

# **IML-RESI F-Series**

## **Bluetooth Electronic**

—

### **F-Tools F-Tools Pro**

#### **Manual**

Issued 10-2009



**IML**

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# 1 Electronic Unit

## 1.1 Scope of Delivery

Prior to familiarizing yourself with the instrument, please check whether the package contains all components comprised in the scope of delivery *F-Electronic*:

- Electronic unit (connected to drilling attachment)
- Battery charger
- USB Data transmission cable
- USB Bluetooth Adapter
- IML Software Center

If any of the above components are missing, please call the distributor you purchased the items from or contact IML System GmbH directly.

## 1.2 Operating and indicating elements

Fig. 1 and Fig. 2 show the operating and indicating elements of the electronic unit.

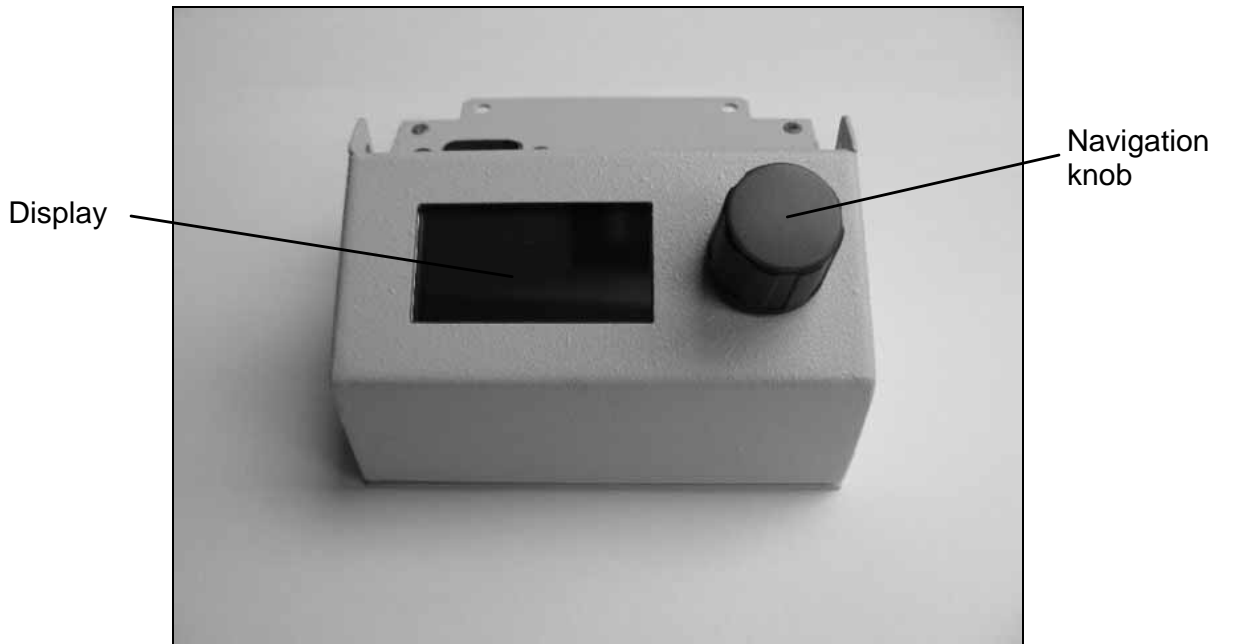


Fig. 1: Front of electronic unit

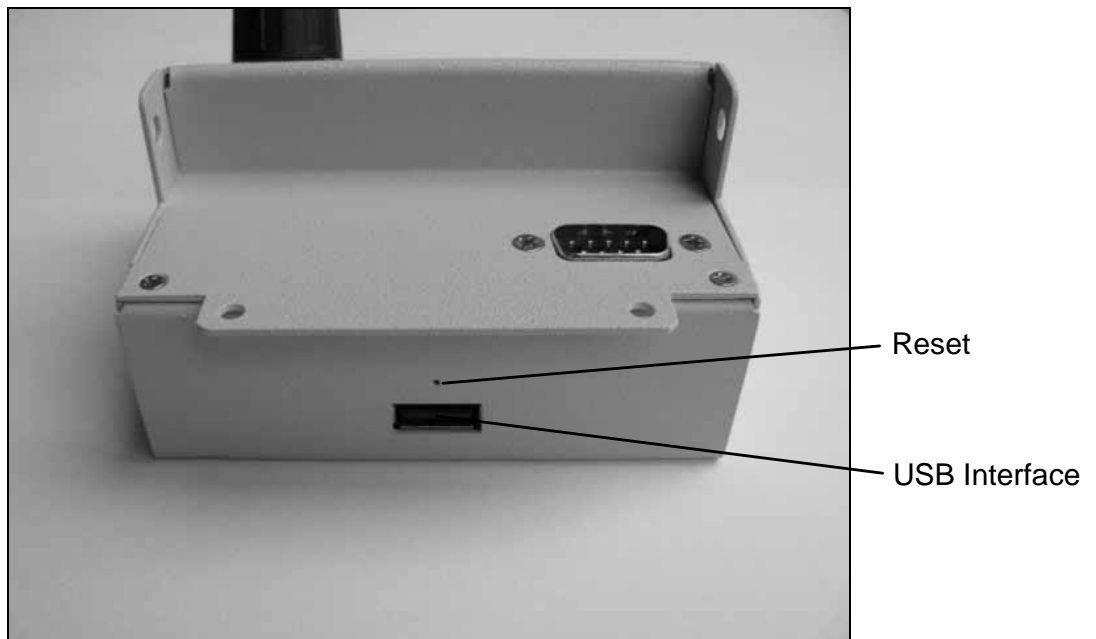


Fig. 2: Rear of electronic unit

## 1.3 Functional Description

### 1.3.1 Switching ON / OFF

Press the navigation button to switch on the electronic unit and keep pressed until the following message will appear in the display:



After a short delay the main menu A will be displayed:



Press again the navigation button to switch off the electronic unit. Keep pressed until the electronic switches off. Only if the main menu A, the main menu B or the system control menu is displayed the electronic unit can be shut down (see next paragraph).

If the electronic cannot be switched off and the unit has hung up, the electronic unit can be shut down by pressing the reset button mounted above the USB interface.

### 1.3.2 Main Menu A

After switching on the unit the main menu A will be displayed.



In this menu you can enter the ID number of a measurement as well as a remark. Furthermore the type of wood set at the drilling instrument (hard or soft wood) and the remaining free memory are indicated. Refer to the corresponding chapter for detailed information about these functions.

### 1.3.3 Main Menu B

Use the navigation knob to set the navigation arrow on the position shown above to enter the main menu B. Press the navigation knob. The main menu B will be displayed:

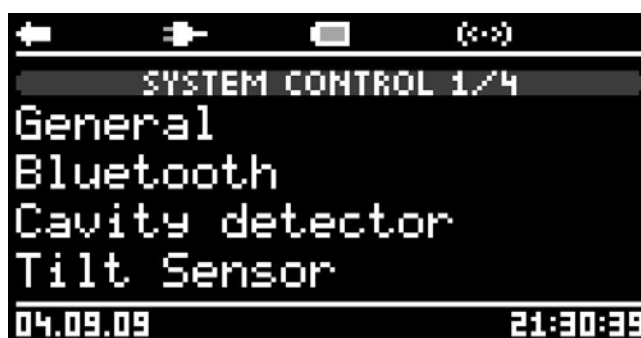


This menu shows the number of stored measurements. You can show stored measurements and also the last measurement or all measurements can be deleted. Refer to the corresponding chapter for detailed information about these functions.

Position the navigation arrow in the upper status bar until it points to the left. Press the navigation knob to get back to the main menu A.

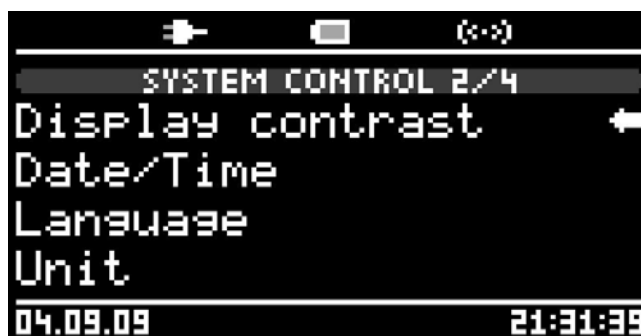
### 1.3.4 System Control Menu

Position the navigation arrow in the upper status bar until it points to the right to open the system control menu. Press the navigation knob to get page 1 of the system control menu:

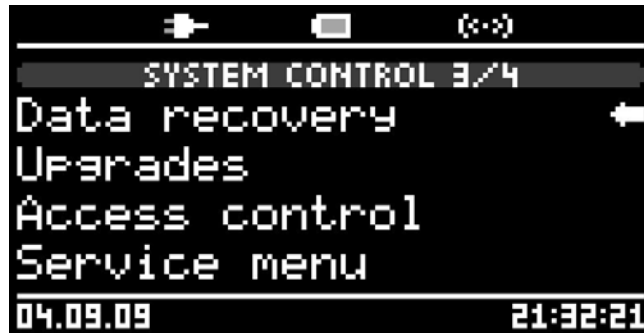


In this menu you can configure the system settings of the electronic unit. Please refer to the corresponding chapter for further information.

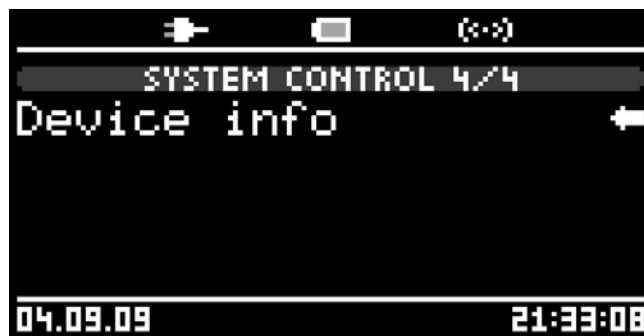
The system control menu consists of 4 pages. Turn the navigation knob to the left until page 2 will be displayed:



Keep on turning the navigation knob to the left to display page 3:



Keep on turning the navigation knob to the left to display page 4:



Position the navigation knob in the upper status bar until it points to the left to get back to main menu B. Press the navigation knob to display main menu B. There you also can switch to main menu A.

