

Rissfox Mini

Data Logger for Analysis of
Crack Displacements,
Air Temperature and Humidity

- Stores up to 64000 measuring values
- Measuring rhythm freely selectable
- Crack sensor resolution: 2,5µm
- Even short - time crack displacement fluctuations can be precisely recorded
- Sensors replaceable (°C / %rH / µm)
- Start / Stop operation programmable
- Activation via magnetic switch
- Alarm output with various functions
- Shock - resistant / watertight housing
- Operation with standard batteries (AA)



Operating Instructions

Introduction to the Rissfox Mini

Dear customer,

Thank you for purchasing a *Rissfox Mini* data logger by Scantronik Mugrauer GmbH. This measuring system has been specifically developed for the recording of long-term crack displacements but also for the detection of short-time crack vibrations. The provided high-resolution sensor (2,5µm) monitors the crack and potential changes can be detected immediately.

For the registration of air temperature and humidity the data logger can optionally be equipped with a revolutionary digital *CMOSens®* climate sensor. The fully calibrated intelligent sensor is characterised in particular by its optimised long-term stability (<0,5%rH / year), its high degree of precision (optional: <1,8%rH and <0,3°C), reliability and extremely fast reaction time of less than 3 seconds. Laborious re-calibration is not necessary, because the sensor can simply be replaced directly on site if need be.

In addition, it is also possible to speedily replace the two standard mignon batteries (AA) that are integrated in the data logger so that any pending measuring task can commence without delay.

Within the scope of these operating instructions, we would like to convey to you a basic understanding of how to use the Rissfox Mini.

The core components for the use of the measuring system are the data logger hardware, the crack analysis sensor and the PC software.

In addition to these, there are further components that can be used in conjunction with the data logger. These are amongst others an alarm system for SMS notification, an acoustic alarm, etc. However, these components will not be dealt with in detail in the context of these instructions.

To be able to set up the data logger for the next measuring task as required, it is necessary to install the PC software on your computer. Among other things, this software grants you access to all the collected measuring data in the data logger's memory.

For this reason, one of the chapters below will deal with how to install the PC software.

Scope of Supply of the Rissfox Mini

The package of the Rissfox Mini will contain the following components:

1. *Rissfox Mini* - data logger hardware
2. Crack analysis sensor
incl. sensor holder and sensor stopper
3. Magnet for the activation of the system
4. AA-Mignon batteries (2 cells)
5. Special two-component wall glue
6. Operating instructions for the *Rissfox Mini*

If you have purchased the PC software together with the Rissfox Mini the package also contains the following components:

7. Data carrier (CD ROM) with PC software
8. PC interface cable

Installing the PC Software

Start your computer and wait until the operating system has been completely loaded. This may take a couple of minutes. If your computer is already switched on, please close all other applications to avoid possible conflicts during installation.

You now see your operating system's desktop in front of you.



Figure 1: Desktop

This may be one of the following operating systems: Microsoft Windows® 98, NT, Me, 2000 or XP. More recent systems are also supported. Now insert the CD with the data logger software in your CD drive. Normally, the installation assistant that will accompany you through the following installation will start automatically. If it does not, your CD drive's automatic start function has probably been disabled. If that is the case, double-click on the "My Computer" symbol to open the desktop. Now double-click the symbol of the CD drive that holds the data logger software. The installation assistant is started.

Follow the instructions on the screen. You first have to specify a directory into which the software is to be installed. After that, you can specify the name of the file that is to be created in your start menu during the installation process. During the last installation step you are given the opportunity to have a direct link created on the desktop and in the start bar.

Before installation starts, you are provided with an overview of the installation options you have selected.



Figure 2: Installation assistant for the PC software

Once installation has been completed, you can access the software via the new entry in the start menu (program “SoftFOX”). After that, the program’s welcome screen opens. Press the “O.K.” button to start working with the software.

These operating instructions are to explain the exact procedure when working with the Rissfox Mini. Furthermore you will get a good overview of the most important software functions.

