SePem® O2

Operating Instructions

SEWERIN

GB

103971

Measurable success by Sewerin equipment

You settled on a precision instrument.
A good choice!

Our equipment stands out for guaranteed safety, optimal output and efficiency.

They correspond with the national and international guidelines.

These operating instructions will help you to handle the instrument quickly and competently.

Please pay close attention to our operating instructions before usage.

In case of further queries our staff is at your disposal at any time.

Yours

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Fig. 1: Components of the **SePem 02** system (carrying box variant)

1 **SePem** devices (data loggers)

2 Charging adapter for up to six **SePem** devices; optionally available as carrying case or box

3 Power supply unit for charging the devices

4 Connection cable for the data exchange between **SePem** software and devices

SePem software for evaluating data on the PC (not shown in fig.)

Before the system is used for the first time ...

- Put stickers with device numbers on the **SePem** devices
- Place **SePem** devices in the charging adapter
- Connect the required cables
- Boot the computer and start the program
- Save device numbers on the PC with the help of the **SePem** software
- Define a measurement time scheme

Preparing the measurement

- Place **SePem** devices in the charging adapter
- Connect the required cables
- Boot the computer and start the program
- Click on the Assistant button and select item **Preparing devices for measuring**
- Enter the measurement place
- Print out a distribution list

Measuring

- Install the **SePem** devices on the pipes or hydrants as specified on the list
- Collect the **SePem** devices after the measurements

Evaluating the measurements

- Place **SePem** devices in the charging adapter
- Connect the required cables
- Boot the computer and start the program
- Read out the devices
- Click on the Assistant button and select item **Reading measurements from devices**
- Print out the measurement data
- Call up the history of the measurement place

Note:
This overview can be used for the first orientation. All actions are described in detail in the operating instructions.

Operating Instructions

SePem® 02

Electronic Measuring and Data Logging System

GB

103971 - 05.12.2003 - V 1.X

This product may only be used after the operating instructions have been read and understood and only by appropriately trained operators.

This product may only be used for its designated purpose, and only in industry and trade.

Repair work may only be carried out by appropriately trained persons.

Changes and modifications to the product may only be carried out with the consent of Hermann Sewerin GmbH. Unauthorised modifications to the product render the warranty null and void.

Only accessories from Hermann Sewerin GmbH may be used with this product.

Only spare parts approved by us may be used for repairs.

Hermann Sewerin GmbH bears no liability for damage attributable to non-compliance with these instructions. The terms of warranty and liability of the conditions of sale and delivery of Hermann Sewerin GmbH are not extended by the above.

We reserve the right to make technical modifications in the interests of further development.

Please comply with general safety rules in addition to these instructions!

Used Symbols

CAUTION!
This symbol is used to indicate dangers which may either result in hazards for the operators or in severe damage - or even destruction - of the product.
If you do not pay attention to these warnings serious injuries or accidents may occur and the component, system and/or the processed product may be damaged or destroyed.

Note:
This symbol is used to call attention to information and tips which may be helpful and which are exceeding the basic operating procedures.
This refers to specific procedures, functions, actions etc., which - if neglected - may lead to errors, troubles or damages as well as to useful advice which may help to optimise working with the **SePem 02** system.

Notes on the copyright

These operating instructions are prepared and worked out with utmost care. However, errors cannot be completely ruled out. Hermann Sewerin GmbH cannot be held responsible or made liable in any way for possible errors and their consequences.

These operating instructions include references to products of other manufacturers.

1 Introduction

The **SePem 02** system is designed for detecting leaks and analyzing water piping networks. The system excels in safety, optimum performance and efficiency. Beyond that, it complies with all valid national and international directives.

This manual will help you to work with the **SePem 02** system in no time.

Note:
Adhere strictly to all operating and safety instructions!

2 Safety Instructions

2.1 Intended Usage

SePem 02 is a modular system for acquiring and evaluating measured values. Depending on the installed sensor type, it can be used for a large variety of applications (see chapter 7).

> ☞ **Note:**
> The **SePem 02** system may only be used by qualified staff of water supply companies, skilled workers, master mechanics/electricians and technicians.

The components of the **SePem 02** system are constructed in compliance with all obligatory legal regulations and established safety rules. They correspond to the current state of technology and to the requirements of EU conformity.

Nevertheless, it cannot be completely ruled out that the system components may cause injuries or damage to goods when handled improperly or incorrectly (see chapter 2.2).

> ☞ **Note:**
> The appropriate usage depends on the installed type of sensor. Refer to chapter 7 for more information.

Adhere exactly to all safety instructions to avoid injuries or damage to goods.

The local safety and accident prevention specifications, such as VBG 4 and DIN VDE 015, apply to the operation of the system and/or its components.

All functional groups, including the software, correspond to the current state of technology. They can be reliably operated when the system and/or its components are appropriately used.

2.2 Inappropriate Usage

Every type of usage exceeding or deviating from the usage specified in chapter 2.1 is considered as inappropriate.

The manufacturer cannot be made liable for any injuries or damages resulting from inappropriate usage.

2.3 Directives and Requirements

2.3.1 EMC Directive

This product meets the requirements of EU directive 89/336/EEC, “Electromagnetic Compatibility”. According to the CE mark it is rated for the following field of application:

Fields of application:	**Tested:**	
	Noise immunity	Radiated interference:
Residential, commercial and industrial areas	EN 61000-6 Parts 1 and 2	EN 61000-6 Parts 3 and 4

Note:
The electromagnetic behaviour of the **entire system** can be influenced by the characteristics of the used computer system.
The certificate of conformity can be found in the appendix of this manual.

2.3.2 Low Voltage Directive / Electrical Safety

This product meets the requirements of EU directive 73/23/EEC, ”Low Voltage Directive”. The delivered power supply units meets the requirements for separating and safety current transformers according to standard EN 60 742 (1995).

2.4 Application Fields and Requirements for the Site of Operation

The following tables contain information on the requirements which must be fulfilled to permit the operation of

- the **SePem** devices and/or
- power supply unit and adapter for recharging the batteries.

SePem devices

Ingress protection of the housing:	IP 68
Splash-proof:	YES
Outdoor operation:	YES
Underwater operation:	up to a water depth of 1 m
Permissible water pressure:	normal atmosphere
Permissible relative humidity:	100 %
Power supply:	permissible operating temperature range
Alkaline-Mangan battery:	- 20 °C ... + 50 °C
Lithium Iron Disulphide battery(Li/FeS_2):	- 30 °C ... + 60 °C
Rechargeable NiCd battery:	- 20 °C ... + 60 °C
Use in aggressive media:	NO
Other liquids except for water:	NO
Application in explosion-hazardous surroundings:	NO

Power supply unit and adapter

Ingress protection of the housing:	IP 20
Splash-proof:	NO
Permissible relative humidity:	up to 90 % (without dewing)
Permissible operating temperature range:	+ 5 °C ... + 40 °C
Application in explosion-hazardous surroundings:	NO
Power supply/mains supply:	1/N/230 V~ / 50 Hz
Protective insulation:	Class of insulation 2
Unattended charging via mains connection:	YES
Unattended charging via car battery:	YES
Power supply in vehicle:	12 V: YES, via adapter 24 V: NO

CAUTION!
Power supply unit and charging adapter may never get wet or humid. For this reason, always charge devices in dry indoor locations.
Power supply unit and charging adapter may be operated outdoors for short periods (e. g. for reading out data), provided that they are sufficiently protected against rain.

2.5 Other Safety Instructions

Read these operating instructions attentively. Pay attention to the instructions on use included this manual!

> **CAUTION!**
> Adhere strictly to all valid accident prevention regulations!

Charging Mode

Unattended charging using the mains or the car battery is only permitted with the original SEWERIN plug-in power supply and/ or car connection cable!

Opening the SePem Devices

Only persons who are sufficiently qualified or instructed by SEWERIN may perform repairs, changes and modifications on **SePem** components. Otherwise injuries or damages to the devices cannot be ruled out.

Inappropriately performed works and repairs can damage the integral safety and protection functions. In addition, the electromagnetic behaviour of the **SePem** devices may be altered so that injuries and damages to the devices may occur!

Use only original spare parts and accessories which are approved by SEWERIN!

Replacing Accumulators, Batteries and Sensors

Before replacing accumulators, batteries or sensors, it is absolutely required to read chapter 13. If the instructions listed in this chapter are ignored, injuries and damages to the **SePem** devices cannot be ruled out.

3 System Overview

You can find an comprehensive view of the individual system components on the front folding page (fig. 1).

3.1 Components of the SePem 02 System

The basic version of the **SePem** system includes the following components:

- **SePem** devices (see chapter 3.1.1)
- Carrying case or box with charging adapter for 6 devices (see chapter 3.1.2)
- Power supply unit and cable (see chapter 3.1.3)
- CD-ROM with **SePem** software (see chapters 3.1.5, 4.2, 11)

Accessories, such as:

- Voltage generator
- Car connection cable
- Various adapters for the connection to hydrants

3.1.1 SePem Device

SePem devices are data loggers. They are used to detect and store measuring data in water supply networks ”on the spot”. A **SePem** device consists of:

- Base unit with measured value memory integrated in the stainless steel housing (**SePem K**)
- an exchangeable, easily detachable sensor (e. g. noise sensor **SePem G**)

Both parts form a compact, robust and waterproof unit.
Thanks to the modular structure of the **SePem** devices, several sensor types can be combined with the same base unit (e. g. noise, pressure or temperature sensors).

Note:
Six **SePem** devices form a **device set** for which a single charging adapter is rated.

