

1.2.1 Conception

It was the intention of those who developed the ELECTRONIC HAMMER system to make available a measuring system for practical utilization, which is easy to handle, sturdy, and precise at the same time.

1.2.2 Structure of the System

As to stability, the ELECTRONIC HAMMER system has been designed to meet the special requirements of practical examination of trees and wooden structural materials. All switches and keys required for operation are located so as to be within quick and easy reach.

The electronic control is located in the electronic unit which will be connected to the hammer and to the sensor by means of a cable of 3 m in length.

1.2.3 Moisture

You should generally avoid any contact of the ELECTRONIC HAMMER measuring system with water and moisture. Although the main components are protected against intake of water, you should – in order to avoid malfunction or failure – consider that electronic instruments are generally sensitive to humidity.

1.3 Maintenance

On principle, maintenance of the ELECTRONIC HAMMER measuring instrument will be carried out by the manufacturer or by an authorized service company. According to the conditions of guarantee, the instrument will have to be sent in for a first inspection after approx. one year. Afterwards, we recommend an inspection by the manufacturer at least once a year.

1.4 Guarantee Conditions

The term of guarantee for the ELECTRONIC HAMMER system is 24 months. Guarantee is based on the condition that the instrument will be used exclusively for the purposes it has been designed for and that the safety instructions below are observed. The manufacturer will not be liable for damages owing to inappropriate utilization or handling. The warranty for defects does not cover normal wear and tear (wearing parts), nor damages that result from inappropriate or negligent handling and excessive strain that have not been provided in the contract of purchase. See the manufacturer's *General Terms of Business*.

The instrument must not be opened by any person, only by the manufacturer or an authorized service company. Otherwise, the guarantee will become extinct.

1.5 Conditions of Use

The user recognizes the manufacturer's conditions of use as soon as he puts the instrument into service. The instrument must not be put into service, unless the present Instructions for Use have been thoroughly read. The manufacturer will not assume any liability for inappropriate handling, nor for damages caused by the application of the instrument for purposes that it has not been provided for, nor in case of non-observance of the safety instructions.

1.6 Safety Instructions

The instrument must not be utilized but for the purpose described in the present Instructions for Use (examination of wood or material that is similar to wood). The manufacturer will not assume any liability in case of inappropriate utilization of the instrument. The safety instructions of the manufacturers of other devices bought along with this instrument or required for the operation of this instrument will have to be observed.

The manufacturer will not be liable for inappropriate utilization of the instrument. The buyer agrees to hand the present Instructions for Use over to any person whom he may let the instrument and to draw his attention to the notes concerning danger.

For normal utilization of the ELECTRONIC HAMMER system, opening of the instrument will not be required. If the instrument has been opened by any person that has not been authorized by IML, the guarantee will immediately become extinct.