To obtain more detailed information about all of the software’s properties and features, open the program’s online help either by means of the “F1” button on your keyboard or by means of the menu item “Software - Help” under the “Help” menu.

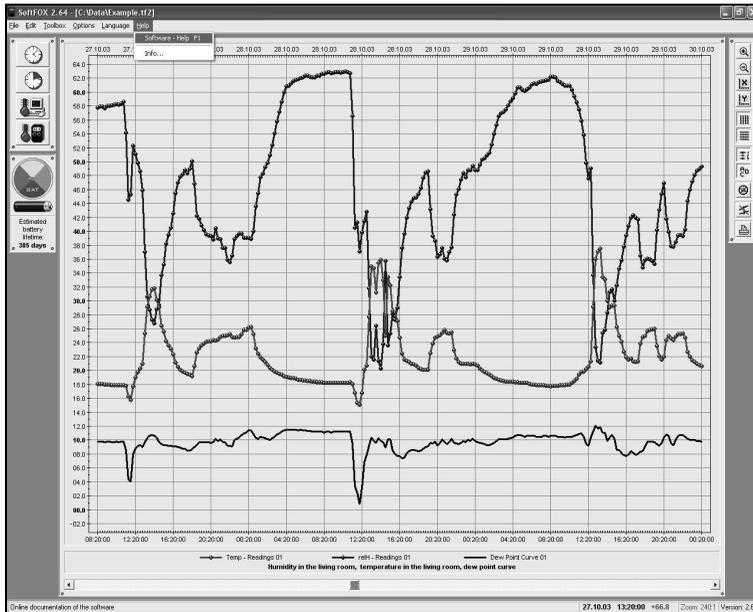


Figure 3: Accessing the online help function

To be able to use all the functions offered by software and data logger, it makes sense to briefly deal with the online help. In this manner, you will learn how to purposefully use the software's and data logger's features.

PC Software Configuration

Before the PC software can work in conjunction with the data logger, you need to connect the latter to your computer. This is done by means of the PC interface cable that is included in the software's scope of supply. Plug the interface cable into one of your PC's free COM ports (serial interface or RS-232 port) and connect the other side of the cable with your data logger. Optionally you can purchase a USB adapter to connect the interface cable to a USB communication port.

Now you need to tell the PC software at which connection the data logger is linked with the PC. This is done via the menu item "Program

Settings...” under the “Options” menu. Enter the relevant port in the field “Communication Port”.

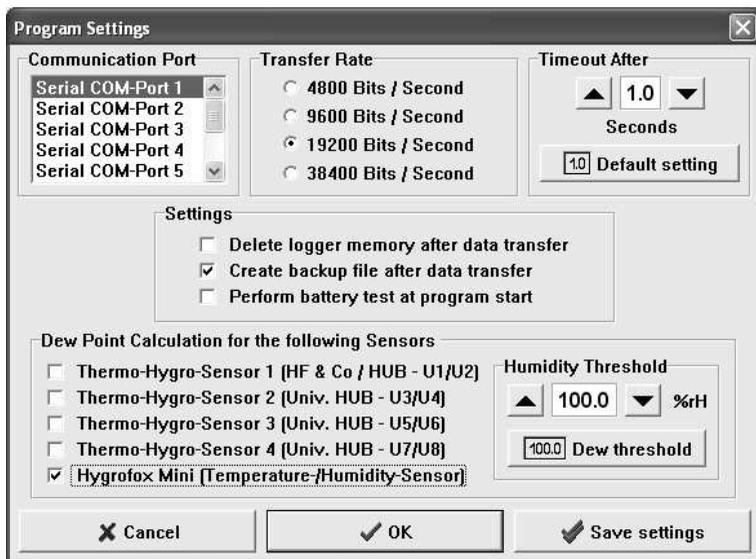


Figure 4: Configuring the interface

Once this is done, save the setting with the “Save settings” button. That way you only need to specify the communication port once. The PC software is now ready to configure and/or read out the data logger.