### 1.3.5 Status Bar

The upper status bar is visible when main menu A, main menu B or the system control menu is shown:



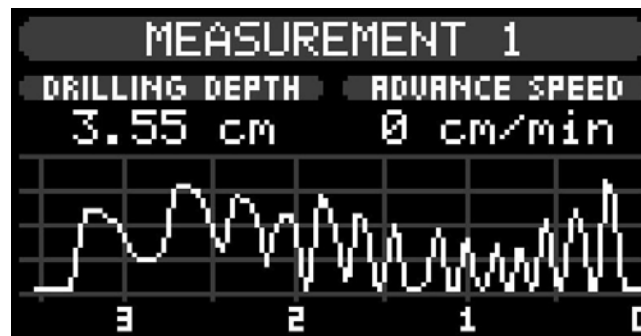
The status bar indicates the condition of the battery. The symbol is blinking when the battery is very low and the remaining battery time is quite short. An animation shows the recharging process.

The instrument connected via USB is shown on the left side of the battery symbol. If the electronic unit is connected to the PC there will appear the symbol of an USB connector. If it is connected to the battery charger there will appear the symbol of a power connector.

The Bluetooth symbol is on the right side of the battery symbol. If the Bluetooth function is enabled and there is no connection to the PC the symbol will be shown shaded. If a connection to the PC has been established the symbol will be shown brightly. If the Bluetooth function is deactivated the symbol will be invisible. Please refer to paragraph *Bluetooth* at chapter *System settings* for further information.

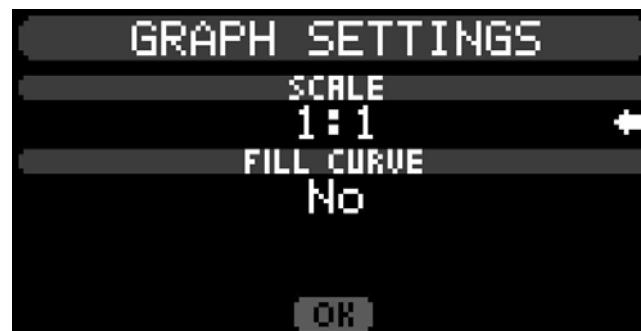
### 1.3.6 Recording a Measurement

The electronic unit will start automatically if a measurement is started by the drilling instrument. A new measurement will only be started if either main menu A, main menu B or the system control menu are displayed. Once the measurement has been started the drilling depth, the advance speed as well as the drilling graph is displayed:



The direction of the drilling graph can be changed in the system settings. Please refer to the paragraph *Display* at chapter *System settings* for further information.

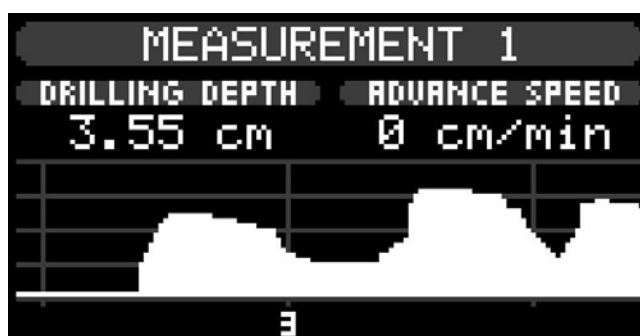
Press the navigation knob to change the graph settings. The following menu will be displayed:



The menu for the graph settings offers two options. **SCALE** can switch the resolution of the graph between true to scale (1:1) or maximum resolution of the instrument. True to scale (1:1) means that the drilling graph is shown at a scale of 1:1. Please regard that this view does not indicate all details of the graph. **Maximum resolution** means that 1 pixel corresponds to the electronic resolution of the instrument (0.1 mm). This scale indicates all details of the drilling graph.

By the option **FILL CURVE** you can choose if the area below the graph has to be filled up. Filling up the area will increase the accuracy and it makes it easier to read the graph at strong sunlight.

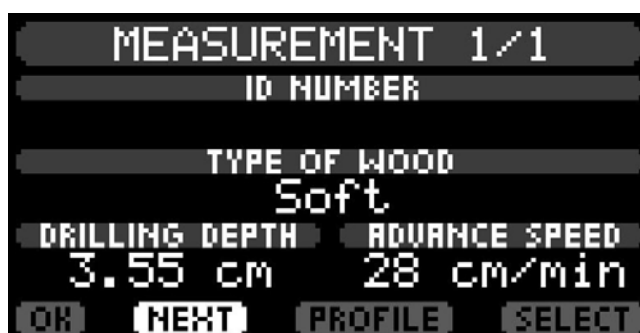
The following figure shows the drilling graph scaled at **Maximum resolution** with filled up area:



If you want to cancel the measurement without saving data keep on pressing the navigation knob until the unit asks if the measurement should be cancelled.

As soon as the drilling instruments runs backwards the measurement will be saved automatically. The corresponding message appears.

The measurement data will be displayed as soon as the data are saved.

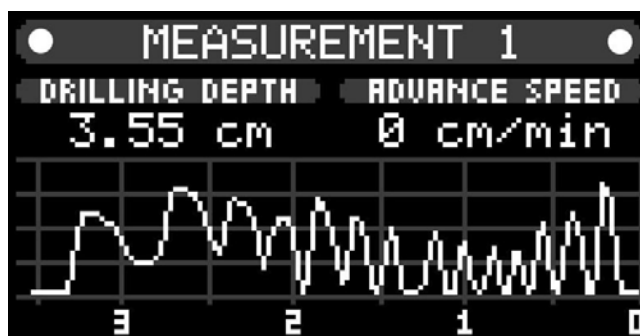


Please refer to the corresponding chapter for further information about these functions. Select **OK** to get back to the main menu.

It is also possible to disable the automatic readout after the drilling process. Please refer to paragraph *Display* at chapter *System Settings*.

If the PC record mode has been activated with F-Tools Pro before a measurement is started, the data are transferred and displayed simultaneously to the PC while the measurement is in process.

Two dots in the title bar indicate that the data transfer is activated:



If both dots (on the right and on the left side of the title bar) are displayed brightly, the PC is within reach and the data are shown simultaneously to the drilling process on the PC. If the dots are greyed, the data are not displayed simultaneously. As soon as the electronic unit is in reach of the PC again, the missing data are transferred until the PC data are synchronized with the electronic unit.

If a measurement is finished and there is no connection to the PC, a message will appear on the electronic unit. As soon as the electronic unit is in reach of the PC again and the Bluetooth connection is restored, the missing data are transferred and the measurement is finished on the electronic unit and on the PC.

### 1.3.7 Changing the ID Number

An ID can be used for assigning a measurement to a tree or to a project. The very ID will be saved with each measurement.

Position the navigation arrow on main menu A behind the ID to change the ID as shown in the following screenshot:



The edit mode for changing the comment will appear after the navigation knob is pressed.



You can select the desired character by the help of the navigation knob. For applying the chosen character press the button. Navigate to **DELETE** and press the navigation knob to delete a character. The last character will be deleted. Keep on pressing the navigation knob if you want to erase the complete ID.

You can apply data by pressing the button **OK** or cancel this progress by pressing the button **CANCEL**.

### 1.3.8 Changing the Remark

To add a note to the measurement, you can use the function **REMARK**. The remark will be stored with every measurement and it will be shown in the field remark of F-Tools / F-Tools Pro after a transfer to the PC.

Position the navigation arrow of main menu A behind remark to change a remark as shown in the following screenshot:



After you have pressed the navigation knob the edit mode to change the remark will appear:



You can select the desired character by the help of the navigation knob. For applying the chosen character press the button. Navigate to the button **DELETE** and then press the navigation knob to delete a character. The last character will be deleted. Keep on pressing the navigation knob if you want to erase the complete remark.

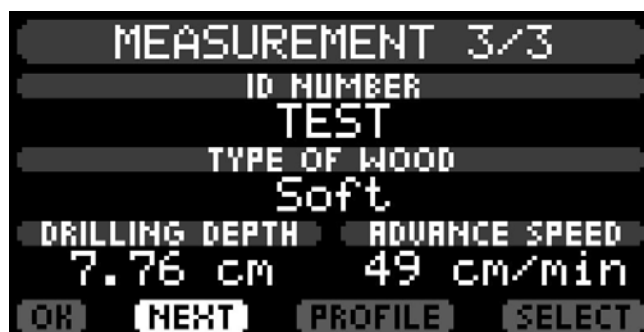
You can apply data by pressing the button **OK** or cancel this progress by pressing the button **CANCEL**.

### 1.3.9 Showing a Measurement

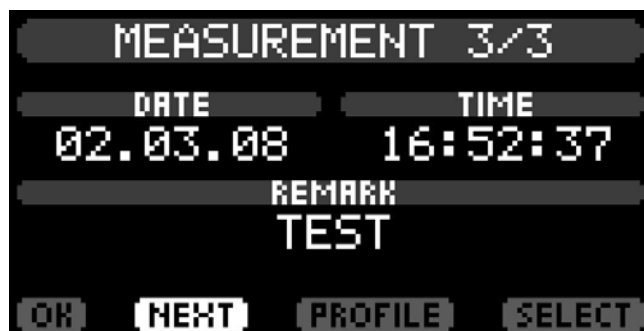
Position the navigation knob on main menu B behind the menu item **Show measurement** to display a saved measurement as shown in the following screenshot:



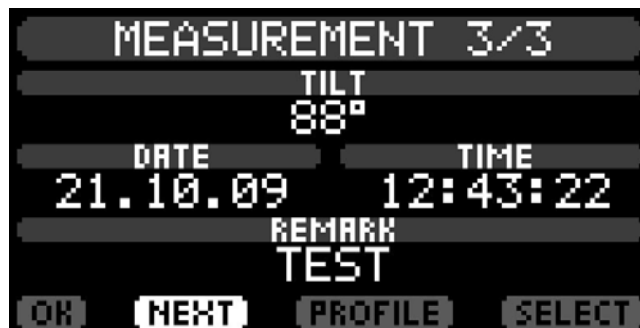
After you have pressed the button the measurement will be shown:



Press the button **OK** to get back to main menu B. Apply **NEXT** to show the next page of the measurement:



The following page will be displayed instead of the above shown, if you have purchased the module *Tilt sensor*.

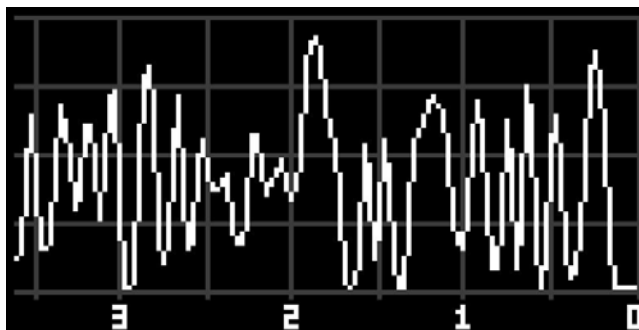


If you have purchased the module *cavity detector* and the cavity detector was activated during the measurement process, the data of the cavity detector will be shown after the button **NEXT** has been pressed again:



See the paragraph *Cavity length* at chapter *System settings* for detailed information about the meaning of the parameters.