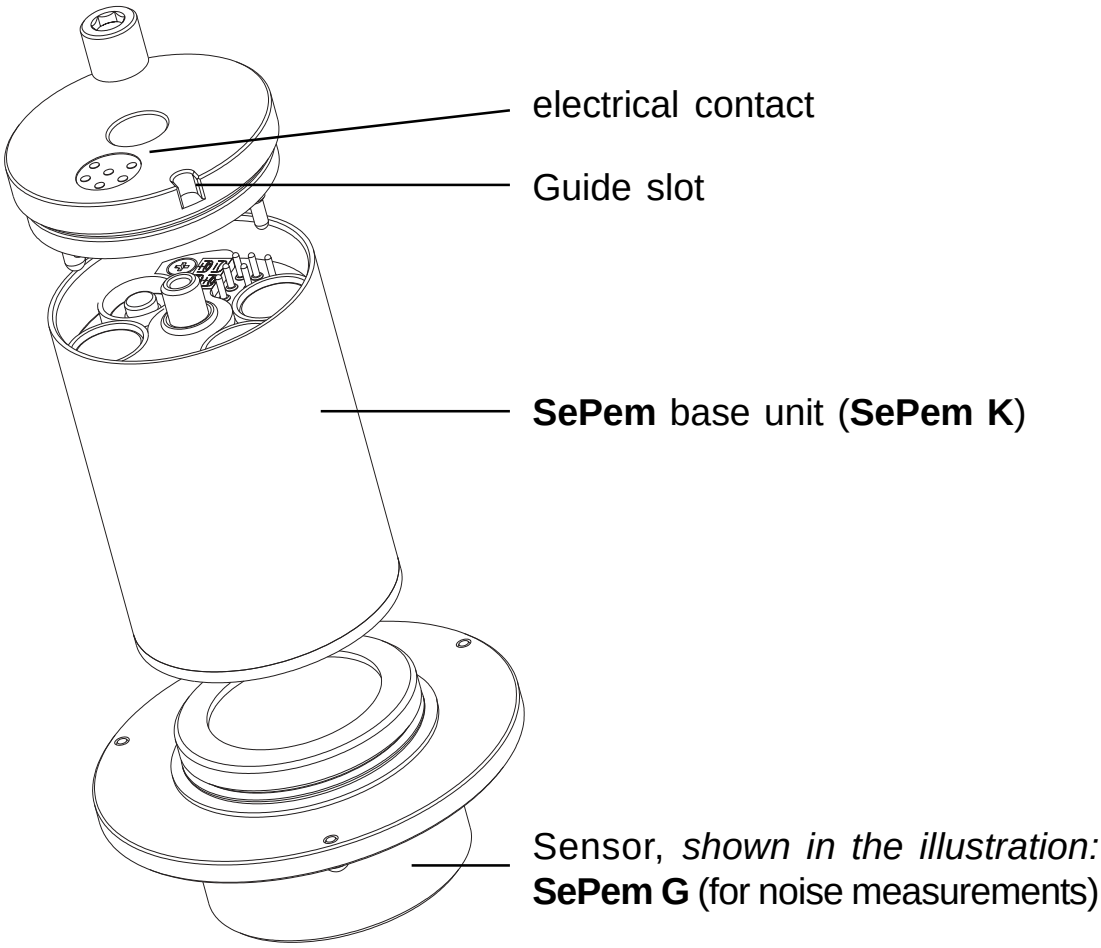


Fig. 2: Structure of a **SePem** device

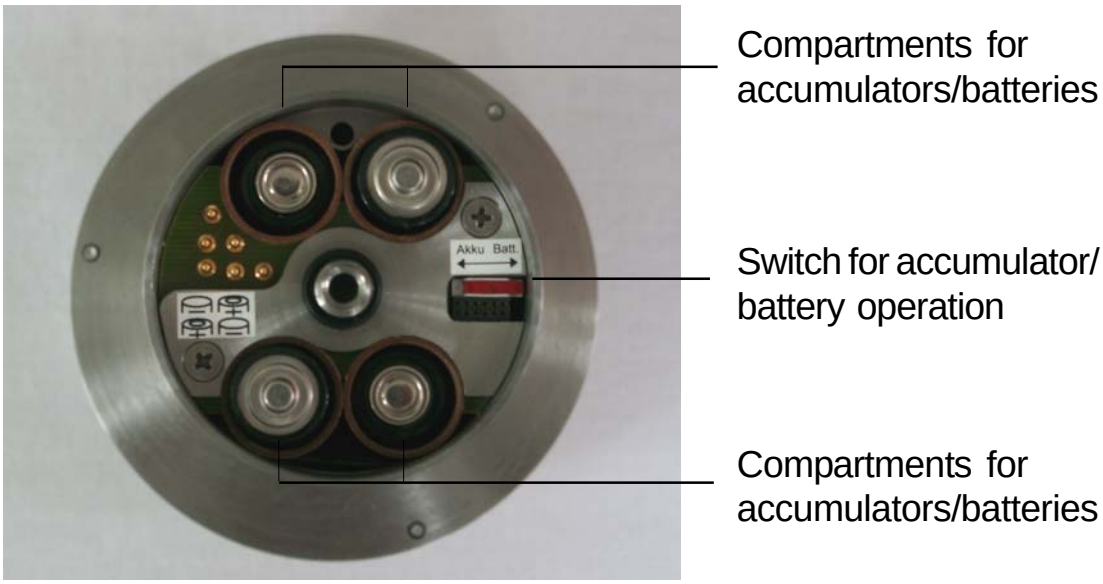


Fig. 3: Opened **SePem** device (top view)

Each **SePem** device is supplied with four accumulator cells (forming a set) and is ready to use immediately after charging. As an alternative, also commercially available, non-rechargeable batteries may be used.

SePem devices are additionally provided with a charging automatism ensuring that the **SePem** devices after automatically charged after being placed in the charging adapter (provided that the charging adapter is supplied with power).

Note:
Make sure that the **screw connection between base unit and sensor is never loosened by mistake.** Otherwise, problems during the acquisition of measurement data may occur or moisture may enter the device.

3.1.2 Charging Adapter

The charging adapter permits to recharge[1] and read out up to six **SePem** devices at the same time.

Depending on the selected equipment variant, the charging adapter is either integrated into a **carrying case** or **box** (see fig. 4 and 5).

> ☞ **Note:**
> The functionality of both equipment types is identical - in spite of the differing design.

The charging adapter is provided with:

- Six slots for holding the **SePem** devices
- Connector socket (12 V =) for the connection to a power source
- Interface for the connection of a further charging adapter (not indicated in fig. 4, due to its position on the rear of the box)
- Interface for the data exchange with a personal computer
- Signal LEDs for the indication of operating conditions

The Signal LEDs are located:

- between the slots for holding the **SePem** devices (carrying box)

OR

- on a separate indicator panel (carrying case)

[1] **SePem** devices with inserted batteries cannot be recharged.

Fig. 4: Charging adapter with six **SePem** devices in carrying box

Fig. 5: Charging adapter for six devices in carrying case

3.1.3 Power Supply Unit and Cable

The **power supply unit** is used to connect the charging adapter to the mains.

The **communication cable PC <-> charging adapter** is used to connect the charging adapter to the computer on which the **SePem** software is installed.

The **communication cable charging adapter <-> charging adapter** permits to combine several charging adapters when, for example, more than six **SePem** devices are to be used.

The **car connection cable** permits to connect the charging adapter to the cigarette lighter of a vehicle if no other source of power is available.

Fig. 6: Power supply unit with mains cable

3.1.4 Accessories

Voltage generator

The **SePem 02** voltage generator permits to read out signal LEDs at installation sites with no other available power supply.

The device generates a voltage pulse which is transmitted to the LEDs of the charging adapter. This permits to read out information on the current state of the **SePem** devices directly at the measurement place.

Fig. 7: Voltage generator

Transport case

The transport case provides space to carry up to twelve **SePem** devices. It is lined with resin foam so that the devices can always be transported with optimum protection.

Fig. 8: **SePem 02** transport case

> **Note:**
> Information on other accessories and wearing parts can be taken from the appendix.

3.1.5 SePem Software

The **SePem 02** software permits to perform the following functions:

- Programming the **SePem** devices
- Evaluating measurement data

4 Installing and Configuring the Software

4.1 Minimum Requirements

4.1.1 Minimum Requirements to the Hardware

- IBM-compatible personal computer
- at least Pentium II processor, 350 MHz
  recommended: Pentium III processor, 600 MHz
- working memory 128 MB, recommended 256 MB
- at least 80 MB free hard-disk space
- graphics card with min. resolution of 1024 x of 768 pixels, 256 colours
- serial interface at the PC for data transmission
  (at least 57.6 kBit/s)
- CD-ROM drive
- sound card (optional, for the playback of audible measurement signals)

4.1.2 System Requirements for the SePem Software

- Microsoft Windows XP, 2000, NT 4.0, ME, 98SE, 98
- Microsoft Internet Explorer 5.01 or higher

Optional:

- For calling up the assistant:
  Windows 2000/ME/XP or Office 2000/XP
- For calling up the help file:
  Acrobat-Reader, version 4.0 or higher

4.2 Notes on the CD-ROM

Apart from the **SePem** software, the supplied CD-ROM contains further software products from SEWERIN together with the corresponding manuals as PDF files.

The **SePem** software must be installed and released (see chapters 4.3 and 4.5). The serial number, which is required for this, is included in the scope of delivery.

All other software products can only be installed as demo versions with reduced functionality. If you decide to purchase one of these products, we will forward to you the serial number required for registration.

4.3 Installation from CD-ROM

The procedure for installing the **SePem** software is as follows.

- Exit all Windows programs.
- Place the SEWERIN CD in the CD-ROM drive of your computer. After a short time, the SEWERIN user dialogue comes up automatically.