Initial Operation and Replacing the Batteries of the Rissfox Mini

If you would like to put the data logger into operation for the first time or if the data logger’s batteries are empty, it is very easy to insert and/or replace the batteries yourself. To do so, you only need two standard 1,5V AA-Mignon batteries and a crosstip screwdriver.

Open the two screw-covers at the left and right side of the data logger housing. Remove the four screws and open the data logger by lifting the top. The bottom of the housing is connected to the top via two flexible links so that the top can't get lost. Remove the old batteries and insert two new batteries in the corresponding holders.

Pay attention to the correct polarity, when inserting the batteries!

If the data logger is put into operation for the first time, the Rissfox Mini does of course not yet contain any batteries. Close the data logger housing, tighten the four screws and protect them with the screw-covers.

Do not use force to open the housing. After replacing the batteries you can subsequently carry out a battery test (see below) to query the state of charge.

Tutorial for the Rissfox Mini

Now that you have successfully installed the PC software and inserted batteries into the data logger, the typical procedure to be followed when using the Rissfox Mini will be explained below.

Every measuring task starts with configuring and testing the measuring system, i.e. the data logger. The state of charge of the data logger batteries should be checked first in this connection. This is of particular importance if the data logger is to record measuring data over a longer period of time.

There are two possibilities to check the state of charge of the batteries. Either select the menu item "Battery Test" under the "Options" menu or use the left mouse key to click on the battery symbol to the left of the diagram window. This updates the battery indicator and provides you with a guide value for the state of charge of the batteries.



Figure 5: The Rissfox Mini's battery indicator

The lifetime of the batteries directly depends on the measurement rhythm, the number of active sensors and the running measurement program. We recommend replacing the batteries anyway approximately every one to one and a half years.

During the next step, you set up the data logger's internal clock and internal calendar.

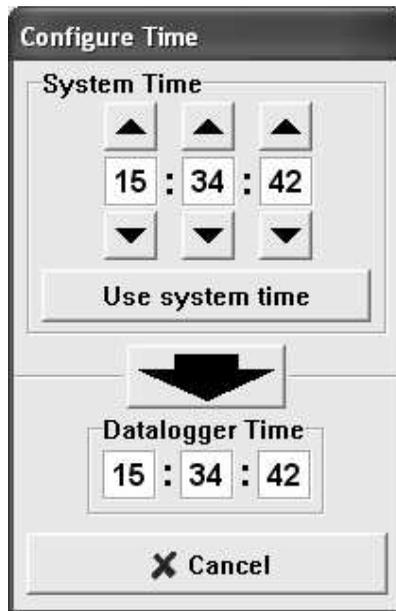


Figure 6: Setting the data logger's internal clock

These two components provide the data logger with the sense of time that enables it to record measuring data at regular intervals and to store these in the memory with a time stamp. The data logger's clock is set via the menu item "Configure Time..." under the "Toolbox" menu or via the clock symbol in the toolbox to the left of the diagram window (1. symbol).

To transfer the current time to the data logger it is sufficient to click on the large black arrow in the centre of the screen. This causes the computer's current system time to be transferred to the data logger. Please ensure that your computer's system time is correct.

Next, the data logger's calendar is set. This is done via the menu item "Configure Date" under the "Options" menu.

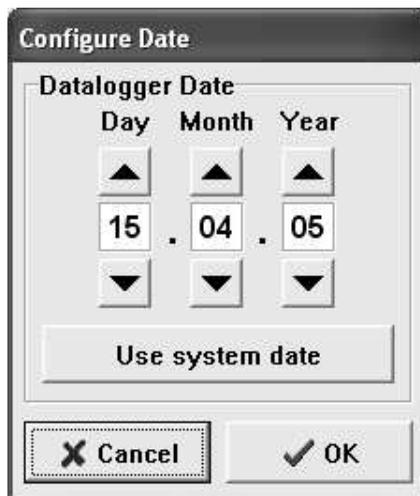


Figure 7: Setting the data logger's internal calendar

The button "Use system date" provides you with the opportunity to directly transfer the current system date into the three date fields. The new date is only transferred to the Rissfox Mini once you press the "OK" button.