Select the button **PROFILE** to display the drilling graph of the measurement:



The graph can be moved by the help of the navigation knob if it cannot be shown completely on the display due to the drilling depth. Therefore turn the navigation knob to the right or to the left. The more you turn to a direction the higher is the speed with which the graph is moved. Turn the navigation knob in the opposite direction or press it to stop the scrolling.

Keep on pressing the navigation knob to change the graph settings. The following menu will appear:

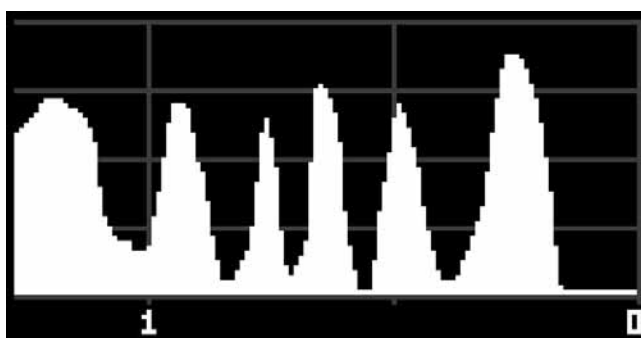


The menu for the graph settings offers two options. **SCALE** can switch the resolution of the graph between true to scale (1:1) or maximum resolution of the instrument. True to scale (1:1) means that the drilling graph is shown at a scale of 1:1. Please regard that this view does not indicate all details of the graph. Maximum resolution means that 1 pixel corresponds to the electronic resolution of the instrument (0.1 mm). This scale indicates all details of the drilling graph.

By the option **FILL CURVE** you can choose if the area below the graph has to be filled up. Filling up the area will increase the accuracy and it makes it easier to read the graph at strong sunlight.

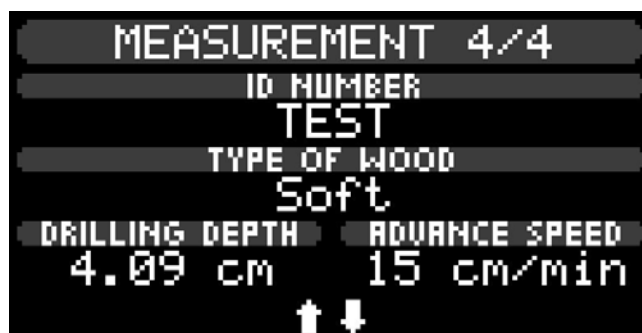
The option **GRAPHIC CAVITY** is only available if purchased the cavity detector package. With this option the graphic for showing the cavity can be switched on or off.

The following figure shows the drilling graph scaled at maximum resolution with filled curve:



Press the navigation knob to quit the display mode.

The button **SELECT** allows you to show another measurement. After you have pressed the navigation knob the scrolling mode will be activated:



Turn the navigation knob to the right or to the left to select the desired measurement. The number of the displayed measurement is shown in the upper edge of the display. Press the button to select the measurement.

Mark **SELECT** and keep on pressing the navigation knob to select a measurement by its number. The menu for the edition of the measurement number will appear:



After entering the number of the desired measurement press **OK**.

### 1.3.10 Deleting the last Measurement

Position the navigation arrow on main menu B behind the menu item **Last measurement** to delete the last measurement as shown in the following screenshot:



After the navigation knob has been pressed a message will appear asking if you really want to delete the last measurement. If you select **YES**, the last measurement will be deleted.

### 1.3.11 Deleting all measurements

Position the navigation knob on main menu B behind the menu item **All measurements** to delete all measurements as shown in the following screenshot:



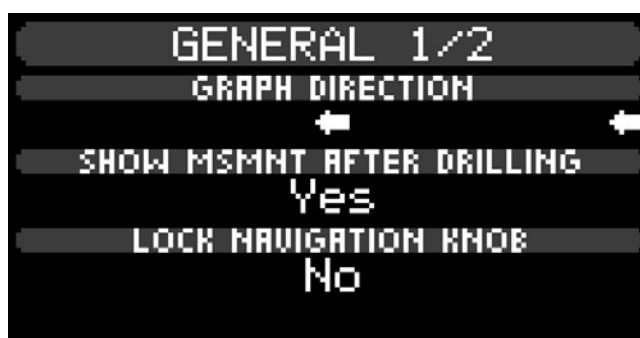
After the navigation knob has been pressed a message appears asking if you really want to delete all measurements. If you select **YES** all measurements will be deleted.

### 1.3.12 System Settings

Switch to the system control menu to change the system settings. The relevant options of this menu will be explained in the following paragraphs.

#### 1.3.12.1 General

After selecting this menu item the following dialog will appear:

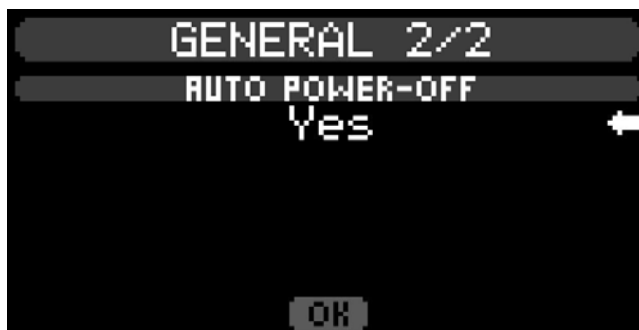


The option **GRAPH DIRECTION** sets the direction of the drilling graph displayed while drilling or in the display mode (left-right or right-left). Please set your preferred direction.

The option **SHOW MSMNT AFTER DRILLING** allows you to decide if the measurement is or is not shown immediately after drilling.

The option **LOCK NAVIGATION KNOB** offers the possibility to activate an automatic lock for the navigation knob and to prevent an accidental manipulation of the instrument. If this function is enabled, the navigation knob will be locked after 10 seconds of inactivity. If you turn or press the navigation knob after this period of time, a relevant message will appear. If you want to reactivate the knob keep on pressing it and answer the request with **Yes**. Please regard that the automatic lock is only active in the main menu A or B, in the system control menu or during the recording of a measurement.

Keep on turning the button to the left to display page 2 of the menu.



With the option **AUTO POWER-OFF** the electronic unit will be switched off after 10 minutes of inactivity. Select **Yes** if the period between the measurements is longer or if you want to ensure that the instrument does not keep switched-on accidentally and the battery runs down. Deactivate the function if you want to ensure that the instrument is always ready when you start a measurement and that it has not been switched-off in the meantime.

### 1.3.12.2 Bluetooth

After selecting this menu item the following dialog appears:



The menu item **STATUS** indicates if the Bluetooth system is on or off.

With the menu item **CONNECTION** you can add a new connection or change the actual connection.

Before selecting the menu item **New** please install the Bluetooth system on the PC that you want to connect (see chapter 2.2.3 Bluetooth interface).

If there is stored at least one connection the following dialogue will appear when you select the menu item **New**:



Select the storage location where the new connection has to be stored. There can be stored at most 3 connections. If you select a storage location that is already used by another connection, this connection will be overwritten by the new connection.

After selecting the storage location, new Bluetooth devices will be searched. If an instrument is in reach, it will be displayed as shown below in the example:



Confirm to establish a new connection to the indicated instrument. Select **NO** to display the next instrument that has been found.

If you have selected **YES**, the connection process will be started. A window will appear on your PC requesting a pin. Please enter **0000** on your PC. After selecting OK, the electronic unit will try to establish a connection with the PC. If the connection process was successful, the connection can be stored.

After entering the connection pin, some Bluetooth systems require another confirmation that the electronic unit is allowed to access the PC. Please confirm that the electronic unit is always allowed to access the PC and close the dialogue.

Select the menu item **Change** in the Bluetooth dialogue to change the existing connection. The following dialogue will appear:



In this dialogue you can choose the instrument to which the Bluetooth connection will be established in the future. Select **OK** to close the dialogue.

All modifications of the Bluetooth configuration will not be applied before you have closed the Bluetooth menu and the main menu is displayed.

### 1.3.12.3 Cavity Detector (*Additional module*)

The following dialog appears after selecting this menu item:



**STATE** indicates if the cavity detector is on or off.

With **START LEVEL** you can adjust the amplitude level for the automatic detection of the needle entry. If this level is exceeded, the electronic unit detects the entry of the needle. The cavity detector is now active and starts with the monitoring of the drilling profile and the detection of cavities.

The parameter **MAX START DEPTH** indicates the maximal drilling depth from which on the cavity detector has to be activated if the starting level has not been reached before. This will avoid the non-detection of external decay.

With the parameter **LEVEL STOP** it is possible to adjust the amplitude level for the automatic detection of the needle exit. The electronic unit detects the exit of the needle the last time this level is not reached. This parameter is applied only if the mode **Full piercing** has been activated.

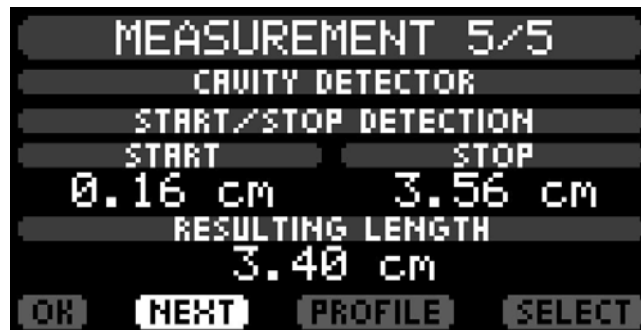
**MODE** indicates the operating mode of the cavity detector. **Full Piercing** means that the object is pierced completely; the last decay of the amplitude below the adjusted level is not detected as cavity but as exit of the needle. **Partial Piercing** means that the object is not pierced completely; the drilling needle remains in the wood when the drilling process is completed. The last decay of the amplitude below the adjusted level is detected as cavity and the length is added to the total cavity length.

Continue turning the navigation button to the left until page 2 appears:



**WIDTH** and **LEVEL** indicate the properties of a detected cavity. For the adjustments shown in the example a cavity is detected as cavity if the drilling graph falls below a level of 10% for at least 1 cm.