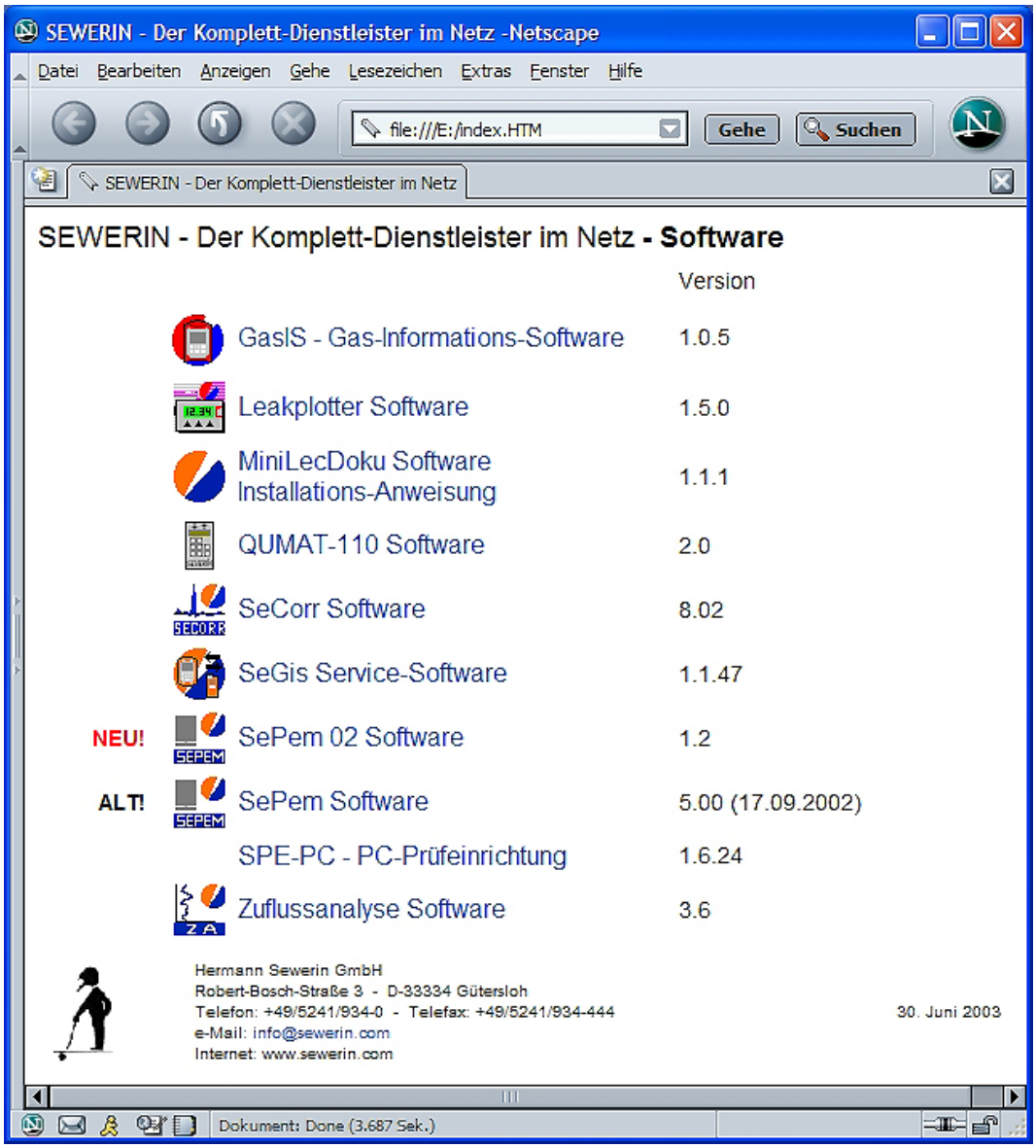


Fig. 9: SEWERIN user dialogue

> **Note:**
> If the SEWERIN user dialogue does not start up automatically on your computer, open the **start.exe** file in the Windows Explorer. You can find this file in the root directory of the SEWERIN CD ROM.
> If problems occur during installation, refer to chapter 12 for troubleshooting measures.

- Click on **SePem 02 Software** (marked with **NEU!**).
- Depending on the computer configuration, the following two windows may appear:

  Window **File Download** > Select option **Run this program from its current location**. Confirm with **OK**.

  Window **Security Warning** >Click on **Yes**.
- In the next window, select the desired language . Confirm your selection with **OK**. The window for initializing the installation appears. (This process may take some time.)
- Read the displayed instructions. Click on **Next**. The license contract appears.
- Read the license contract. Select option **I accept the license agreement**. Click on **Next**. A note on network installation appears.
- Read this note. Click on **Next**. The following window appears:

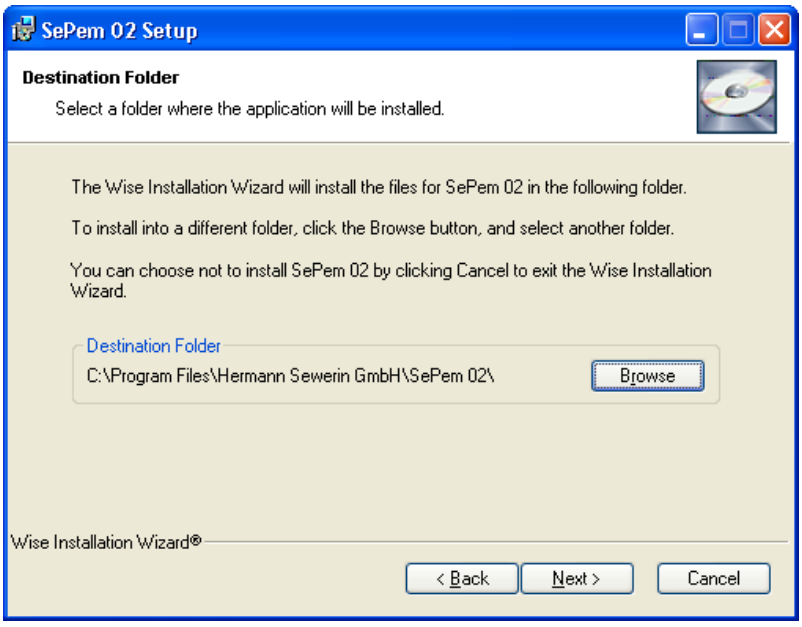


Fig. 10: Select target directory for **SePem** software

The installation wizard suggests the following destination folder:

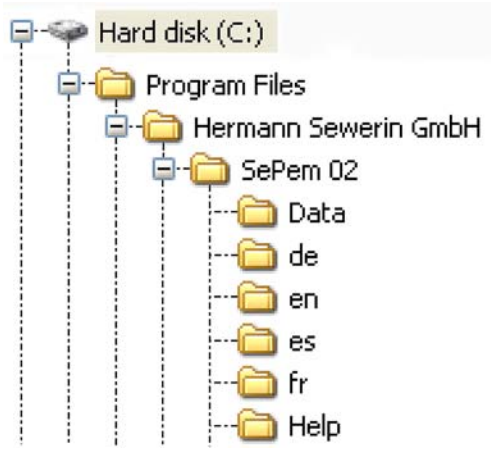


Fig. 11: Structure of the **SePem** directory

In the **SePem 02** installation folder, all required program files are stored automatically.

- Take over the suggested installation path by clicking on **Next**.

OR

Click on **Browse** if you want to install the **SePem** software on another drive (for example **D:**, **E:**) or in another directory. Enter the desired installation path.

- In the next window, you can start the installation. To do so, click on **Next**.

> **Note:**
> Depending on the available computing power of your PC it may take several minutes before the installation really starts. The program will be installed correctly nevertheless.

- After finishing installation a corresponding message appears. Click on **Finish**. A corresponding message appears on the screen.
- Click on **Yes** to restart the computer immediately. After restarting the PC, you can use the **SePem** software right away. The **SePem** icon is added to the Windows desktop.

4.3.1 Network Installation

Proceed as follows to install the **SePem** software in a network:

- Install the software as described in chapter 4.3.
- Read the help text under **Start** - **Programs** - **Hermann Sewerin GmbH** - **SePem 02** - **SePem 02 network installation**.
- Pay attention to the notes and instructions listed there.

4.4 De-installing the SePem Software

> **Note:**
> Before de-installing the **SePem** software, make a backup of the **SePem 02 Data.mdb** database. You can find this file in the installation directory. This ensures that the saved measurement data is archived.

- In the Windows start menu, click on **Settings** - **Control Panel**.
- Double-click on **Add/Remove programs**. The **Add/Remove programs** window is opened.
- Click on **Change or Remove Programs**.
- Select **SePem 02** in the list of installed programs.
- Click on **Remove**.

  The operating system deletes all **SePem** program files and removes the corresponding entries from the Windows registry.

4.5 Releasing the Software

In order to make full use of the **SePem** software you must release it by entering the serial number.

You receive the serial number when purchasing the **SePem** system.

> **Note:**
> You can only communicate with the **SePem** devices if the software is released.
> Without release you can use only the demo version of **SePem 02** with reduced functionality.

Proceed as follows to release the **SePem** software:

- In the **Help** menu ("**?**"), click on **Program Release**. A new window appears.

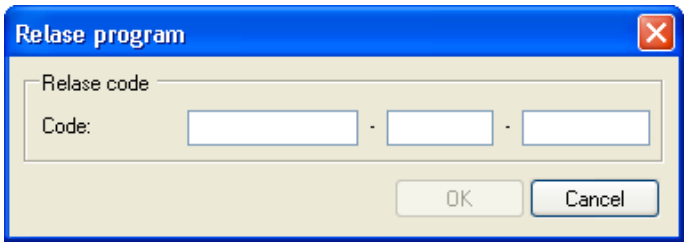


Fig. 12: Window for releasing the program

- Enter your serial number.
- Confirm your entry with **OK**.
- Close the **SePem** program and restart it.

The software is now released and can be used without restrictions.

5 Commissioning

It is required to carry out the following steps before the first commissioning and after altering the device numbers or the measurement time scheme:

- Assign to the **SePem** devices only device numbers with max. two digits.

  Recommendation:
  Use the last two digits of the FAB number as device numbers (can be found on the label on the side of the **SePem** device).

  As default, the **SePem** devices are pre-set conforming to this recommendation.

  Stick-on labels with individual digits are included in the scope of delivery.

  Stick the device number on the **SePem** devices. Make sure that the series of digits can be read without problems when the devices are placed in the charging adapter.

- Perform all steps from chapter 6.1 in the prescribed order.

- If you do not want to use the last two digits of the FAB numbers as device numbers, you must change the default setting in the software.
  Enter the new **SePem-**device numbers under **Devices** - **Adjust Settings** - **General** - **Device Nr.** - **Change** (see chapter 11.2.2.1).

- Plan a measurement time scheme, i. e. the cycle with which the measurements are to be carried out. Enter the desired scheme under **Devices** - **Prepare for measuring** - **Meas. times** - **New** (see chapter 8.3.2).

You can then prepare the first measurement (see chapter 6).

6 Preparing Measurements

> **Note:**
> The measurement preparation is described in two separate sections. **You always need to perform all steps from both sections, 1 and 2, to prepare a measurement completely.**
> When the system is taken into service for the first time, it is also required to perform the steps listed under ”Preparation - Part 1”.

6.1 Preparation - Part 1

- Switch off your computer, provided that it is switched on.
- Place the **SePem** devices into the slots of the charging adapter. While doing so, turn the devices slightly until they lock into place.