After you have configured the data logger's two time-defining components, you must now select the sensors that are of interest during the following measuring task. The sensors are selected via the menu item "Configure Sensors" under the "Options" menu.

The configuration window is subdivided into two sectors. In the left sector you select those sensors that are to be recorded during the following measuring task while the right sector defines for which sensors the min/max detection is to be active.

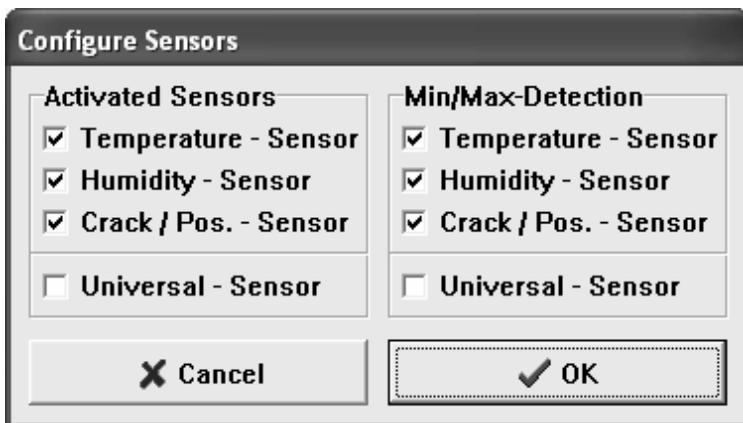


Figure 8: Selecting the active sensors

Without min/max detection, only one measurement is recorded per sensor for every measuring time. If a slow measuring rhythm (e.g. every hour) is used, this may lead to very brief extremums being overlooked.

If the min/max detection is active for the air temperature and/or the humidity sensor, the Rissfox Mini data logger will analyse the corresponding sensors every 5 seconds. If the Rissfox Mini identifies an extremum, it will additionally store this value for later analysis.

Cracks often react to short-time vibrations (like passing trucks, jackhammers on building sites, slammed doors, ...), so it is also possible to activate the min/max detection for the crack sensor. In this case the crack will be analysed with a much higher frequency compared to the climate sensors. When using the min/max detection for the crack sensor the crack will be analysed approximately 100 times a second.

Please note that the min/max detection for the crack sensor is only running when the computer is not connected to the data logger.

Last but not least it is possible to activate the universal sensor to connect many further external sensors to the data logger via the input "PC/Alarm/Switch".

As a last step, the rhythm (logging interval / measuring interval) at which the data logger is to record measurements has to be specified. This is either done via the menu item "Configure Logging Interval" under the "Toolbox" menu or via the second clock symbol (the one with the green section) in the toolbox to the left of the diagram window.

In the "Logging Interval" sector you can specify at which intervals the Rissfox Mini is to regularly store measurements of the selected sensors in the memory.

In the sector "Restart of the Datalogger" you can choose between two modes. Either the data logger starts immediately or the data logger starts at a pre-defined date/time.

In the "Recording Time of the Datalogger" sector you can define if the data logger should perpetually register measurement data and overwrite the oldest values when the memory is full or if the logging should stop at a pre-defined date/time.

Once you have made all the required settings, start the measuring operation by pressing the “Start Logger” button. You will be warned that all values that are currently in the data logger’s memory will be deleted. Confirm this message.