The following figure shows the cavity parameters appearing during a measurement:



**START** indicates the entry of the needle.

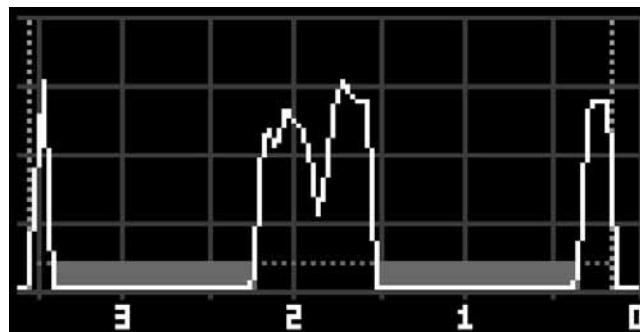
**STOP** indicates the depth where the detector has recognized the final point of the graph. If **Partial piercing** is selected, this value correlates to the total drilling depth. If **Full piercing** is selected, this value correlates to the point of exit of the needle.

The value **RESULTING LENGTH** indicates the difference between **START** and **STOP** and corresponds to the tree diameter.



The cavity length indicates the total length of all detected cavities as well as its percentage of the total drilling depth. In this case one or more cavities have been detected with a total length of 2.38 cm. This correlates to 70% of the drilling depth. The 30% remaining correlate to the residual wall of the inspected object.

If the cavity detector is activated the entry and the exit of the needle as well as the cavities are displayed graphically. The adjusted level determines the height of the area corresponding to the cavity.



#### 1.3.12.4 Tilt Sensor (**Additional module**)

The following dialog appears after selecting this menu item:



If the parameter **RESOLUTION** is adjusted to **1°**, the tilt will be measured in steps of 1°. We recommend to choose this adjustment if the angle has to be measured accurately. If you adjust the resolution to **45°** the electronic unit will only differentiate between the angles 0°, 45°, 90°, 135° and 180°. Chose this adjustment if you only want a differentiation between these steps.

The tilt will be displayed in the status bar of the main menu, if the option **DISPLAY TILT** has been activated.

### 1.3.12.5 Display Contrast

The following dialog appears after selecting this menu item:



If there is strong sunlight it is possible to switch contrast from **Normal** to **High** so that it is easier to read the display. Please regard that the lifetime of the display will decrease with this setting.

### 1.3.12.6 Date/Time

The following dialog appears after selecting this menu item:



With the menu item **DATE FORMAT** it is possible to choose the display format for the date.

After selecting the menu item **Change Date / Time** the dialogue for changing the date and the time will appear:



Please enter first the date and then the time. After pressing **OK** you have to confirm another time with **OK** to save the new time settings.

Please regard that date and time settings are synchronized with the PC time when measurements are transferred to your PC.

### 1.3.12.7 Language

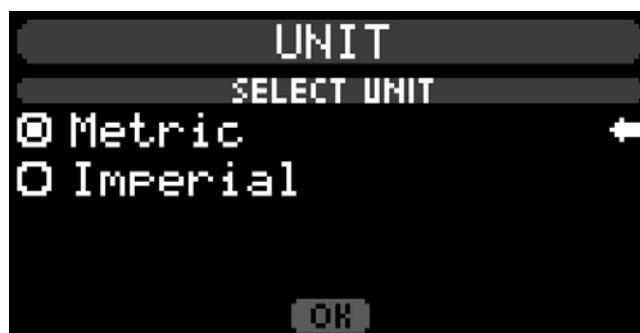
The following dialog appears after selecting this menu item:



Select the desired language.

### 1.3.12.8 Unit

The following dialog appears after selecting this menu item:



Select the desired unit.

### 1.3.12.9 Data Recovery

After selecting this menu item a request appears asking if you really want to start the data recovery. After confirming this request with **YES** the data recovery will start:



The data recovery routine searches the complete memory for valid measurements and recovers them. This function will be helpful if you have deleted measurements accidentally and you want them to be recovered.

### 1.3.12.10 Upgrades

After selecting this menu item, the following dialog will appear:



The menu item **INSTALLED OPTIONS** indicates the upgrade options you have purchased and already installed. For the F series the following options are available:

<b>M40</b>	Memory upgrade to 40 meters memory length
<b>M80</b>	Memory upgrade to 80 meters memory length
<b>M160</b>	Memory upgrade to 160 meters memory length
<b>PI</b>	Pole Inspector
<b>TLT</b>	Tilt Sensor
<b>RCI</b>	Remote Control Interface

With **ADD/REMOVE OPTION** it is possible to add or remove options. To run one of these functions you need the corresponding activation key that you obtain purchasing the upgrade option.

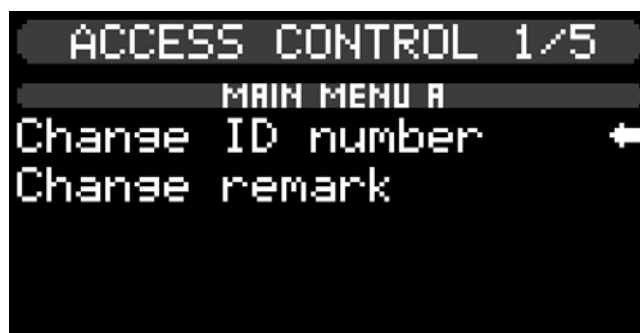
After selecting **Add**, the dialog to enter the activation key for the upgrade option will appear. Please enter your code and select **OK**. If the entered activation key was correct, the option that has been installed will be displayed in the menu item **OPTIONS INSTALLED**.

After selecting **Remove**, the dialog, to enter the activation key for the upgrade option to be removed, will appear. Please enter the code and select **OK**. If the entered activation key was correct, the option will no longer be shown in the menu **OPTIONS INSTALLED**.

### 1.3.12.11 Access control

With the access control it is possible to protect all the functions of the instrument with a password.

After selecting this menu item, a password request appears. The standard password is **IML**. After entering this password the dialogue to adjust the access control will appear.



Page 1 shows all the disposable functions of main menu A. If you want to block the access to a function you have to select this function and press the navigation button. The function will be greyed and furthermore it is impossible to access this function without entering the password. Analogically to page 1, page 2 shows all the disposable functions of main menu B. Page 3 and 4 show the functions of the system control.

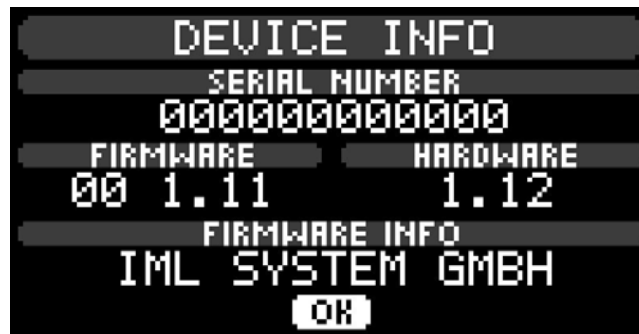
On page 5 it is possible to change the password. You can access this menu and all the locked functions only by entering this password.

### 1.3.12.12 Service Menu

This menu is designed for internal service activities and not addressable for end users.

### 1.3.12.13 Device Info

The following dialog appears after selecting this menu item:



There are displayed the serial number of the electronic unit, the firmware version and the hardware revision. Please regard that the shown serial number does not correspond to the serial number of F-Tools / F-Tools Pro.

### 1.3.13 Charging

It is possible to charge the electronic unit either by the provided battery charger or by a connected PC.

Charging with the PC makes it possible to charge the electronic unit on the way by a notebook without having connection with the grid. Please regard that for charging via the USB connection it is necessary to have installed the USB drivers. They will be installed automatically while the installation of F-Tools / F-Tools Pro.

If the charging process is running while the instrument is on, an animated symbol in the status bar will show it. If the electronic unit is off there will appear an animation as well as a status information.



**Only connect the battery charger to the electronic unit. Otherwise, if you connect it to a PC or an USB hub, it may cause damage to the PC components or the battery charger.**

**Please disconnect the battery charger from the electronic unit before unplugging it from the wall. This way you avoid overvoltages that may damage the electronic unit.**

## 2 F-Tools / F-Tools Pro

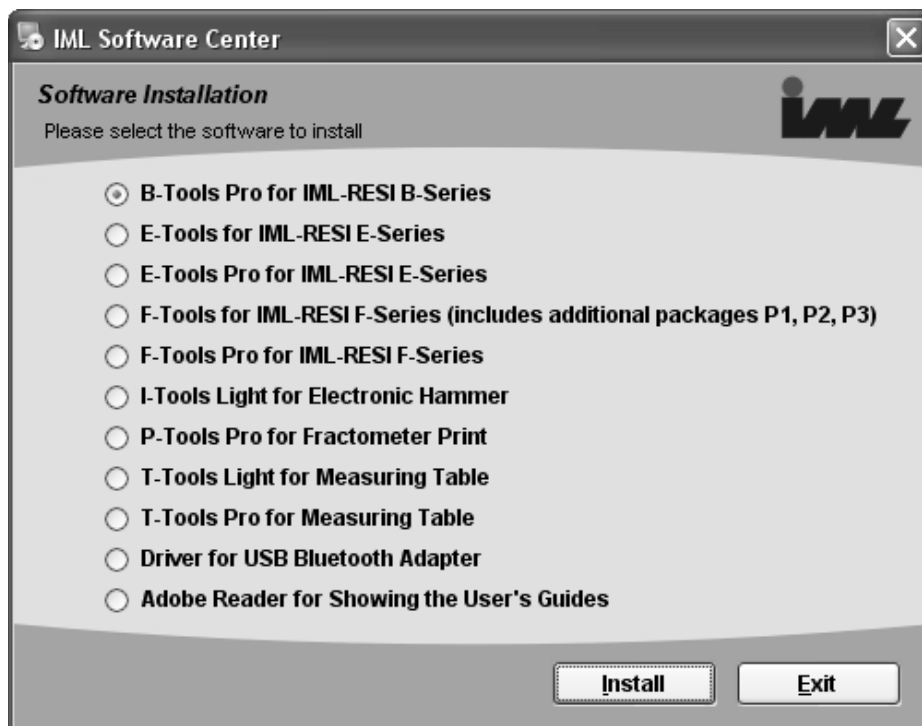
### 2.1 System Requirements

- 32-bit Operating System Windows 98SE or later

### 2.2 Installation

#### 2.2.1 F-Tools / F-Tools Pro

Insert the provided CD ROM into the CD ROM drive of your PC. Click on **Start, Run, Browse** if the CD ROM does not start automatically. Navigate to your CD ROM drive and start the file Setup.exe. The IML Software Center will appear:



Select the software to be installed and click on **Install** to start the installation. Follow the instructions on the screen to finish the installation.

## 2.2.2 USB Interface

After the successful installation of F-Tools / F-Tools Pro, connect your electronic unit to an USB connection of your PC. After connecting the following dialog will appear:



Mark the third option as shown in the screenshot and select **Next**. The next dialog will appear:



Mark the first option and select **Next**. The hardware wizard will install the new hardware. After the successful installation your PC can transmit data via USB and you can use F-Tools / F-Tools Pro.