> **Note:**
> Ensure that the **SePem** devices are correctly locked in the charging slots. Only then the data transmission can be performed correctly. During data transmission, the **SePem** devices must not be taken from the charging adapter. If devices with rechargeable batteries (accumulators) are used, it is required to charge them before the system is taken into service (see chapter 9).

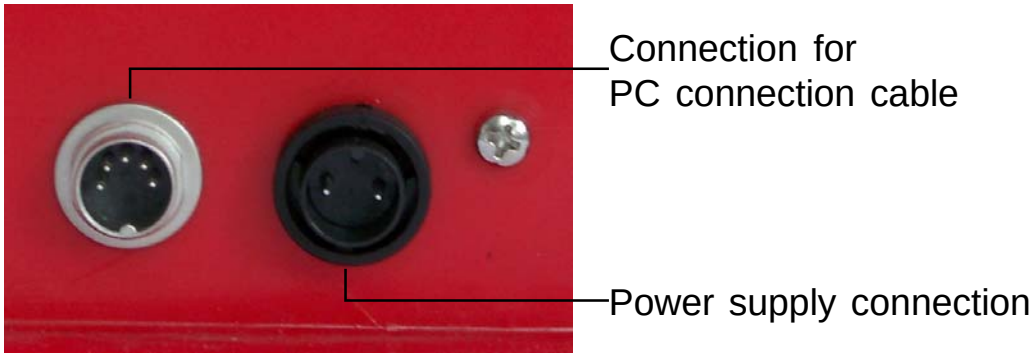


Fig. 13: Exterior of the carrying case or box: Connections for power supply and data exchange at the charging adapter

- Connect the data-exchange cable first to the charging adapter (port for PC connection cable, see fig. 12) and then to your computer.
- Connect the cable of the power supply unit to the charging adapter (connector for power supply, see fig. 12).
- Connect the plug of the power supply unit to the mains.

> ☞ **Note:**
> If no other power supply is available at the installation site, you can also connect the charging adapter to the cigarette lighter of your vehicle using the car connection cable.

- Switch on your computer and call up the **SePem** software. (See chapter 8.1. for further information.)

6.2 Preparation - Part 2

- Click on the Help Assistant and select **Preparing devices for measuring** (see chapter 8.3).
- Enter the measurement places (see chapter 8.3.3).
- Print out a distribution list (see chapter 8.3.5).

> ☞ **Note:**
> You can find a more comprehensive summary of the basic operating steps in chapter 8.

7 Intended Purpose and Principle of Operation

The **SePem 02** system is modularly structured. It is designed to be used with different sensors. Therefore, it can be used for a wide range of applications. (See chapter 14 for information on exchanging sensors.)

7.1 Noise Sensors

SePem devices with inserted noise sensor can be used for localizing leaks in water-supply distribution systems (remote detection).
Electro-acoustic processes for localizing water leaks depend to a large extent on the intensity of the ambient noise. For this reason, it is often unavoidable to check the pipeline networks during the night - i. e. outside the regular working hours. The **SePem** system is based on sound level measurements and offers a reasonably priced and efficient alternative to nightshift work.

7.1.1 Functionality and Measuring Principle

The **SePem** devices take over the sound recording directly on-site. All present sound signals are amplified and filtered (50 Hz filter). The sound level is determined using filtered signals.

Noise sensors allow to measure the following:

- Volume level
- Complete sound samples

7.1.1.1 Volume Level

The sound volume levels are measured over a pre-set period of time. During the measurements, the **SePem** devices record in specific chronological intervals the present sound level and further statistical data.

Evaluation

When the sound level is very low during the measurement (measured value close to 0), there is **no leakage** in the area which can currently be detected by the **SePem** devices.

A continuously high sound level is a reliable indicator for a **leak**, since it generates a permanent and uniform noise signal (see also graphics of the measurement details in chapter 11.1.1.10).

The absolute volume of the leak sound level may vary extremely since this value depends on the size of the leak and the distance between device and leak.

Consumption noise caused, for example, by water being drawn off by a consumer, occurs only during the draw-off. Depending on the quantity of the flow rate, an sound level is generated during the draw-off period reflecting the consumption.

Interfering noise on the other hand, caused by background noise, cars, etc., generates sound patterns with increasing and decreasing intensity.

7.1.1.2 Complete Sound Samples

Sound samples are also recorded over a pre-set period of time. During the measurement, the **SePem** devices detect internally the point of time at which the minimum sound level is present. Then, the measurement is started for a defined time. During the measurement, all sounds are recorded.

Evaluation

You can listen to the sound sample at the PC. Usually, leaks can be clearly distinguished from interfering noise.

7.1.2 Procedures for Recording Data

Basically, the **SePem 02** system provides two different approaches for handling data recording.

- On the one hand, the individual data loggers can be **regularly** moved, for example after one or two measurement nights. For this purpose, the **SePem** software provides a wide range of functions for planning measurement cycles and conditioning the data which is read out at the end of a measurement period.
- On the other hand, **SePem** devices can be used **stationary** - thanks to the GSM module. This extra feature permits to monitor crucial spots within the pipeline network continuously. Otherwise these spots could only be controlled with considerable effort.

7.1.3 Problems during the Application of Noise Sensors

The **SePem 02** system cannot make a distinction between certain types of interfering noise, such as pumps, transformers, etc., which are generating a steady and uniform sound signal and the noise generated by leaks.

To detect interfering noise nevertheless, the **SePem** software is provided with several options of how to display and evaluate the measurement results:

- Combination of different display types (e. g. frequency spectrum, histogram, representation as a chronological function)
- Acoustic control with the help of sound samples

7.2 Installing SePem Devices at the Measurement Location

You can install the **SePem** devices in defined spaces at the pipeline system.

Recommendation for determining proper spacing
Provided that the spacing between the hydrants is 100 m:

- metallic pipeline systems: every 2nd hydrant
- non-metallic pipeline systems: every hydrant

The sound is recorded automatically in user-defined cycles.

> **Note:**
> The transmission of the structure-borne sound must not be dampened by dirt, mud or rust.
> If required, clean the coupling positions before installing the adapter.

The acoustic coupling is realized with the help of various adapters.

The following table is an overview of the adapters and other accessories which can be used for the different types of coupling positions.

Coupling position	Adapter/ Accessories	Remark
Underground hydrant	Adapter ring	● Available[2] on the **SePem** device
	Hydrant adapter	● Is used when the **SePem** device cannot be completely inserted in the hydrant mouth due to the construction of the hydrant
	Hydrant combi adapter	● Can be used for coupling the adapter the devices to square-head covers

... Continued on next page

[2] Only special versions are delivered without adapter ring.

Coupling position	Adapter/ Accessories	Remark
Slider	Hydrant combi adapter	
Pipeline	Magnet	
Overground hydrant	Fixed coupling & blanking flanges	● Various couplings to choose from (see offer)

More detailed information on placing the **SePem** devices can be found in chapter 8.3.

If the **SePem** devices are not used for stationary measurements, they are, for example, collected after two measurement nights (typical practice-oriented value. They can then be installed at the next hydrant or connected to a PC for evaluating the data.

Note:
Max. 50 SePem devices can be read out at the same time.

7.2.1 Installing SePem Devices on Underground Hydrants

When installing the devices on underground hydrants, you can select between two variants of how to record the structure-borne sound:

- via the hydrant mouth
- via the square-head cover

Recording structure-borne sound via the hydrant mouth

- Install the **SePem** device on the underground hydrant, using the adapter ring, as shown in the illustration.

  If required, use additionally the hydrant adapter (available as an accessory part) to improve the coupling.

Fig. 14: Installing **SePem** device at the hydrant mouth

Recording structure-borne sound via the square-head cover

You need a hydrant combi adapter (available as an accessory part) to record structure-borne sound via the square-head cover.

- Screw the hydrant combi adapter on the **SePem** device.
- Place the **SePem** device on the appropriate underground hydrant.

Fig. 15: Installing **SePem** device at the square-head cover

7.2.2 Installation on the Conduit Pipe

On metallic conduits, **SePem** devices with noise sensor record the structure-borne sound via a magnet.

- Screw the D55 magnet (with M10 thread) on the bottom of the **SePem** device. This magnet is available as an accessory part.
- Place the **SePem** device, with the magnet pointing down, on the corresponding conduit.

7.2.3 Installation on Overground Hydrants

- Connect the **SePem** device to the discharge pipe of the hydrant. While doing so, do not open the hydrant.
- Push a protecting tube over the **SePem** device to protect it against external influences.
- Lock the protective tube to the hydrant using a chain.

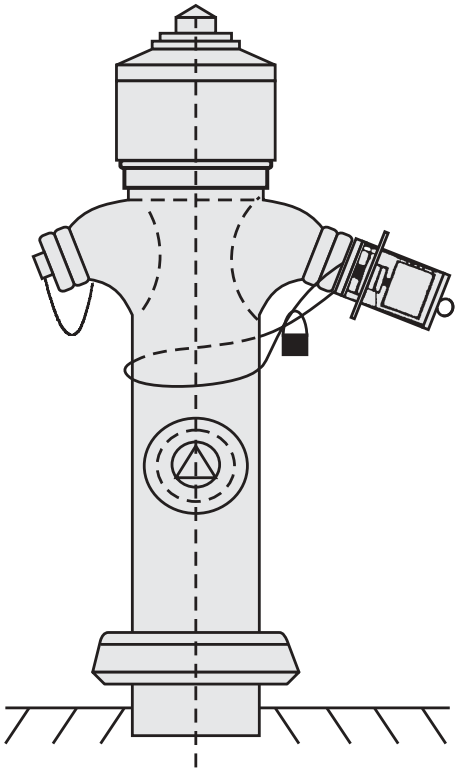


Fig. 16: Installation on overground hydrant

8 Performing Measurements - The Most Important Steps at a Glance

This chapter describes how to perform measurements with the **SePem** devices. In addition, it includes a comprehensive overview of the most important actions which you need to perform after the measurements.

Topic-wise, the chapter picks up the thread of chapter 6. This means, before carrying out the following actions you must first prepare the measurement as described in chapter 6.

You can find more detailed information, as well as numerous tips and instructions, on how to make optimum use of the **SePem** software in chapter 11.