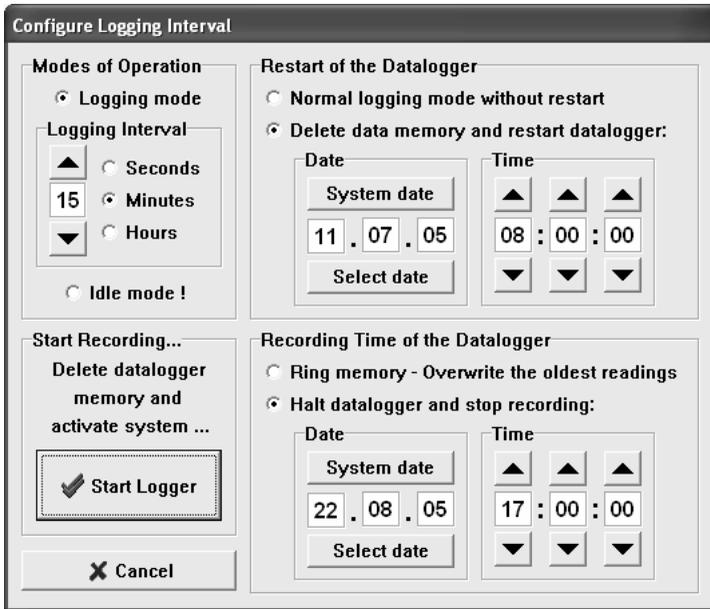


Figure 9: Setting the Rissfox Mini’s measuring interval

The data logger hardware is now ready for operation. The next step is to mount the crack analysis sensor over the crack. The sensor equipment consists of the following three components:



Figure 10: Crack sensor and mounting screws

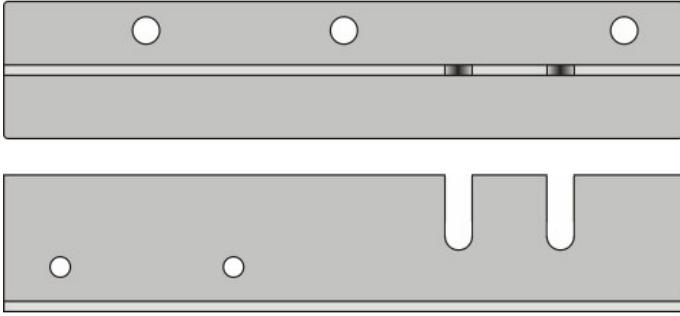


Figure 11: Sensor holder (top view and side view)

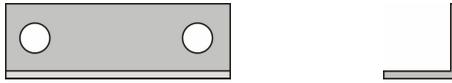


Figure 12: Sensor stopper (top view and side view)

The figure below shows the ready-to-use crack analysis sensor mounted over the crack.

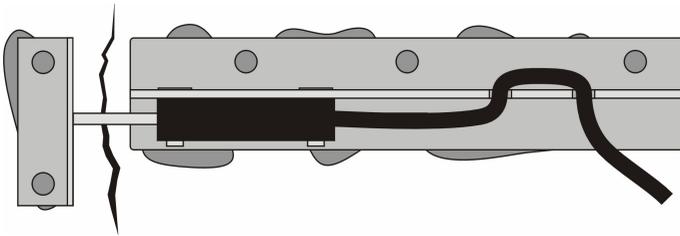


Figure 13: Ready-to-use crack analysis sensor (top view)

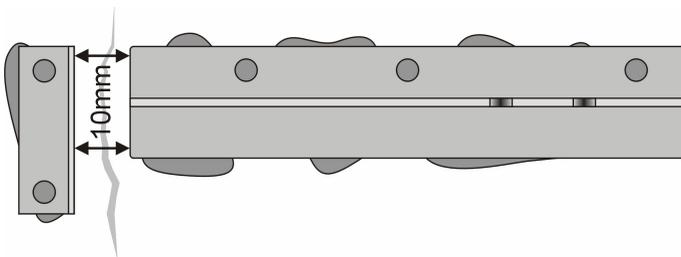
The sensor stopper is mounted on the one side of the crack (here: left), the sensor holder is mounted on the other side (here: right). Remove the sensor from the holder before you start to mount the holder on the wall. Reattach the sensor before you start the measurement task.

To mount the sensor holder as well as the sensor stopper on the wall, we recommend the use of the provided two-component wall glue.

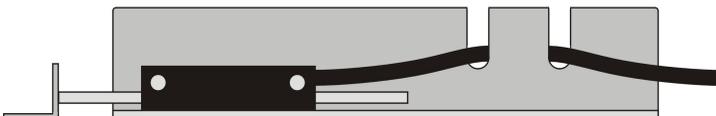
Using glue is uncomplicated and flexible. It is also possible to use screws or nails to mount the sensor holder and stopper on the wall. Please note that using screws or nails is much more laborious and you must assure that all components are solidly attached to the wall.