### 2.2.3 Bluetooth Interface

Before setting up the Bluetooth connection please set up the USB interface (see previous paragraph).

If you want to use the provided USB Bluetooth adapter please see the following paragraph. If there is already a Bluetooth interface on your system, please follow with the next paragraph but one.

**Please regard that only one Bluetooth receiver can be connected to your PC.**

#### 2.2.3.1 Installation of the provided USB Bluetooth-adapter

Please regard that the provided USB Bluetooth adapter may not be connected to the USB interface of your PC before the driver installation asks you to do so!

Using the IML Software Center you have to select the option **Bluetooth driver for Delock USB Bluetooth Adapter** and then click on the button **Install** to install the Bluetooth driver for the USB Bluetooth adapter. Follow the instructions on the screen to finish the installation.

Please do not run any further functions of the Bluetooth driver. The electronic unit will establish the Bluetooth connection. See the chapter *System settings*, paragraph *Bluetooth* for further information.

#### 2.2.3.2 Installation of an existing Bluetooth interface

The complete Bluetooth driver has to be installed on your PC if you want to use an existing Bluetooth connection. If you don't know for sure if the driver is installed on your system you have to install it according to the installation instructions of your system.

## 2.3 Functional Description

Upon start of the program, the following window will appear:



Below the main menu (*File, IML-Resi, View, Options, ?*) you see the toolbar, which serves for direct selection of essential functions by clicking an icon with the mouse. In the following, the functions of all menu items of the main menu are described. If there is an icon for any of the menu items in the toolbar, this icon is printed beside the description.

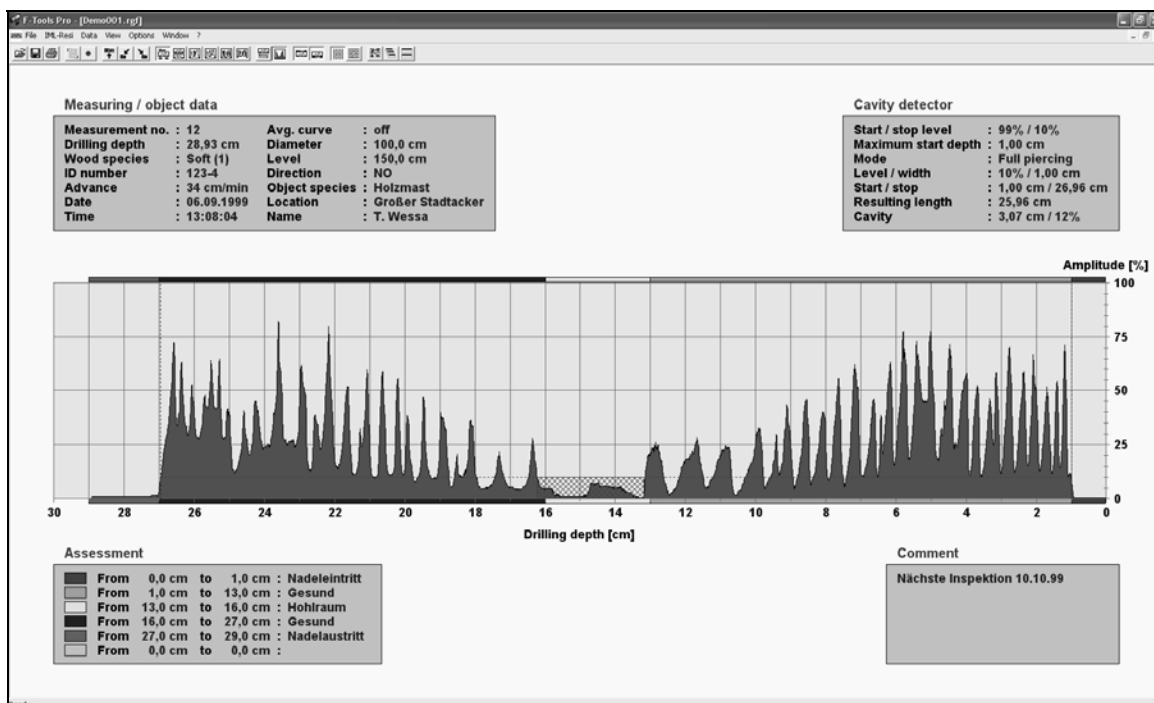
At the bottom of the window you see the status bar, which shows the description of the menu item selected.

### 2.3.1 Menu Item *File*



#### 2.3.1.1 *Open*

This menu item serves for loading a measurement from a drive (e.g. hard disk). Upon selecting this menu item, a dialog box will appear, by means of which a measurement may be opened. During installation of the software, ten examples have been installed. Choose any of these measurements and press the *OK* button to open the measurement. To obtain a full screen view, press the *Maximize* button.



**Hint:** You may select and open several curves simultaneously in the dialog box *Open* by means of the shift key and the Ctrl key.

### 2.3.1.2 Close

This menu item serves for closing the current measurement. If you have not saved the modifications made in the measurement so far, the program will automatically ask you, whether you want to save the modifications.

### 2.3.1.3 Close all without saving

Selecting this menu item will close all the open measurements without saving the changes.

### 2.3.1.4 Save all and close

Selecting this menu item will save all the open measurements and then close them.



### 2.3.1.5 Save

Select this menu item, if you have modified a measurement and want to save the modifications. However, in case that several measurements are opened, only the active measurement is saved. You can recognize the current measurement by title bar appearing in a different colour from the one of the other opened measurements.

### 2.3.1.6 Save all

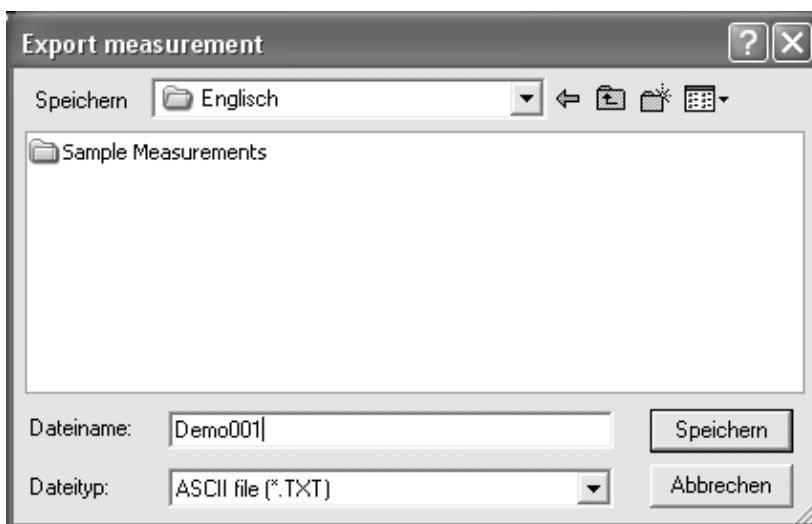
This menu item serves for saving all active measurements.

### 2.3.1.7 Save as...

Select this menu item, if you want to save the current measurement in another file. A dialog box will appear where you may choose or create the target directory. After having chosen the target directory, you may enter a new name of the measurement and save the new file by confirming.

### 2.3.1.8 Export... (Additional module)

Select this menu item, if you want to export the measurement into a different format. After having selected this menu item, the following dialog box will appear:



There are two ways of exporting a measurement available:

1. The ASCII format: If you export the measurement into the ASCII format, you will obtain a text file containing all data relating to the measurement. This file may be imported into another program (e.g. Excel<sup>®</sup>) for you to adapt the curve or the assessment to your requirements. The data of the curve start in line 46.
2. The EMF format: If you export the measurement into the EMF format (enhanced Windows meta file), you will obtain a file which saves the curve in the shape of a graphical representation. You may then import this file into a word processing program in order to document or record it. If you want to export the measurement into this format, select the entry *Enhanced windows meta file (\*.EMF)* in the selection box *Type of file*.

You may export all opened measurements simultaneously by entering the key word **.A** as a file name (do not forget the full stop). Upon pressing the Save button, all measurements will be exported in the format selected.

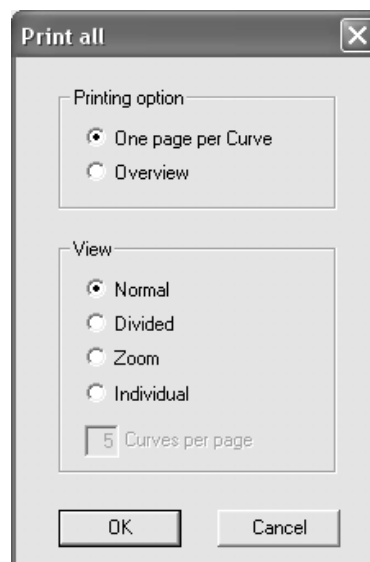


### 2.3.1.9 *Print...*

This menu item serves for printing out the current measurement. Upon selection of this menu item, a dialog box will appear, by means of which you may set the printer options. Print-out will be done in the view selected (normal, divided or zoomed).

### 2.3.1.10 *Print all...* (Additional module)

Upon selection of this menu item, the following dialog box will appear:



Select the printing option *One page per curve*, to print out all opened measurements one after the other. Print-out will be done in the view selected. If you have selected the view *Individual*, all measurement will be printed out in the view currently set.

Select the printing option *Overview*, to obtain a print-out of several curves on one page. After you have selected this option, you may fix the number of curves to be printed on the page (max. 10).

Upon confirmation of this dialog box by pressing the *OK* button, a dialog box will appear by means of which you may select the printer options. The program automatically selects the orientation of the page (portrait or landscape) depending on the number of curves to be printed (in case of the option *Overview*).

### 2.3.1.11 *Files last opened*

Above the menu item *Exit*, the four measurements that have last been opened are shown. You may directly open any of these four measurements by selecting it.

### 2.3.1.12 *Exit*

Select this menu item, if you want to quit the program. If the modifications of a current measurement have not yet been saved, the program will automatically ask you, whether you want to save these modifications.