8.1 Starting the Program

- Start the **SePem** software in the Windows start menu (**Start - Programs - Hermann Sewerin GmbH - SePem 02 - SePem 02**)

OR

use the **SePem** icon on the Windows desktop.

When the program is started the first time, a welcome window appears.

- Uncheck the check box **Don’t show this dialog again** if you want to skip the welcome screen the next time the program is started.
- Close the window with **OK**.

The **SePem** user interface appears from which you can select all software menus and functions.

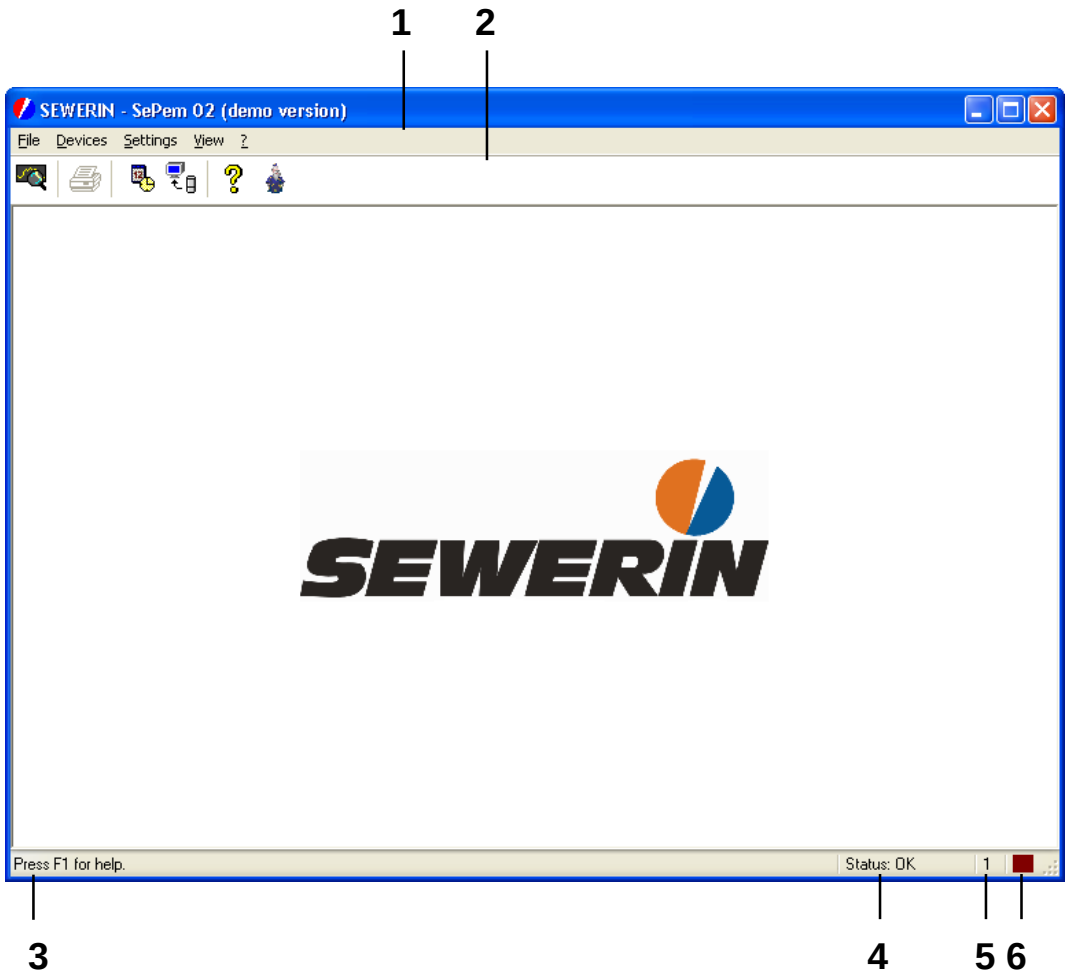


Fig. 17: User interface of the **SePem** software

1 Menu bar

2 Icon bar

3 Status bar

4 Status field

5 Number of **SePem** devices which are currently inserted in the charging adapter

6 Signal field; indicating the status of data transmission

8.2 Calling Up the Help Assistant

The Microsoft Help Assistant guides you safely through the **SePem** software. Speech balloons are used to suggest the next logical steps which can be taken. In addition, it provides help and advice.

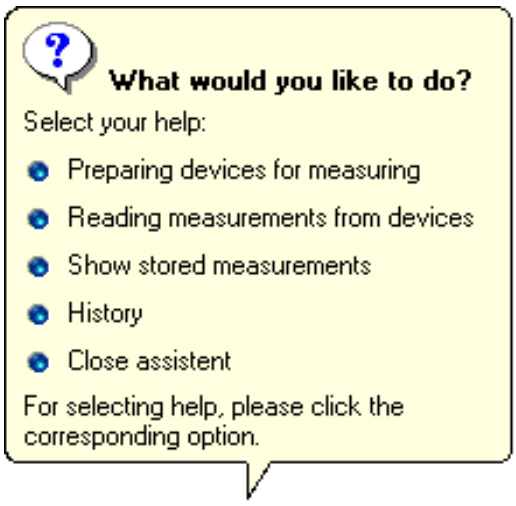


Fig. 18: Advice and guidance of the Assistant (optional)

It goes without saying that you can also use the program without the Assistant. Just use the various menus. The most important actions can also be started with function keys on the keyboard (for example, key F5 opens the **Show measurement data** window).

8.2.1 Fading In/Out the Help Assistant

You can use a toggle button to fade in/out the Help Assistant.

- Click on the **Enable/disable help agent** button in the icon bar.

OR

In the **Settings** menu, select the item **Help assistant**.

> **Note:**
> If you cannot call up the Help Assistant, check whether this optional feature is really installed on your computer (see chapter 8.2).

8.2.2 Installing the Help Assistant Later On

If you want to install the Help Assistant later on, you can find the required program on your Microsoft Windows/Office CD ROM (2000 or XP). You can find it under the path: **Features to install** - **Office Shared Features** - **Office Assistant**.

You can also download the Help Assistant from the Internet (http://www.microsoft.com/msagent/resources.htm, keyword ”Downloads”).

When installing the Assistant, you may select one or several animations.

8.3 Placing SePem Devices

Before placing the **SePem** devices you must first program them. The following data is required:

- Date and time of the first measurement
- Duration of the individual measurements
- Cycle in which the measurements are to be executed

The two last items are part of the so-called ”measurement time scheme” (see chapter 8.3.2).

If you want to work with the Help Assistant:

- Click on **Preparing devices for measuring** in the speech balloon of the Assistant.

OR

If you do not want to use the Help Assistant:

- Click on **Devices** - **Prepare for measuring** or press F9 on the keyboard.

> **Note:**
> The following screens are examples, illustrating typical application situations. Therefore, they can differ from your individual application situation.

At first, a window is opened in which the data transmission between **SePem** software and devices is indicated.

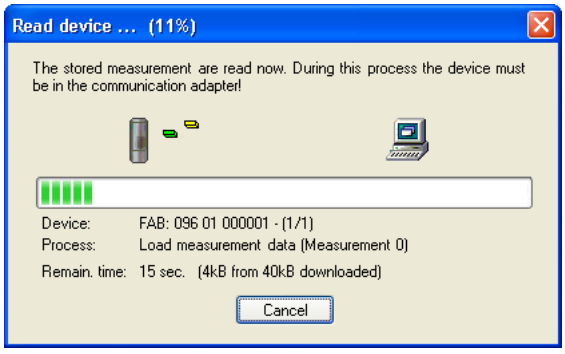


Fig. 19: **Read device** window

Note:
Before starting the data transmission, make sure that the **SePem** devices are correctly inserted and locked in the charging slots (screw in the devices carefully until they audibly lock in).
During data transmission, the **SePem** devices must not be taken from the charging adapter.

After transmitting data to the **SePem** devices, the **Expose devices** window is opened.

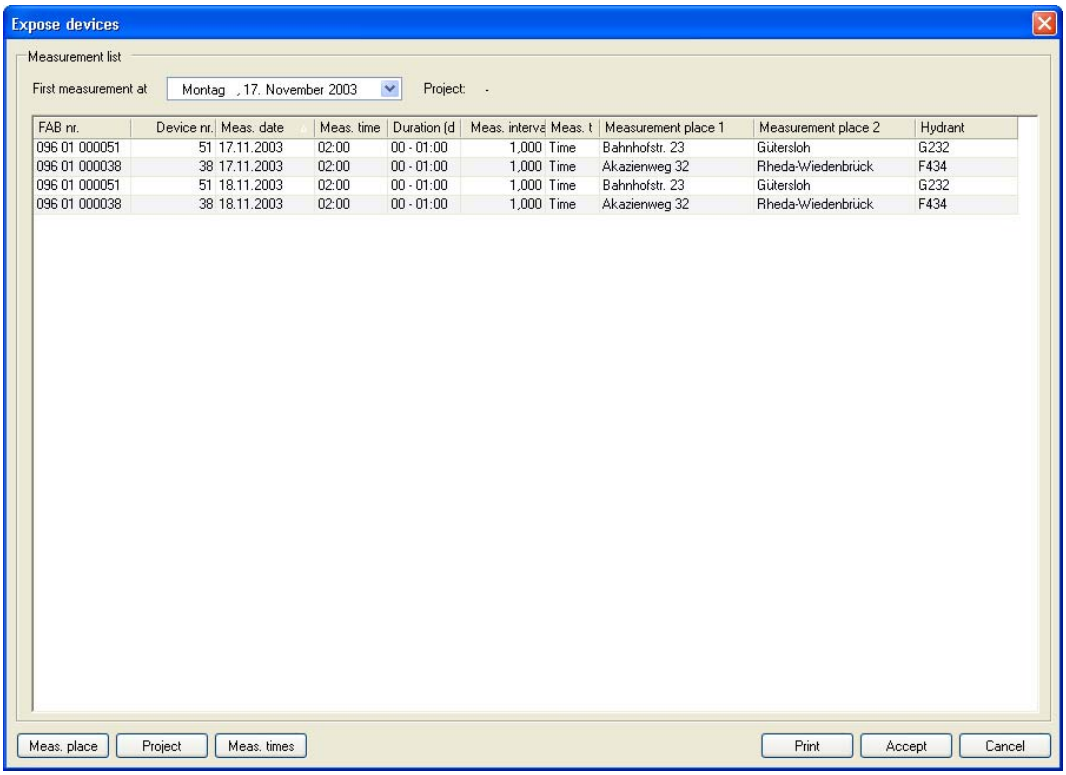


Fig. 20: **Expose devices** window

8.3.1 Entering the Date of the First Measurement

The date of the first measurement determines on which day a series of measurements is started (see measurement time scheme, chapter 8.3.2).