2 Scope of Delivery

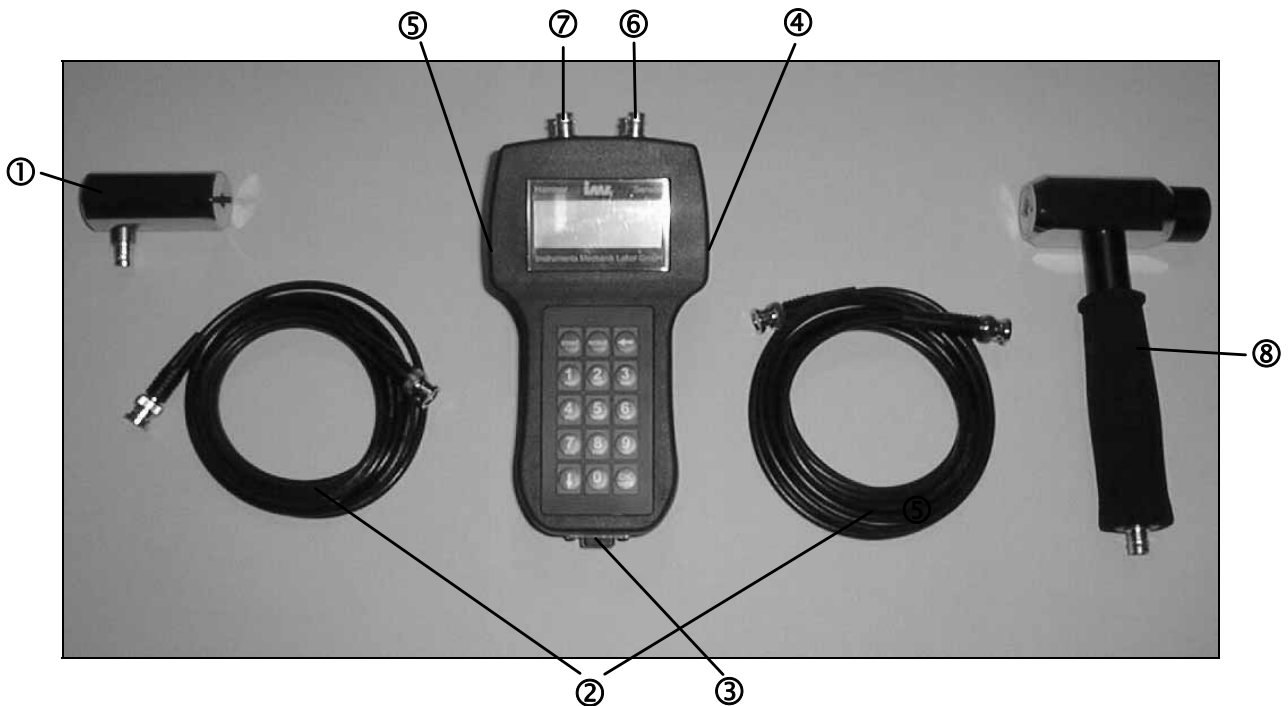
Prior to familiarizing yourself with the instrument, please check, whether the package contains all components:

- Case
- Electronic unit
- Hammer and sensor
- BNC cable
- Battery charger
- Ratchet
- Set of screws
- Data transmission cable for PC
- Analysing software I-Tools Light

Should any of the above components be missing, please contact your distributor.

3 Operating Elements

The following is a description of the operating elements of the ELECTRONIC HAMMER system:

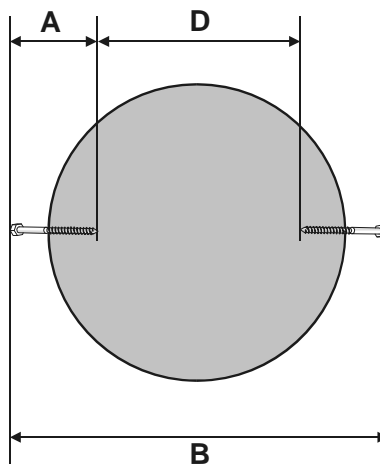


- ① Sensor
- ② BNC cable
- ③ PC interface
- ④ On / Off switch
- ⑤ Socket for battery charger
- ⑥ Connection socket for sensor
- ⑦ Connection socket for hammer
- ⑧ Hammer

4 Functional Description

4.1 Preparation

Prior to starting the measurement, please screw the wood screws supplied into the object to be examined. Then, the effective diameter will be determined on the basis of the graphical representation below:



$$\text{Diameter (D)} = B - 2 \times A$$

After determination of the effective diameter, please fix the sensor to the modified screw (female thread).

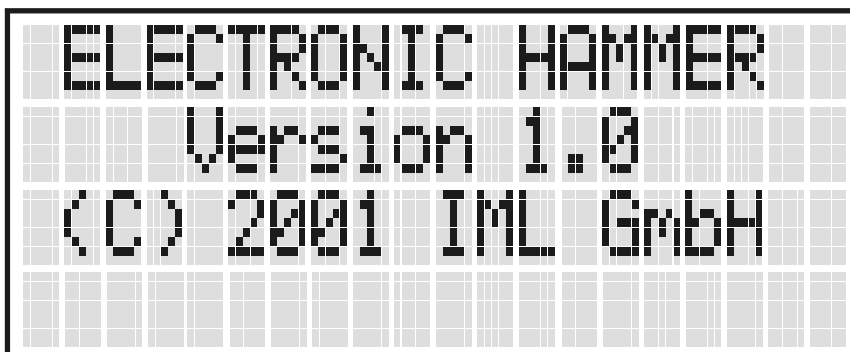
Now connect the sensor with the electronic unit by means of the BNC cable supplied. Please pay attention to connecting the sensor to the appropriate socket on the electronic unit.