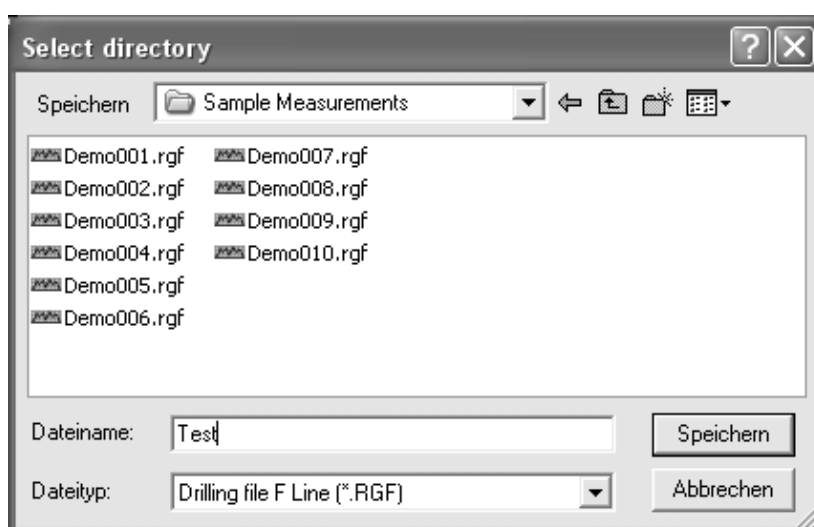
## 2.3.2 Menu Item *IML-Resi*



### 2.3.2.1 *Transmit measurements...*

This menu item serves for transmitting all measurements from the IML-Resi to your PC.

Upon selection of this menu item, a dialog box will appear, by means of which you may choose the target directory for these measurements.



As to the file name, there are two possibilities:

1. Enter a root name (any string of characters **without full stop**). In our example, the name entered is *Test*. The file name is then formed from the root name entered and the measurement number. If, for instance, four measurements are transmitted, the file names of these measurements will be:

```
Test001.rgf
Test002.rgf
Test003.rgf
Test004.rgf
```

2. Enter *.ID* in the field **File name** (do not forget the full stop). The file name will then be formed from the identification number of each measurement (e.g. the tree number) and the measurement number. If, for instance, four measurements have been carried out and each of these have been given an ID number:

Measurement 1: 98-001

Measurement 2: 98-002

Measurement 3: 98-002

Measurement 4: 98-003

the file names after transmission of the measurement will be the following:

98-001M001.rgf

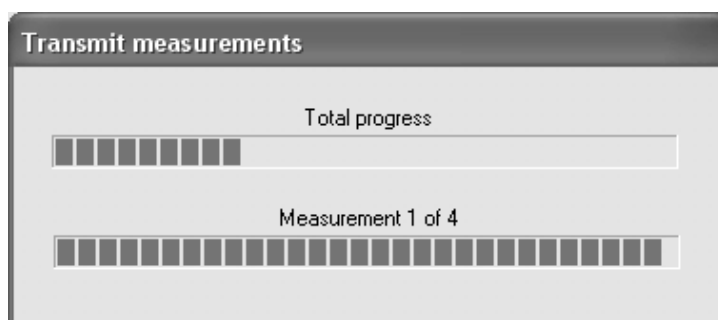
98-002M002.rgf

98-002M003.rgf

98-003M004.rgf

**Attention:** *Since the special characters \ / : \* „ > < | ? must not be used in the file name (Windows default), please pay attention to **not** using these characters when entering the ID number (option 2 above). If, however, you want the file name to be formed from the root name (option 1), you may use these special characters for the ID number.*

After the file name has thus been entered and you have confirmed by pressing the *OK* button, the measurements will be transmitted:



The upper progress indicator shows the overall progress, the lower progress indicator shows the progress of the measurement currently transmitted. If you want to quit the transmission, press both keys of the electronic unit and wait for the transmission to be aborted.



### 2.3.2.2 *Record measurements* (**Additional module**)

Select this menu item if the measurements should be recorded simultaneously to the drilling process. Please regard that the transmission is only supported by Bluetooth. The USB interface is not supported for recording.

After selecting this menu item a dialog will appear where the destination folder and the file name for the measurements can be chosen. The procedure of naming the file is similar to the procedure of transferring measurements (see previous paragraph).

After the record mode has been activated, a new measurement will be opened automatically by F-Tools Pro when a new measurement is started (as soon as the drilling instrument drives forwards). Depending on the quality of connection the drilling data are displayed simultaneously in F-Tools Pro. When the measurement with the drilling instrument is finished (the instrument drives backwards) the measurement data will be transmitted and the measurement will be stored.

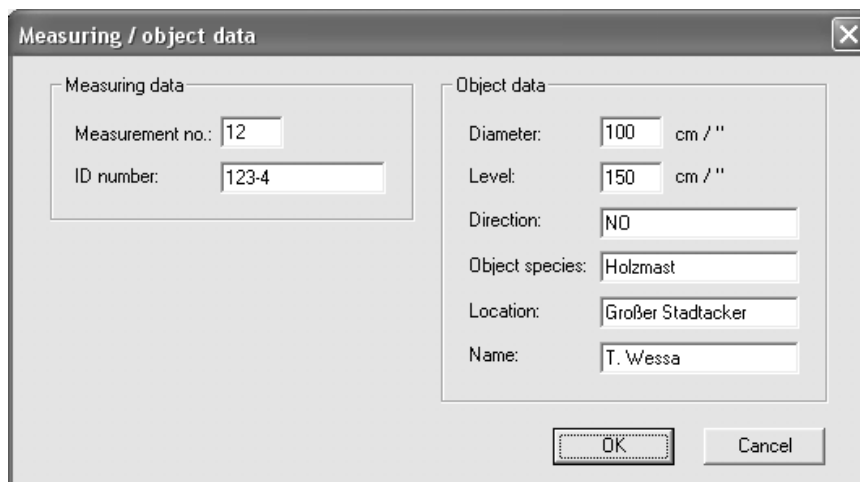
Please regard that an existing file having the same name will be overwritten without request.

## 2.3.3 Menu Item *Data*



### 2.3.3.1 *Measuring / object data...*

This menu item serves for modifying the measuring and object data of the active measurement. Upon selection of this menu item, a dialog box will appear:



Section	Field	Value
Measuring data	Measurement no.:	12
	ID number:	123-4
Object data	Diameter:	100 cm / "
	Level:	150 cm / "
	Direction:	NO
	Object species:	Holzmast
	Location:	Großer Stadttacker
	Name:	T. Wessa

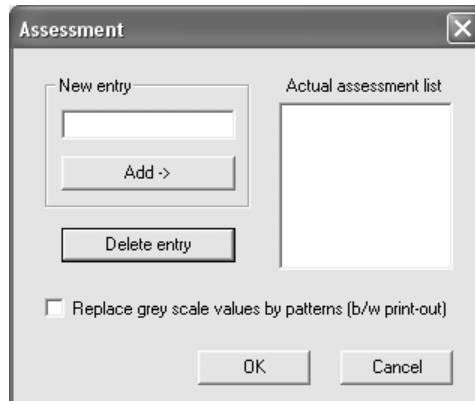
Upon pressing the *OK* button, the modifications will be shown in the main window.

**Hint:** You may invoke the dialog box as well by double-clicking with the left mouse button the case *Measuring / object data*.



### 2.3.3.2 Assessment...

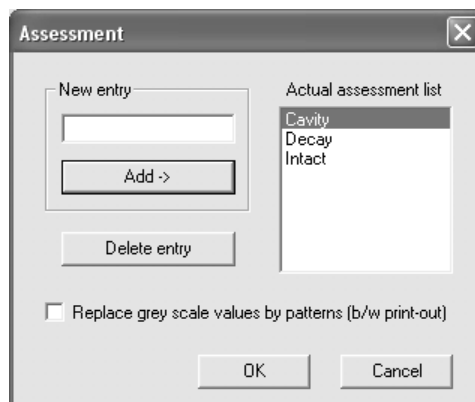
To facilitate assessment of the measurement, you should previously make a list of the most current special terms. For this purpose, select the menu item *Options – Assessment*. The following dialog will appear:



Enter a new term into the case *New entry*. Press the *Add* button to add this term to the list. The term will be added to the list in alphabetical order. If you want to delete a term from the list, highlight this term and press the *Delete entry* button.

If the function *Replace grey scale values by patterns (b/w printout)* is activated, the coloured markings above and below the curve will be filled with patterns in order to achieve a clearer differentiation in case of black and white printout.

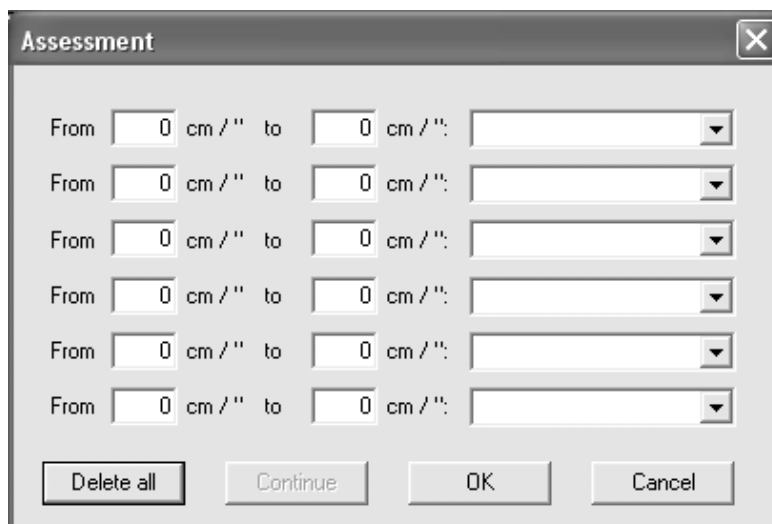
The following figure shows an example of an assessment list.



After you have thus made your assessment list, assessment of the curve may be carried out in two different ways:

## 1. Manual Assessment

Upon selection of the menu item *Data – Assessment* the following dialog box will appear:



The dialog box is titled "Assessment" and features a close button in the top right corner. It contains six rows of input fields. Each row is labeled "From" and "To" and includes a unit selector dropdown menu. The "From" and "To" fields are currently set to "0". Below the input fields are four buttons: "Delete all", "Continue", "OK", and "Cancel".

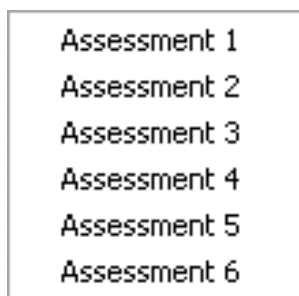
The cases *From* and *To* serve for entering the zone to be marked. In the case on the right side, you may either enter a term (e.g. entrance of needle) or select a pre-defined term from the assessment list by clicking the arrow. If you want to delete all cases, press the *Delete all* button.

Upon pressing the *OK* button, you can see the modifications in the main window. The colours of the markings above and below the curve may be individually changed. For the description, please refer to section 2.3.5.5 *Colours*.