- Click on the arrow on the right-hand side of the **First measurement at** field. A calendar appears on screen.
- Click on the desired date on which the first measurement is to be started. The calendar field is closed and the selected day is automatically taken over in the **Expose devices** window.

8.3.2 Setting Up or Modifying a Measurement Time Scheme

The **SePem** software functions are based on a measurement time scheme. The measurement time scheme is used to determine when the measurements are to be started, how long they should take and in which cycles they are to be performed (for example, on five consecutive days with two measurements per night). Measurement time schemes offer the advantage that the measurement times need only to be entered once.

The scheme contains a **varying number of entries** which are modifiable.
After installing the software, the **measuring-time scheme** is still **empty**. This means, before placing the **SePem** devices for the first time the required data has to be entered or modified.

Proceed as follows if you want to set up or modify the measurement time scheme:

- Click on the **Meas. times** button in the **Expose devices** window.

  The **Adjust measurement scheme** window is opened.

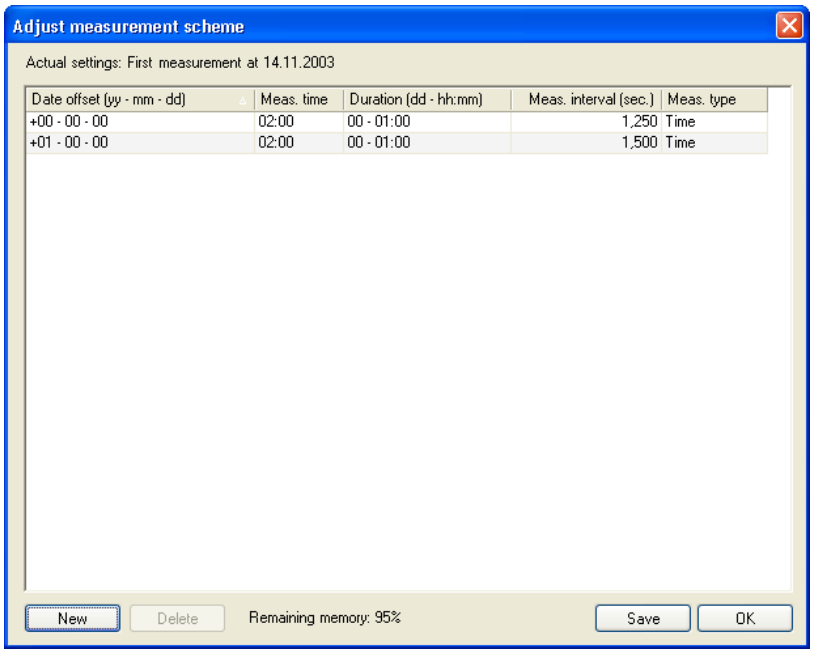


Fig. 21: **Adjust measurement scheme** window

The entries in the **Adjust measurement scheme** window will be taken over in the **Expose devices** window when the window is closed.

- Close the **Adjust measurement scheme** window with

  OK if you want to take over the entered measuring-time scheme only for the planned series of measurements

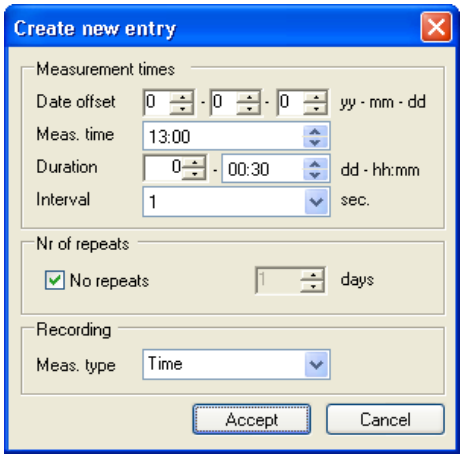
OR

Save to store the measurement time scheme permanently. Then, close the window with **OK**.

Registering new entries

- In the **Adjust measurement scheme** window (fig. 21), click on **New**.

  The **Create new entry** window is opened.



- Enter the desired values in the input fields. For detailed information on the individual fields refer to chapter 11.2.1.1.
- Confirm your entries with **Accept**.

Fig. 22: **Create new entry** window

Changing entries

- In the list of measurement time schemes (**Adjust measurement scheme** window**,** fig. 21) double-click on the entry which you want to change. The **Change entry** window is opened.
- Change the values as desired.
- Confirm your entries with **Accept**.

8.3.3 Entering Project Names and Measurement Places

Project names and specifications on the measurement place (e. g. place, street, hydrant number) help you to set up a plan for placing the devices. This permits to place **SePem** devices easier.

Selecting existing and entering new project names

- In the **Expose devices** window (fig. 20), click on **Project**. The **Select project** window appears. If project names are already available, you can select an entry from the indicated list.

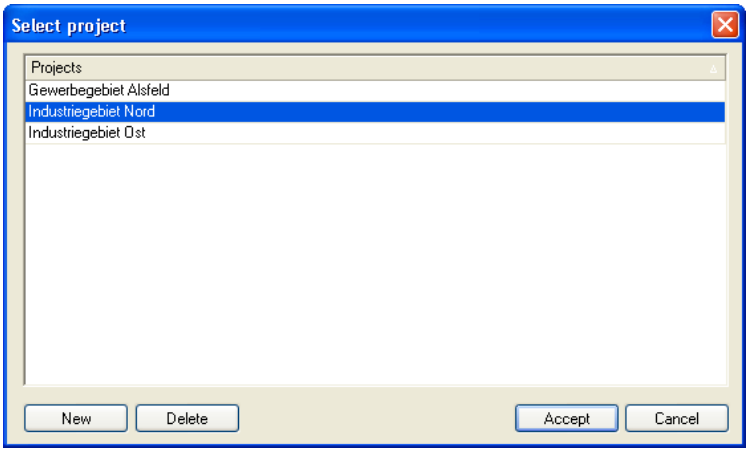


Fig. 23: **Select project** window

- Select the desired project name if you want to assign it to the current measurement. Click on **Accept**.

OR

Click on **New** if you want to enter a new project name.
See chapter 11.1.1.6 for further information.

Selecting available or entering new information on the measurement place

- In the **Expose devices** window, select the data record for which you want to enter information.
- Click on **Meas. place**. The **Edit measurement places** window is opened. If measurement places are already available, you can select an entry from the indicated list.

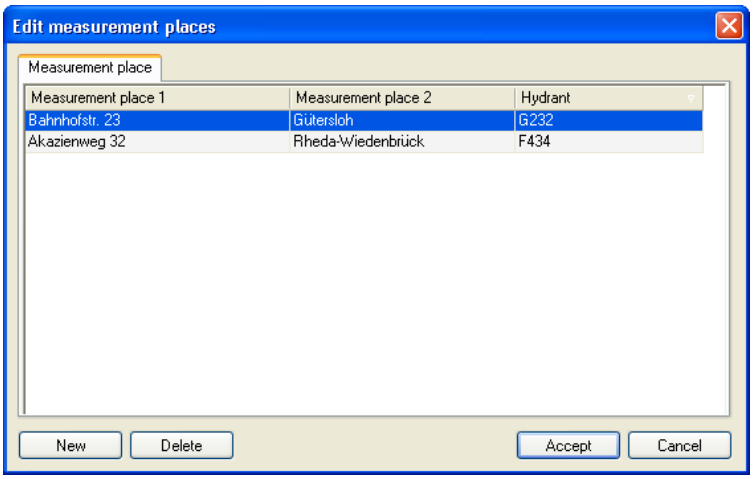


Fig. 24: **Edit measurement places** window

- Select the desired measurement place if you want to assign it to the current measurement. Click on **Accept**

OR

Click on **New** if you want to enter a new measurement place. See chapter 11.1.1.7 for further information.

8.3.4 Defining Device Changes

You can pre-set the point of time at which a **SePem** device is to be placed at a new measurement place. This requires that a measurement place was assigned to the device beforehand.

- In the **Expose devices** window (fig. 20), assign a measurement place to the appropriate measurement (i. e. the device), provided that you did not do it yet (see previous section).
- Double-click on the desired measurement. The **Change measurement place** window is opened.

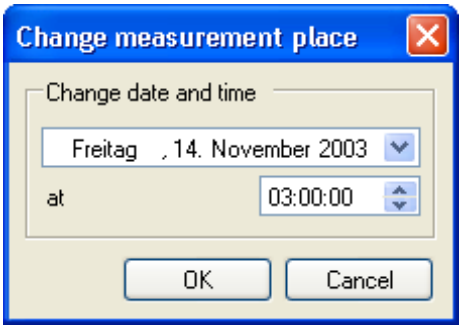


Fig. 25: **Change measurement place** window

- Enter the desired date (day, time) and confirm it with **OK**.

8.3.5 Transmitting Settings to the SePem Devices and Printing Out a Distribution List

Finally, all entered settings need be transmitted by the PC to the **SePem** devices.

Distribution lists make it easier to obtain a general overview which **SePem** device is to be placed where and when for measurements. The distribution printouts include the information required for placing all **SePem** devices at a different location (date and time, installation site, precise place of the measurement and designation of the hydrants). A sample pattern of a distribution list is included in the appendix.

Distribution lists can be printed out via the **Expose devices** window using the **Print** button. If you do not want to start a printout right away, an appropriate message will appear after starting the data transmission. You can then start the printout in the displayed message window.

- Click on **Accept** in the **Expose devices** window. A message appears on screen.
- Click on **Yes** to start the list printout.

> ☞ **Note:**
> **Always** print out a distribution list **before placing** the **SePem** devices!

After the data is transmitted successfully, a corresponding message is indicated on-screen. During data transmission the **Expose devices** window is automatically closed.

8.4 Placing SePem Devices

After having programmed the **SePem** devices as laid out in the preceding sections, you can now place them at the desired measurement places. Adhere to the installation instructions and tips listed in chapter 7.2!