Then connect the hammer with the electronic unit by means of the second BNC cable. Please pay attention to connecting the hammer to the appropriate socket on the electronic unit.

4.2 Switching on the Electronic Unit

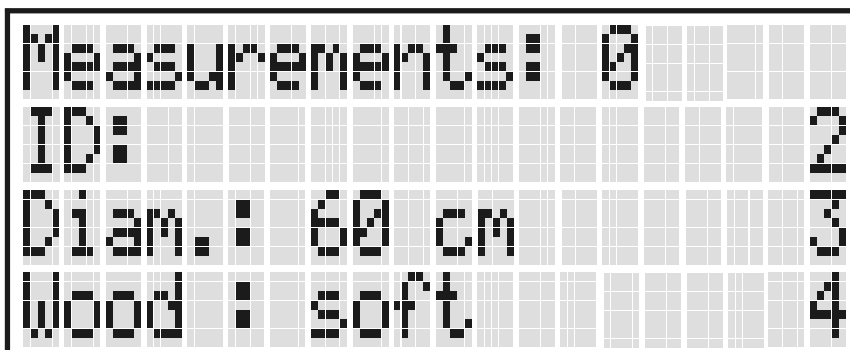
Switch the electronic unit on by pressing the switch on the right side.

After the electronic unit has been switched on, the following message will be shown on the display:



```
ELECTRONIC HAMMER
Version 1.0
(C) 2001 IML GmbH
```

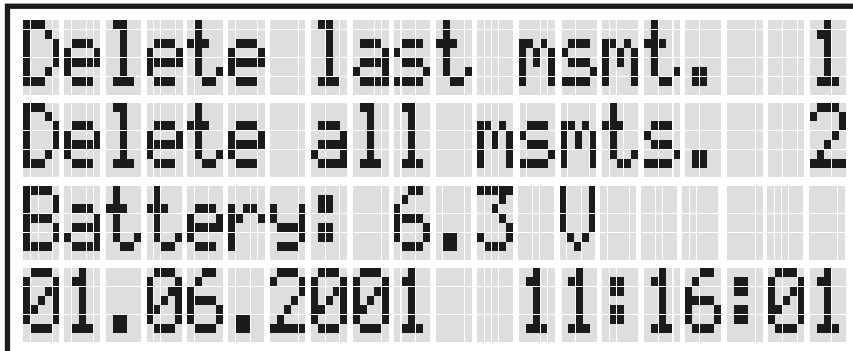
After approx. 2 seconds, the main menu will appear:



```
Measurements: 0
ID: 2
Diam.: 60 cm 3
Wood: soft 4
```

You will be shown the number of measurements stored, the identification number (ID number) as well as the diameter and the type of wood of the object to be examined.

Upon pressing the MENU key, the system menu will appear:

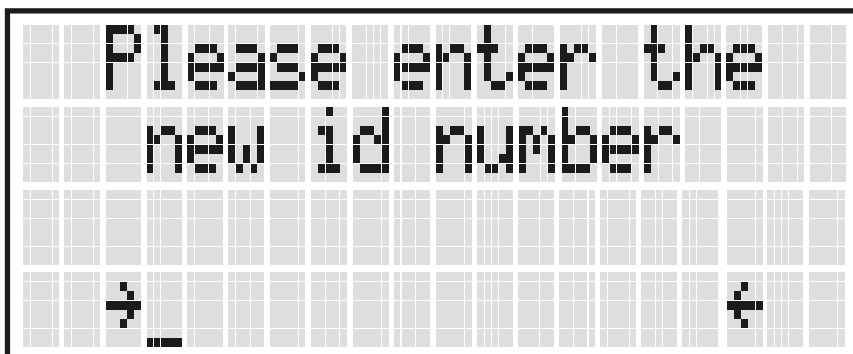


```
Delete last msmt. 1
Delete all msmts. 2
Battery: 6.3 V
01.06.2001 11:16:01
```

The system menu serves for deleting the last measurement or all measurements. Apart from that, you will be informed about the voltage of the storage battery as well as the date and the hour.