**Hint:** You may invoke the dialog box as well by double-clicking with the left mouse button the case *Assessment*.

## 2. Assessment by Means of the Mouse

If you want to assess the curve by means of the mouse, please press the right mouse button. The following context menu will be shown:



Please select the line where you want the assessment to be entered. A line will appear (if the mouse pointer is positioned above the curve), which marks the beginning of the marking. As soon as you have positioned the line at the beginning, press the left mouse button. A second line will appear, by means of which you may fix the end of the marking. Upon pressing the left mouse button again, the above assessment dialog box will appear. The beginning and the end of the marking will be automatically entered into the cases. If necessary, you may manually modify the value. Now, please enter an assessment term either manually or by selecting one from the assessment list.

Upon pressing the *OK* button, you can see the modifications in the main window. You may now carry out the next assessment by pressing the right mouse button.

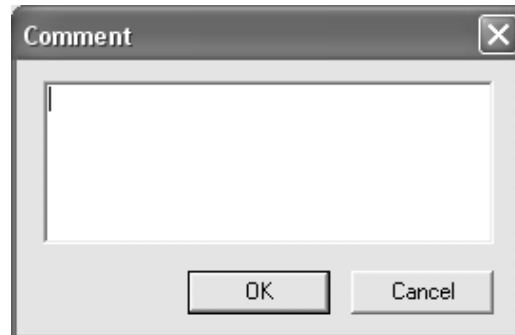
If you click the *Continue* button instead of the *OK* button, the next measurement will automatically be started, the programme adopting the final value of the previous measurement as starting value of the new measurement. This function serves for quickening the assessment of a curve, since each time you only have to select the end of an assessment section.

A checkmark beside an entry in the context menu shows that this assessment has already been carried out.



### 2.3.3.3 *Comment...*

Select this menu item to provide the measurement with a comment. Upon selection of this menu item, the following dialog box will appear:

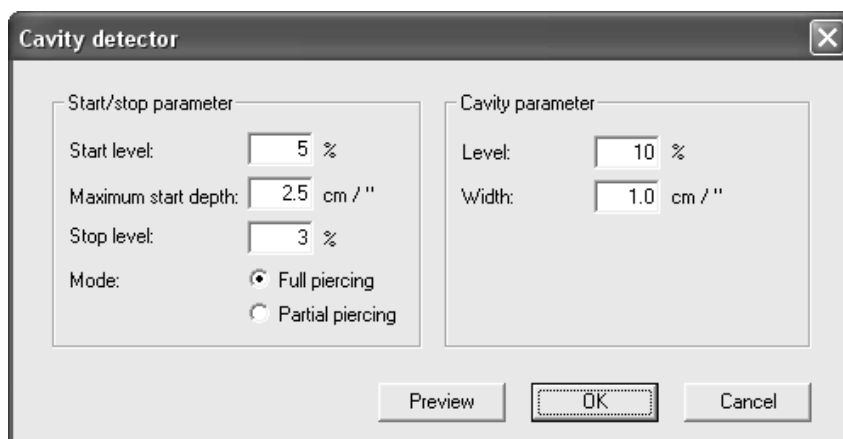


You may enter 6 lines with 70 characters each.

**Hint:** You may invoke the dialog box as well by double-clicking with the left mouse button the case *Comment*.

#### 2.3.3.4 Cavity detector... (Additional module)

This function serves for subsequently modifying the cavity parameters of the measurement. Upon selection of this menu item, the following dialog will appear:



After having modified the parameters, you may view the result without having to close the window by clicking the *Preview* button.

**Hint:** You may invoke the dialog box as well by double-clicking with the left mouse button the case *Cavity detector*.

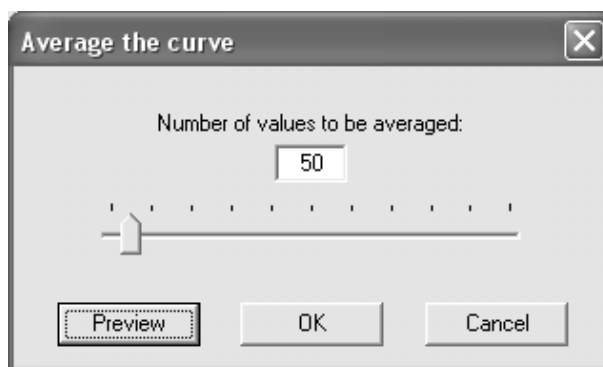
### 2.3.3.5 Transfer measuring / object data...

This function serves for transferring different measuring / object data of the active measurement to all other open measurements. This is very helpful if there are a large number of measurements, since many data will have to be entered just once.

Select this function after you have edited the measuring / object data of a measurement. A dialog box will appear where you may select the data to be adopted. Highlight the desired fields and click the *OK* button.

### 2.3.3.6 Average the curve... (Additional module)

Please select this menu item, if you want to add an averaged curve into the diagram. Depending on the extent to which the curve has been averaged, the tendency is more clearly recognizable. You may, however, not activate this function before the averaged curve is shown on the screen (menu *View*, item *Average the curve*, submenu *Show*). Upon selection of the menu item *Average the curve*, the following dialog box will appear:



You may fix the number of values to be averaged either in the case or by means of the scroll box. The *Preview* button serves for showing the curve without closing the dialog box. If the averaged curve meets your requirements, press the *OK* button to confirm the modifications and to close the dialog box.

### 2.3.3.7 Start annual ring analysis... (Additional module)

This function serves for measuring the annual rings and subsequently exporting the data. Upon selection of this menu item, the following dialog box will appear in the top left corner of the active measurement:



When the mouse cursor is moved above the curve, a marker will appear. Please position this marker on the first annual ring and press the left mouse button to fix the start position. The dialog box will show the start value. Now you may highlight all annual rings (left mouse button). The dialog box will show the annual ring number, the start and end positions, and the width of the annual ring. If you want to delete the last marking, press the *Delete* button in the dialog box. If you want to quit the annual ring analysis, press the *Quit* button.

Before you quit the annual ring analysis, you should, however, save your data by pressing the *Save...* button. Upon pressing this button, the same dialog box as described in section 2.3.1.6 *Export...* will appear. The selection box *Type of file* serves for selecting either 'ASCII file' or 'measuring table file'.

The ASCII format serves for saving the data of the annual ring analysis in the text format so that you may import them into another application (e.g. Excel<sup>®</sup>). The data of the individual annual rings start in line 37.

The export filter *Measuring table file (\*.MST)* serves for saving the annual ring analysis in the MST format. This file may be opened and processed by means of the software T-Tools or T-Tools Pro.

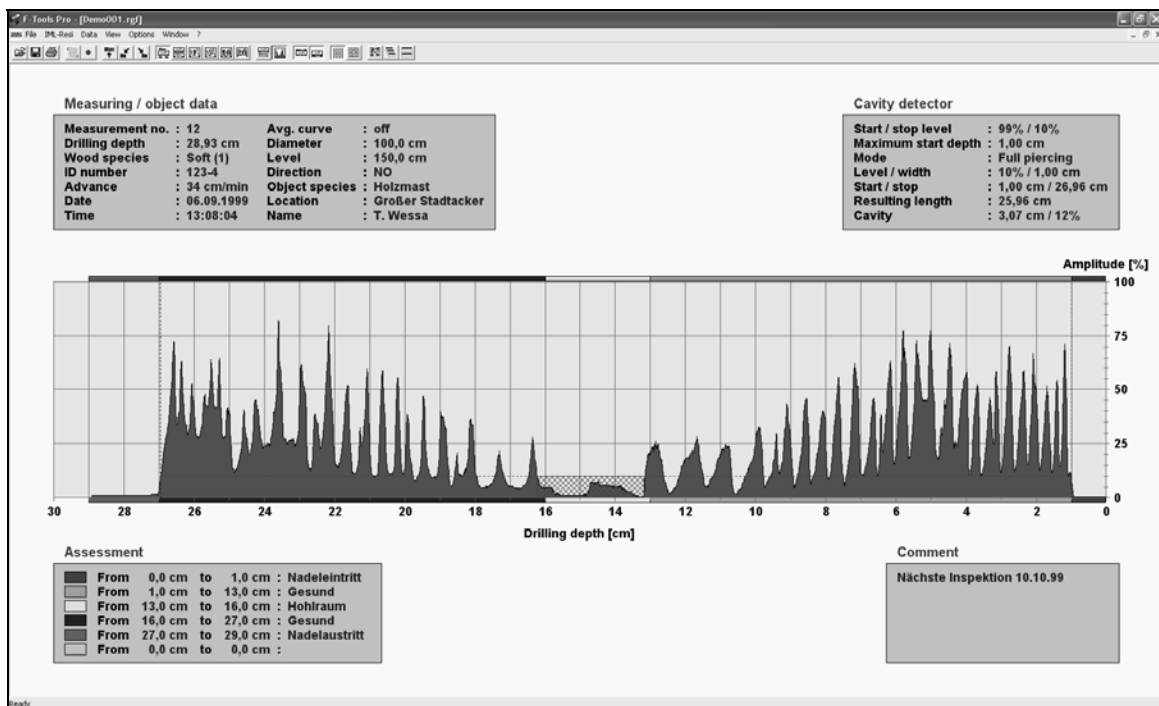
***To ensure accuracy, the annual ring analysis should be carried out in enlarged view (factor 20, cf. section 2.3.4.3)!***

## 2.3.4 Menu Item View



### 2.3.4.1 Normal

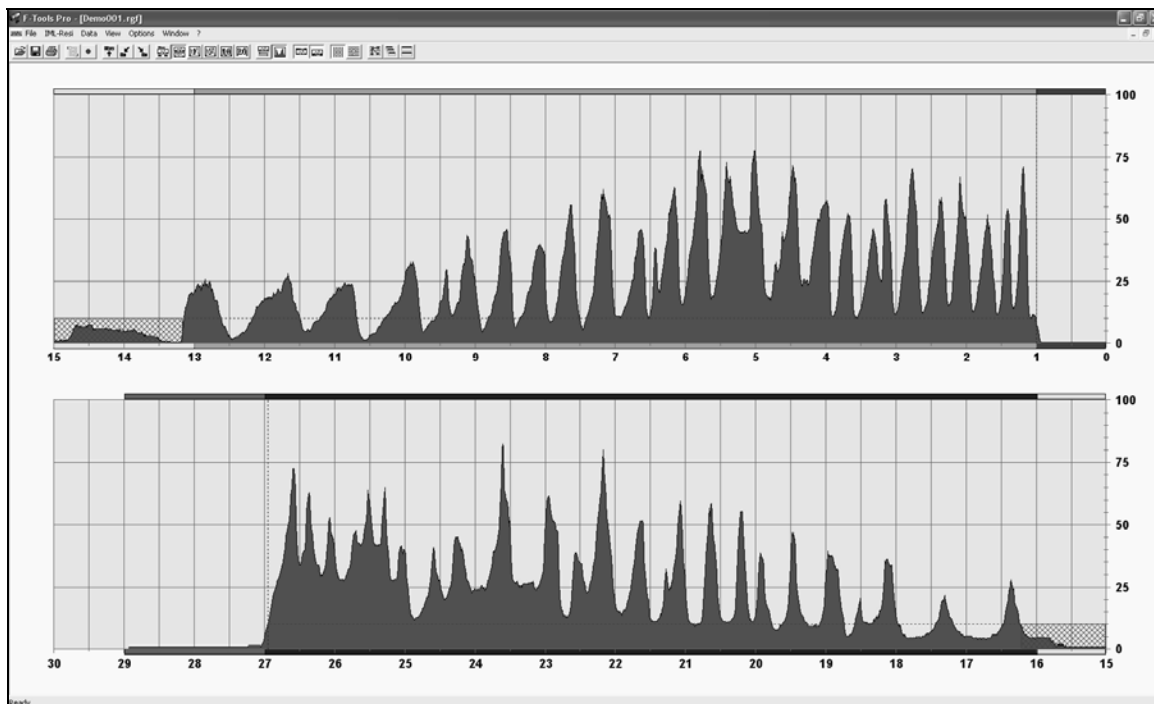
Select this view to get an overall view of the measurement. The curve and all relevant data will be displayed.