Mounting the crack analysis sensor on the wall:

1. Remove the sensor from the sensor holder
2. Clean the bottom side of the sensor holder, the sensor stopper as well as the wall surface. All elements have to be dry!
3. Mix the wall glue thoroughly for about 2-3 minutes. Also see glue instructions.
4. Apply enough glue onto the bottom side of the sensor holder and sensor stopper.
5. Fix the two components on the left and right side of the crack. The front side of the sensor stopper has to be clean. Pay attention to the distance between the sensor holder and the sensor stopper. The optimal distance is 10mm. The front side of both components should be parallel as shown below:



6. Wait until the glue fixes the components solidly to the wall. Mount the crack sensor on the sensor holder using the two provided screws. Tighten the screws. The spring born sensor nail touches the sensor stopper. Last but not least hook the sensor cord into the cord grip.



After the crack analysis sensor has been mounted over the crack, the sensor has to be connected to the data logger input “Crack Analysis Sensor”.

The system provides a so called “zeroing” function. By this means the data logger starts the recording of the measurement data with exactly 0,000mm.

The provided activation magnet is used to initiate the zeroing function. When holding the magnet lengthwise to the left side of the data logger housing for about 3 seconds, the zeroing function is executed. This is acknowledged by flashing the “System Status LED” once. When holding the magnet to the left side of the housing for about 6 seconds, the system will additionally erase the complete data logger memory. This is acknowledge be flashing the “System Status LED” twice.

The data logger is now measuring continuously and stores the measurements in its internal memory. You may place the data logger in an arbitrary position to use it for your measuring task.

At the end of the measuring task, reconnect the data logger to the computer and read out the collected measurements. Data may be read out either via the menu item “Transfer Data...” under the “Toolbox” menu or by clicking on the fourth button of the toolbar to the left of the diagram window.

Once the measurements have been transferred to the computer, they are directly depicted in the form of a clearly laid out diagram. You can zoom-in the diagram by using the left mouse button. This is interesting and important for the crack curve in particular because crack displacements are often very small. By this means you can magnify the crack curve.

The measuring unit of the crack curve is millimeter [mm], the unit of the air humidity curve is percent [%rH] and the unit of the air temperature curve is degree Celsius [°C].

If the measured value of the crack sensor is positive, the crack has closed. If the measured value is negative, the crack has opened.

With the aid of the diagram tools to the right of the diagram window, you can change the diagram's appearance.

To save the data, use the menu item "Save Project As..." under the "File" menu.

More detailed information on how to operate the software and configure your data logger may be found under the online help function.

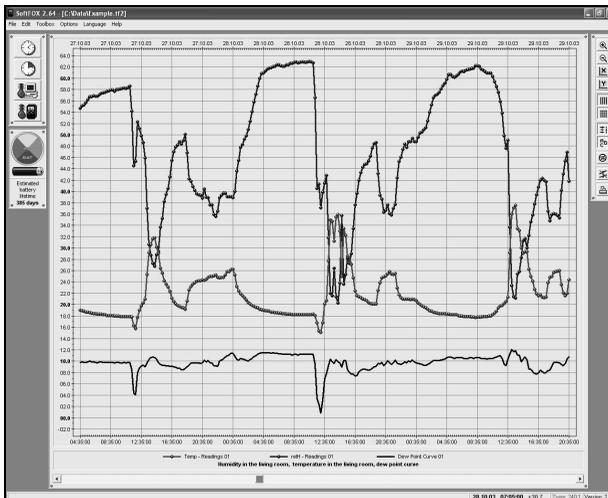


Figure 14: Read out measuring data

Guarantee Information and Liability

Scantronik Mugrauer GmbH grants a 24 months guarantee on all its data loggers. Recalibration and battery replacement do not form part of the scope of guarantee. We will not assume liability for damages caused by the improper use or application of our devices.