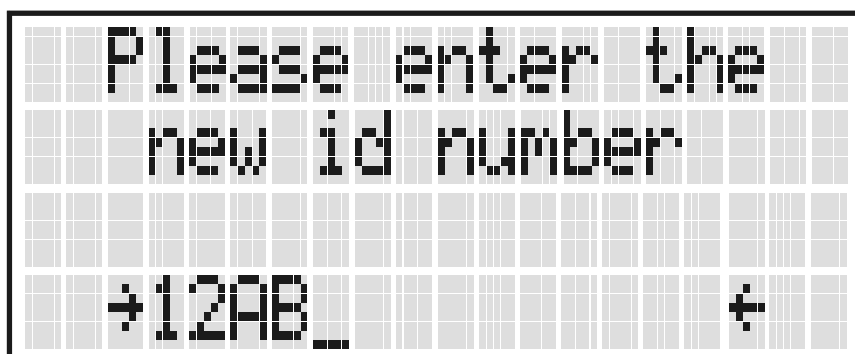
4.3 Changing the ID number

If you want to enter or change the identification number (ID number), the main menu must be shown on the display. Upon pressing the 2nd key, the ID number entry mode will appear:



```
Please enter the
new id number
↓ ←
```

You may enter a new ID number or change an existing one by pressing the numeral keys. To enter a letter, please press and hold the ↓ key and then press the respective numeral key until the desired letter appears. Upon entry of the letter, release the ↓ key. Delete a character by pressing the ← key.



In general: To confirm an entry (**OK**), press the following key:



To abort an entry (**CANCEL**), press the following shortcut:



4.4 Changing the Diameter

To enter or change the diameter, the main menu will have to be shown on the display. Upon pressing the 3rd key, the diameter entry mode will appear.

Proceed the same way as you would for entering or changing the ID number.

4.5 Changing the Type of Wood

There are two options for the type of wood available: soft and hard. This setting only serves for registration purposes and will not affect the measuring result.

To change between the types of wood, the main menu will have to be shown. Please press the 4th key to switch over.

4.6 Deleting the Last Measurement

To enable deleting the last measurement, the system menu will have to be shown. Upon pressing the 1st key, you will be asked whether you really want to delete the last measurement.. Press the **OK** key to delete the last measurement. Press **CANCEL** to abort.

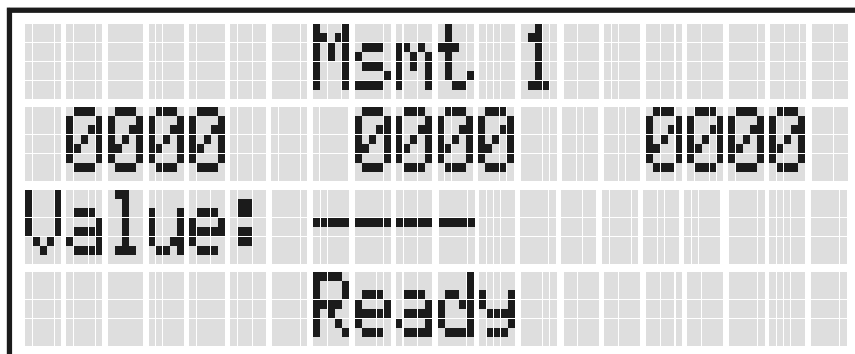
4.7 Deleting all Measurements

To enable deleting the last measurement, the system menu will have to be shown. Upon pressing the 2nd key, you will be asked whether you really want to delete all measurements. Press the **OK** key to delete all measurements. Press **CANCEL** to abort.

4.8 Registering a Measurement

Prior to registering a new measurement, please fix the sensor to the tree. Connect the sensor and the hammer with the electronic unit by means of the BNC cables.

Press the **Start** key. The display will show the following message.



In the first line, the number of the actual measurement and in the second line, the measured values of the three last measurements are shown. The second line indicates the actual measured value. The fifth line serves for displaying status messages.

You may now effect measurements.

If you want to accept the measured values shown in the second line, press the **OK** key. The following message will appear:



```
v=1736 m/sec
Measurement stored
OK=Next
```

The top line shows the average of the last three measurements. This value will be stored. Press the **OK** key to get back to the main menu.