### 2.3.4.2 Divided

This view serves for dividing the curve into two parts. The upper part shows the drilling curve up to half of the overall drilling length of the instrument and the lower part shows the other half of the curve. This stretching of the curve results in a higher resolution in x direction.





### 2.3.4.3 Zoom



This menu item contains a submenu with various factors of enlargement. Depending on the factor, the width of the curve will be more or less enlarged.



You may scroll through the curve by means of the scroll bar at the bottom of the window (except in case of factor 1). Instead of the scroll bar, you may



use the arrow keys to shift the curve to the right and to the left:

- ⇒ = Shift curve to the left by 1 mm
- ⇐ = Shift curve to the right by 1 mm
- ↑ = Shift curve forward by 1 cm
- ↓ = Shift curve backward by 1 cm
- Pos1 = Start of the curve
- End = End of the curve

Shifting of the curve by means of the keys is only possible if no marker is displayed.



### 2.3.4.4 Mirror curve

This menu item serves for mirrored representation of the curve. The curve will be represented from the left to the right instead of from the right to the left.



### 2.3.4.5 Fill curve

With this menu item it is possible to fill up the area below the graph with colours.



### 2.3.4.6 Subsidiary lines



This menu item contains the submenus *x axis* and *y axis*. These functions allow activating and deactivating the subsidiary lines of the x axis and the y axis. You may use the subsidiary lines to adapt the sectioning of the different views to your personal requirements.



#### 2.3.4.7 *Assessment*



This menu item contains the submenus *Top* and *Bottom*. They serve for activating and deactivating the coloured markings of the assessment.

#### 2.3.4.8 *Averaged curve (Additional module)*

This menu item contains the submenus *Show* and *Show only*. The submenu *Show* serves for showing and hiding the averaged curve. If this menu item is activated, the averaged curve may be shown exclusively in the diagram by selecting the menu item *Show only*.

#### 2.3.4.9 *Cavity detector (Additional module)*

This menu item contains a sub-menu with the items *Show parameters* and *Show cavities*.

The function *Show parameters* serves for showing and hiding the cavity parameters. They will appear above the curve in the case *Measuring / object data*.

The function *Show cavities* serves for showing and hiding the cavities in the curve.



#### 2.3.4.10 *All windows*

This menu item serves for transferring the view of the active window to all other opened measurements. This is helpful in case several measurements are represented side by side or one above the other and you want to adapt the views of all measurements to the active measurement.

#### 2.3.4.11 *Toolbar*

This menu item serves for showing and hiding the toolbar on top of the window. If you do not want to use the toolbar, you may hide it from the screen to obtain a larger space for the presentation of the curve.

#### 2.3.4.12 Status bar

This menu item serves for showing and hiding the status bar at the bottom of the window. If you do not want to use the status bar, you may hide it from the screen to obtain a larger space for the presentation of the curve.

## 2.3.5 Menu Item *Options*

### 2.3.5.1 *Drilling machine*

Upon selecting this menu item, a list of the different types of IML-Resi will appear. Choose from this list the type of drilling instrument you employ, to ensure that the calibration of the drilling curve is adjusted to the drilling length of your instrument.

### 2.3.5.2 *Electronic unit*

Please choose from this list the menu item *With USB/Bluetooth*.

### 2.3.5.3 *Unit*

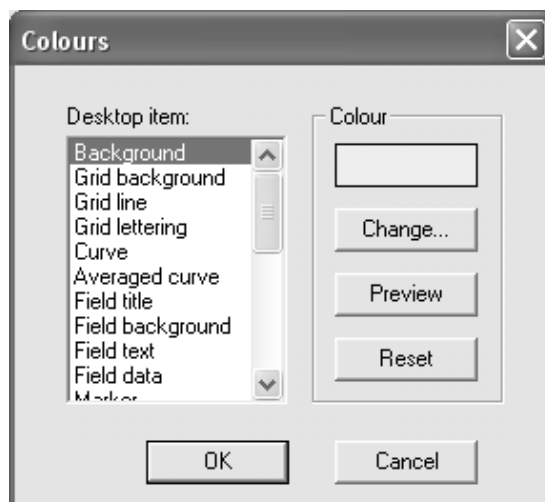
This menu item allows switching over between the units 'centimeter' and 'inch'. Calibration of the drilling curve and all numeric values are indicated in the unit selected.

### 2.3.5.4 *Number format...*

After clicking this menu item, a dialog box will appear, where you may select the number format you want the application to use. Upon clicking the *OK* button, all numbers will be displayed or exported in the format selected.

### 2.3.5.5 Colours...

Upon selection of this menu item, a dialog box will appear, by means of which you may change the desktop colours:



Choose an item in the list field *desktop items*. The current colour of the respective item is shown in the box on top on the right side. To change the colour, press the *Change* button. A dialog box will appear, by means of which you may choose a colour. Upon closing of the dialog box, the colour selected will be shown in the above box. If you want to be shown the modification in advance, press the *Preview* button. The main window will now be displayed in the current colours. To reset all colours to default, press the *Reset* button.

### 2.3.5.6 Assessment...

This menu item serves for modifying the assessment list (cf. section 2.3.3.2 *Assessment*).

### 2.3.5.7 *Print-out*

This menu item serves for managing the printing options. The following is a description of the sub-menu items.

#### 2.3.5.7.1 Change footer...

Select this menu item to enter a text which will appear in the footer of the print-out. Here, you may enter for instance the name of your company.

#### 2.3.5.7.2 Colour print-out

If you have connected a colour printer to your PC, you may activate this menu item to have the drilling curve and the data printed out in the desktop colours selected.

#### 2.3.5.7.3 No print-out of file name

If this menu item is activated, the file name will not appear on the print-out.

#### 2.3.5.7.4 Print file name

If this menu item is activated, the name of the measurement (file name) will appear on the print-out.

#### 2.3.5.7.5 Print file name including path

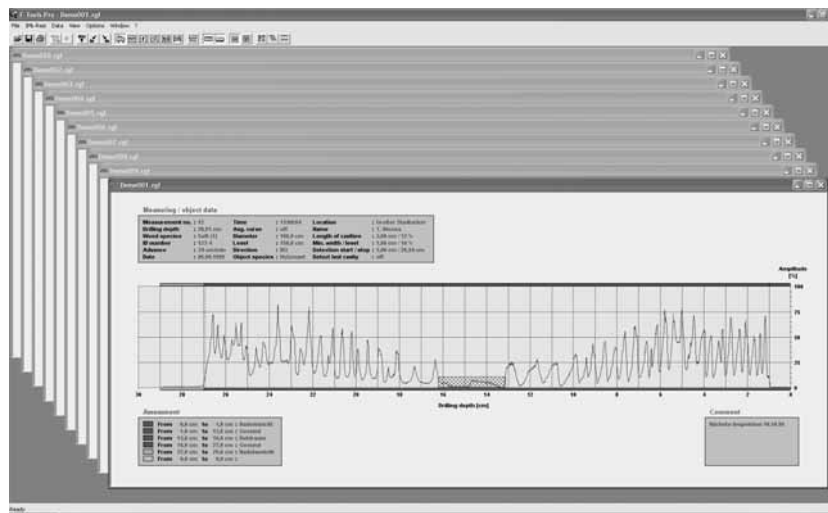
If this menu item is activated, the file name of the measurement, incl. the directory containing the file, will appear on the print-out.

## 2.3.6 Menu Item *Window*



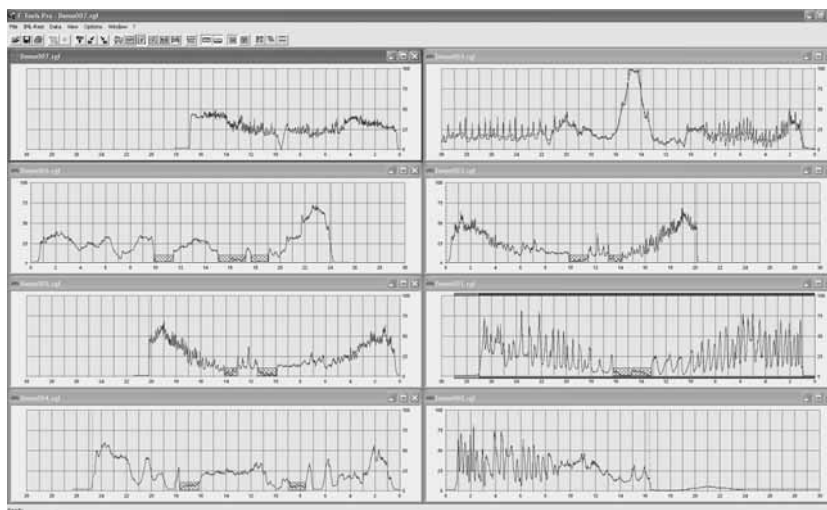
### 2.3.6.1 *Cascade*

Upon selection of this menu item all opened windows are arranged cascadingly.



### 2.3.6.2 *Tile horizontal*

Upon selection of this menu item all opened windows are arranged one above the other:





Suggestions

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**Suggestions F Electronic:**

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**Suggestions F-Tools / F-Tools Pro:**

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**Have you found any errors in the present manual?**

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Sender:

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Send to: IML Instrumenta Mechanik Labor System GmbH  
Großer Stadtacker 2  
69168 Wiesloch • Germany

or fax to: (49) 6222-6797-10