> ☞ **Note:**
> When placing **SePem** devices, make absolutely sure that they are really placed at the prescribed measurement places. Otherwise **mistakes** cannot be ruled out. Only then the data can be evaluated correctly.

8.5 Collecting SePem Devices

After the measurements, the **SePem** devices can be picked up at the measurement places again.

You can then proceed with reading out the measurement data (see chapter 8.6).

8.6 Reading Out SePem Devices

- Place the **SePem** devices into the slots of the charging adapter.

> **Note:**
> Ensure that the **SePem** devices are correctly inserted and locked in the charging slots.
> During data transmission, the **SePem** devices must not be taken from the charging adapter.

- Start the **SePem** software.
- To start reading out the **SePem** devices, open the **Devices - Read measurements** menu or press function key F10.

  The transmission progress between **SePem** devices and PC is indicated. The measurement data is stored in the **SePem** database. After the transmission the **Show measurement data** window is opened. Each line of the displayed table represents an individual measurement.

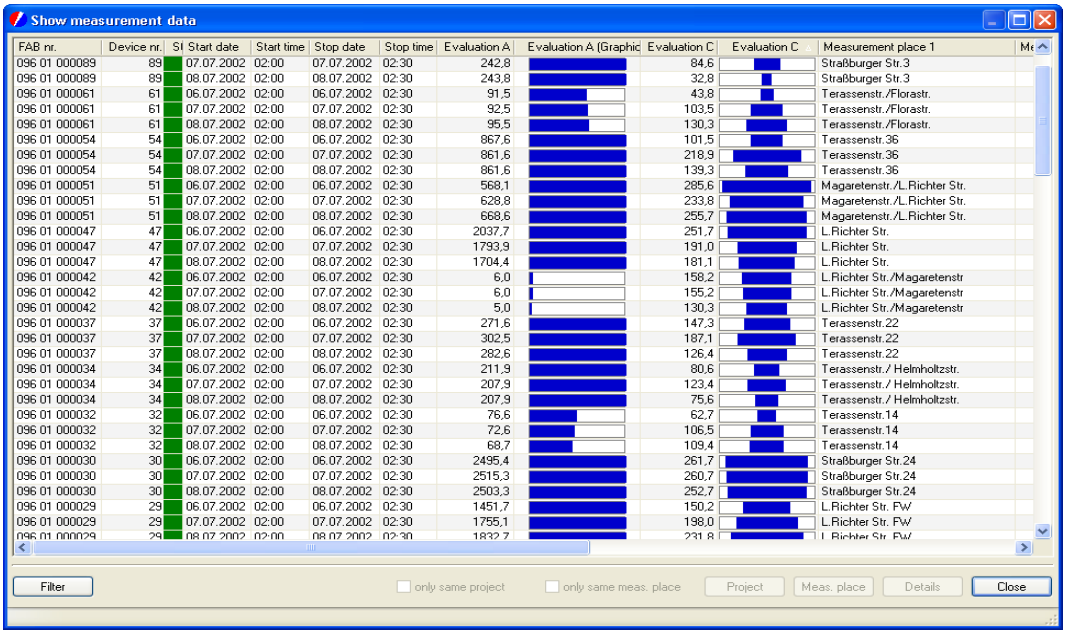


Fig. 26: **Show measurement data** window

8.7 Showing Stored Measurements

The measurements listed in the **Show measurement data** window (fig. 26) can be edited as follows:

- Selective display of specific measurements with the help of filters and control fields
- Indication of the appropriate graphics (max. four measurements can be displayed at the same time); four different types of representation can be selected
- Assignment of projects, measurement places and/or modification of data which is already assigned
- Deletion

Entries can be selected and deleted just like in the Microsoft Windows Explorer. You can, for example, select several lines for further editing by holding down the **Ctrl** key, or you can delete the selected line(s) by pressing the **Del** key on the keyboard. A detailed description of all other functions can be found in chapter 11.1.1.

> ☞ **Note:**
> The buttons on the bottom edge of the screen (e. g. **Project**, **Meas. place**, **Details**) are only available after selecting one or several lines in the table.

Depending on the default setting, the table may have more columns as can be shown in the **Show measurement data** window. You can access these hidden columns with the help of the scroll bar at the bottom edge of the table. Refer to chapters 11.1.1.2 and 11.1.1.3 for notes on setting up and adjusting the table (e. g. selection of columns).

8.8 Printing Out Measurement Data

Proceed as follows if you want to print out measurement data:

- Open the **Show measurement data** window.

  (For detailed information refer to chapter 11.1.1.)
- Select the measurement(s) which you want to print out from the table.
- Click on the **Print** icon in the icon bar. The **Print** window is opened.
- Select the desired printing options. (For detailed information refer to chapter 11.1.5.)

9 Power Supply of the SePem Devices

The **SePem** devices can be used with both - batteries as well as rechargeable accumulators. Depending on the used type of battery or accumulator, the maximum operating time may vary.

Accumulators must be recharged in regular intervals. This can either be done using the power supply unit or via a car battery.

Detailed information on the technical specifications of the power supply can be found in the appendix.

Chapter 2.4 contains information on the in-service conditions.

9.1 Accumulator Operation

Thanks to the integrated accumulator management system it is practically impossible to overcharge or damage accumulators. The integrated electronic system monitors the charging process and switches automatically to charge retention.

It is recommended to recharge the accumulators regularly after finishing a series of measurements. This ensures that your **SePem** devices are always ready to use.

Note:
On delivery the accumulators are not completely charged! For this reason, charge the accumulators for **14 hours** before taking them into service!

Note:
When charging **SePem** devices in the **carrying case variant**, make absolutely sure that the **lid remains open during charging**.
Otherwise the devices will be charged extremely slowly due to the heat development in the closed case.

9.1.1 Charging Devices with the Help of the Plug-In Power Supply

Place the **SePem** devices in the charging adapter. Then, connect the power supply unit to the power supply connector (see fig. 13).

> ☞ **Note:**
> Use only the original SEWERIN plug-in power supply! Only with this unit it is permitted to charge the devices unattended.

9.1.2 Charging Inside a Vehicle

Place the **SePem** devices in the charging adapter. Then, connect the car connection cable (available as accessory) to the power supply connector (see fig. 13).

10 Signal Indication on the Charging Adapter

The signal indicators inform on the current operating status of the **SePem** devices.

10.1 Position of the Signal Indicators

The exact position of the signal LEDs depends on the type of charging adapter. The functionality of the signal indicators is identical for both types of charging adapter (carrying case and box).

Box

- The LEDs are arranged in groups of three (red, yellow, green) directly under and/or over the appropriate charging slots.

Fig. 27: Signal indicators on the charging adapter - box type

Carrying case

- The signal LEDs of all charging slots are arranged on a separate indicator panel on the left-hand side of the carrying case.

Fig. 28: Signal indicators on the charging adapter - carrying case type

10.2 Preparing the Signal Indicator Query

The current operating status of the **SePem** devices can be queried any time. You only require the following accessories:

Accessory	Application field
Power supply unit	230 V power supply available
Car connection cable	Permits queries ”on the spot”, provided that a car is available
Voltage generator (accessory)	Permits queries ”on the spot”, provided that no mains connection is available

10.2.1 Query with Available Power Source

- Place the **SePem** devices into the slots of the charging adapter.
- Connect the cable of the power supply unit, or the car connection cable, to the charging adapter (connector for power supply, see fig. 13).

10.2.2 Query Using a Voltage Generator

Use a voltage generator (accessory) for querying devices when no mains connection is available at the installation site.

Fig. 29: Connection of the voltage generator

- Connect the voltage generator as shown in fig. 29.
- Press the key on the voltage generator and hold it in that position. After **approx. 2-3 seconds** the LEDs start to flash.

- Read the signal indicators with the key kept pressed down. You have **approx. 5 seconds** for reading. After that, the LEDs stop flashing.
- Release the key of the voltage generator.

Why?

SePem devices with **batteries**	The display goes out.
SePem devices with **accumulators**	The charging mode starts automatically. For this, the available power source is used. This means that the battery of the voltage generator is used, therefore rapidly discharging it.

10.3 Operating Principle and Meaning of the Signal Indications

The signal indicators inform on:

- Status of data evaluation (flashing phases)
- Operating status of the accumulators, provided that accumulators are inserted in the devices

10.3.1 Operating Principle

SePem devices with batteries

After preparing the signal indication (see chapter 10.2), the data evaluation is lit for **approx. 5 seconds**. After that, the indication goes out.
If you need the signals indication again, you must re-connect the power supply (by pulling the connector first, then replugging it).

SePem devices with accumulators

After preparing the signal indication (see chapter 10.2), the data evaluation is displayed for **approx. 5 seconds**. This is followed by a pause of **approx. 3 seconds**, i. e. all LEDs go out. After that, the charging status of the accumulators is indicated continuously.

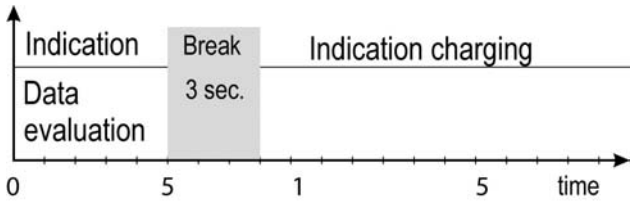


Fig. 30: LED indicators during accumulator operation

10.3.2 Meaning of the Signal Indications

The **red** and **green** LEDs are pre-set ex-works (exception: green LED, flashing). The default settings can be individually adjusted (see chapter 11.2.2.4).
The **yellow** LEDs have a fixed-assigned meaning which cannot be changed.

LEDs with default setting, freely configurab le

		Indication Data evaluation	Indication charging
red	flashing		Accu is excessively discharged or working in reduced charging mode (temperature > 50° C)
red	steady light	Measurement evaluation exceeds threshold value (3 % of end value)	Charging operation
green	steady light	Measurement evaluation falls below threshold value (3 % of end value)	Charge retention

LED without default setting, freely configurable

green flashing

LEDs with fixed-assigned meaning (unchangeable)

		Description	Remedy
yellow	flashing	Error	Start diagnostics (see chapter 11.2.4)
yellow	steady light	Device not ready to operate	Contact SEWERIN customer service

11 Menus and Functions of the SePem Software

This chapter describes in detail all menus and functions of the **SePem** software. The structure of the chapter corresponds to the order of menus in the menu bar, i. e., the description starts with item **Show measurement data** in the **File** menu and ends with item **Info about SePem 02** in the **Help** (**?**) menu.