5 I-Tools Light

5.1 System Requirements

- IBM compatible PC with processor min. 486SX/25 MHz
- Min. 8 MB RAM (16 MB recommended)
- Min. 2 MB hard disk memory
- Graphics adapter min. VGA
- Windows 95 or later

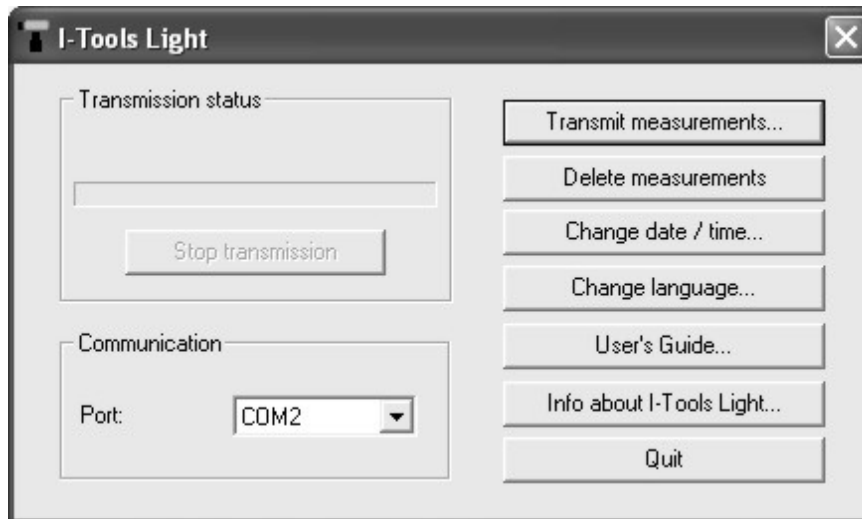
5.3 Starting I-Tools Light

If you haven't changed the default settings during installation, you may now start the program by proceeding as follows:

- Click the *Start* button (Task bar)
- Select *Programs*
- Select *IML-Software*
- Select *I-Tools Light*
- Start *I-Tools Light*

5.3 Functional Description

Upon start of the program, the following dialogue box will appear:



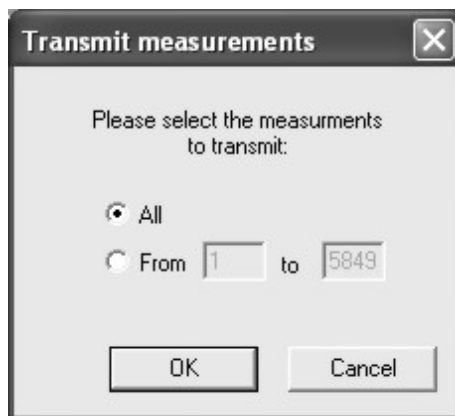
The following is a description of the individual buttons:

5.3.1 Transmit Measurements

This button serves for transmitting all of your data from the electronic unit to your PC.

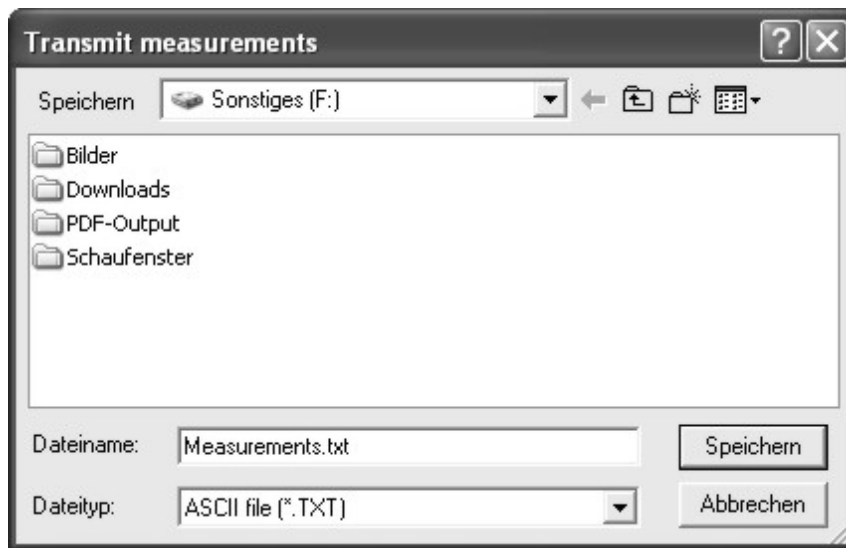
Previously, you will, however have to connect the electronic unit with the PC by means of the connection cable supplied. Connect one end of the cable with the PC socket on the electronic unit and the other end with a free serial interface on your PC. Should you want to use another interface than COM2, you will have to select the respective interface in the *Communication* box.

After clicking on the *Transmit measurements* button, a dialogue box will appear, where you may select the data you want to transmit:



If you do not want to transmit all data, check the lower function and select the data to be transmitted.

Upon clicking on the **OK** button, a dialogue will appear, where you may select the target directory for transmission of the data:



We suggest *measurements.txt* as file name. You may, however, change the name.

Upon selecting the desired directory, click the **Save** button. All data are now transmitted to the PC. You may abort the transmission by clicking on the **Abort transmission** button in the main dialogue.

After the data have been transmitted to the PC, the target directory will contain an ASCII file in the following format:

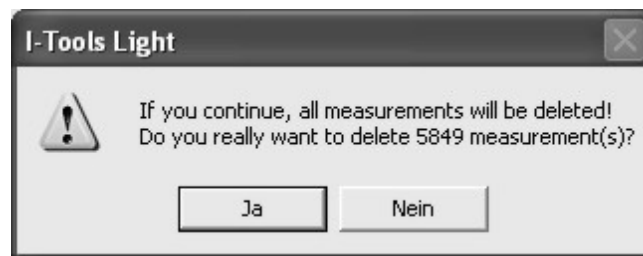
```
*****
*
*                               Elektronik Hammer Measurements
*
*   No. of msmts. : 1
*   Period       : From 01.08.2001 12:36:50 to 01.08.2001 12:36:50
*
*****

Msmt. no.   Id number   Date       Time         Wood       Diameter   Measuring value
1           TEST 01/1       27.07.2001 15:30:19    soft       100 cm     1445 m/sec
2           TEST 01/1       27.07.2001 15:32:40    soft       100 cm     1428 m/sec
3           TEST 01/2       27.07.2001 15:38:24    soft       80 cm      426 m/sec
4           TEST 01/3       27.07.2001 15:41:35    soft       100 cm     542 m/sec
```

You may open this file by means of a spreadsheet programme (e.g. Excel) The data are separated by a blank and they may be imported from line 11 (incl. header) or from line 13 (without header).

5.3.2 Delete Measurements

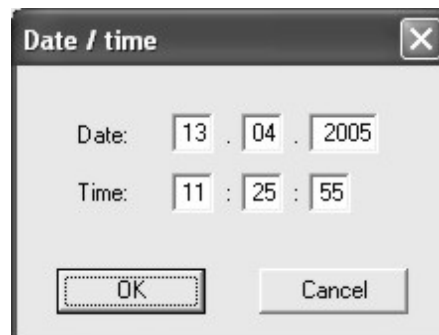
Click on this button to delete all measurements in the electronic unit. Upon clicking on this button, you will be asked whether you really want to delete all measurements:



Attention: After clicking on the **Yes** button, all measurements will be irrevocably deleted!

5.3.3 Change Date / Hour

This button serves for setting the date and the time of the electronic unit. Upon clicking on this button, the following dialogue will appear:



The system time of your PC will be automatically entered into the cases. After checking the data, click on the **OK** button.

5.3.4 Change Language

Click on this button to select the language of the electronic unit. The following dialogue will appear (the instrument must be connected with the electronic unit):



After selecting the desired language, click on the **OK** button.

5.3.5 User's Guide

Upon clicking on this button the User's guide will be shown.

5.3.6 Info about I-Tools Light

Upon clicking on this button you will be shown information on the software.

5.3.7 Close

Click on this button to exit the programme.

Suggestions

Suggestions ELECTRONIC HAMMER:

Suggestions I-Tools Light:

Have you found any errors in the present manual?

Sender:

Name: _____

Company: _____

Address: _____

Send to: IML Instrumenta Mechanik Labor System GmbH
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69168 Wiesloch • Germany

or fax to: (49) 06222-6797-10