11.1 File Menu

The **File** menu comprises the following functions:

- **Show measurement data**
- **Handle measurement places and comments**
- **Repair and compress database**
- **Import** of measurement data
- **Export** of measurement data
- **Print**
- **Adjust page settings**
- **Close** (for exiting the **SePem** program)

11.1.1 Show measurement data

The **SePem** software indicates stored measurement data in a separate window.

- In the menu bar, click on **File** – **Show measurement data**.

OR

Click on **Show stored measurements** in the icon bar.

OR

Press key F5 on the keyboard.

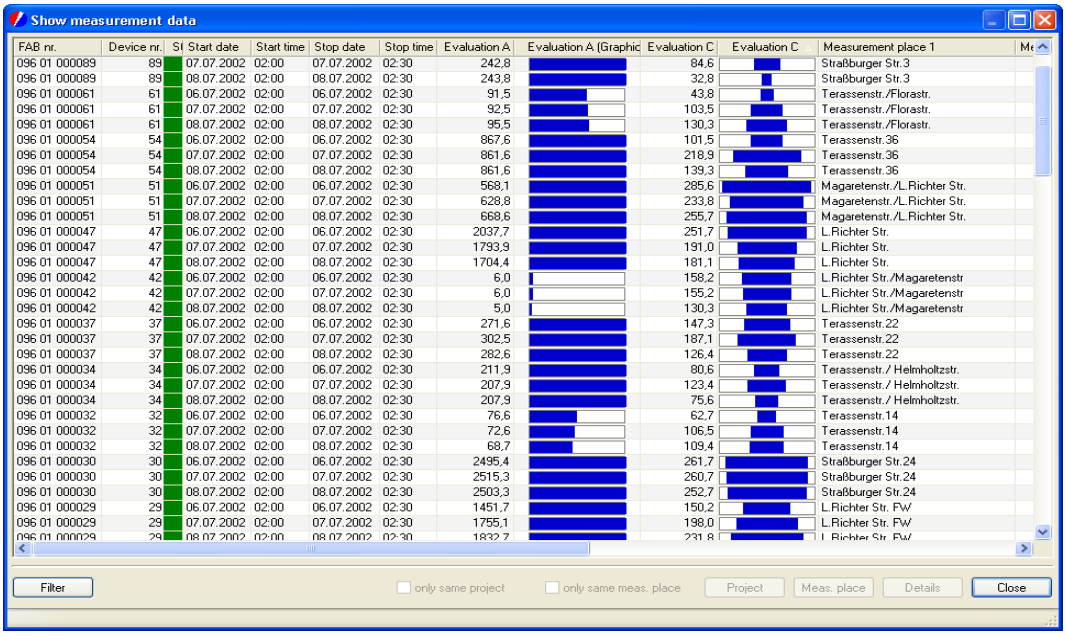


Fig. 31: **Show measurement data** window

Each line of the table represents an individual measurement. These measurements can be generated by various **SePem** devices.

The table can be configured individually. It is possible to adjust or select the following:

- Sorting of the measurement data
- Width of columns
- Selection of columns which are to be displayed on-screen or faded out
- Order of columns

You can use the scroll bar (at the bottom of the table) to access columns which are lying outside of the display area.

Selecting measurement data (lines)

Selection of 1 line	Click with left mouse button
Selection of several lines (grouped together)	**Shift** key and + click with left mouse button
selection of several individual lines	**CTRL** key and + click with left mouse button

Key functions for editing measurement data	
Deleting line(s)	Select line(s), then press the **DEL** key
Reading out individual sound data records	Select line(s), then Press letter **A** (see chapter 11.2.3.1)
Assigning projects, measurement places, storing comments	Select line(s), then Press letter **D** (see chapter 11.1.1.7)

11.1.1.1 Sorting measurement data

Any column can be used as a criterion for sorting the order of measurement data.

- Click on the header of the column whose entries are to be used for sorting the measurement data.
  The measurements are immediately displayed in ascending order (i. e., for letters: A > Z). At the same time, a small white sorting arrow appears in the column header.

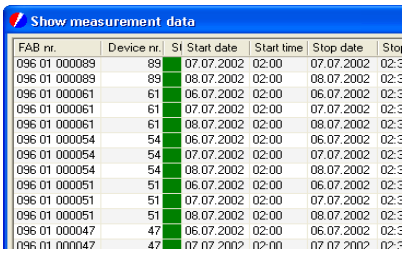


Fig. 32: Measurements – sorted according to starting date

- If you now click again on the column header, the sorting order is reversed (for letters: Z > A). The sorting arrow points downwards.

11.1.1.2 Changing the column width

- Move the mouse over the header of the column whose width you want to change.
- Press the left mouse button as soon as the mouse pointer changes into a double arrow (<->).
- Move the lateral borders of the column until it has the desired width.
- Release the mouse button.

11.1.1.3 Selecting column for the measurement data table

The table in the **Show Measurement data** window can contain up to 31 different measurement parameters (fig. 31). The number and sequence of columns can be determined individually.
The stored settings are taken over for printing out the measurement data.

Overview of the selectable measurement data information

FAB No.	Serial number of the **SePem** device
Device No.	User-definable number (see chapter 5)
Status graphics	Indication of the measurement status with the help of color symbols
Red	An error has occurred, measurement not performed
Green	Measurement finished successfully
Yellow	A problem has occurred, the displayed measurement result may be incorrect (e. g. when a **SePem** device is not taken out of the charging slot before the measurement starts)
Status text	Comment or description of the measurement status
Start date	Day of the measurement start
Start time	Time of the measurement start
Stop date	Day of the measurement end
Stop time	Time of the measurement end
Evaluation A, B, C	Depending on the used sensor type and selected sensor settings (see following table)
Evaluation A, B, C (Graphics)	Depending on the used sensor, schematic representation of the measurement result
Info evaluation A, B, C	Depending on the sensor type (see following table)
Temperature (° C)	Ambient temperature measured at the beginning of the measurement

Transfer	Day at which the **SePem** devices are transferred
Measurement type	The type of measurement (Time, event or stationary measurement)
Measurement interval (in sec.)	Interval between two 2 measurement values
Project	User-definable name (e. g. ”Town centre”)
Measurement place #1	Information on the point of measurement (e. g. street name)
Measurement place #2	Information on the measurement place (e. g. place name)
Hydrant	Designation of the hydrant
Comment	Comment on the measurement
Channel 1, 2, 3, 4	Display of the measuring range of the appropriate channel (e. g. noise sensor=1-channel sensor, combined temperature/pressure sensor=2-channel sensor, etc.)
Next service	Suggestion for the next scheduled service
Last service	Last registered service

Parameter - Info evaluation A, B, C for noise sensors

	Display	**Description**
A	5 % level (minimum)	minimum measurement value
B	5 % level (filtered)	This value is required when a GSM module is used
C	Spectrum of the	Deviation from the mean value measurement

If only a single sensor type is used, the parameter **Info evaluation** is not available.
In this case, instead of **Evaluation A , B, C**, the column headers **5 % level (minimum)**, **5 % level (filtered)** and/or **Width** are indicated.

Configuring the table (selection of columns)

- Click with the right mouse button on the table of measurement data. A menu pops up.
- Click with the left mouse button on the item **Adjust table**. The window **Adjust measurement data table** appears.

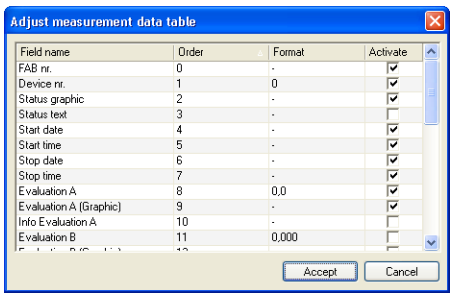


Fig. 33: Window **Adjust measurement data table**

You can now change the order, status (enabled/disabled) and format (only for numerical fields) of every individual parameter.

- Double-click on the line which you want to edit.
  The **Change measurement data table** window appears.

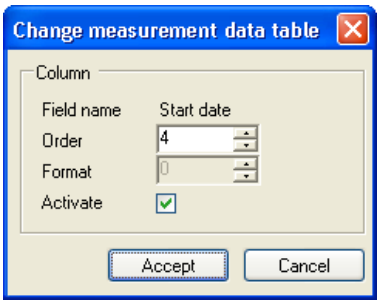


Fig. 34: Window **Change measurement data table,** modification of parameter **Evaluation A**

- Perform the desired changes. A tick in the check box **Activate** means that the column will be displayed in the measurement data table.
- Click on **Accept**.
- In the **Adjust measurement data table** window, click also on **Accept** to apply the changes to the table view.

11.1.1.4 Generating the history log of a specific measurement place or project

All measurement data records which are assigned to a specific measurement place or project (see also chapter 11.1.1.7), form the history of this particular project or measurement place.

- Select a line in the **Show measurement data** window (fig. 31) which is containing measurement data of a particular measurement place or project whose history you want to generate.
- Optionally, you may select the options **only same project** or **only same meas. place** (a tick appears in the appropriate check box when the option is selected). The corresponding data records are immediately filtered and shown in the **Show measurement data** window.
  If you select both check boxes, the history of a specific measurement place belonging to a particular project will be indicated.

  After disabling the options (i. e. no tick in the check boxes) all data records are indicated again.

11.1.1.5 Setting filters

Filters can be used to perform precise and fast search runs for specific measurement data records included in the **SePem** database. Filters are very convenient, for example, if you want to call up the results of a specific day, interval, place or device.

You can use the following options:

- fixed-assigned (pre-defined) filter schemes
- freely configurable filters

Both filter options can also be **combined** with each other. In addition, you may also **set up new filter schemes**.

> **Note:**
> Select item **Filter settings only with schemes** if you want to block the freely configurable filter function. You can select this item following the path: **Settings – Program settings – Miscellaneous** area.

- Click on **Filter** in the **Show measurement data** window (fig. 31). The **Filter settings** window is opened.

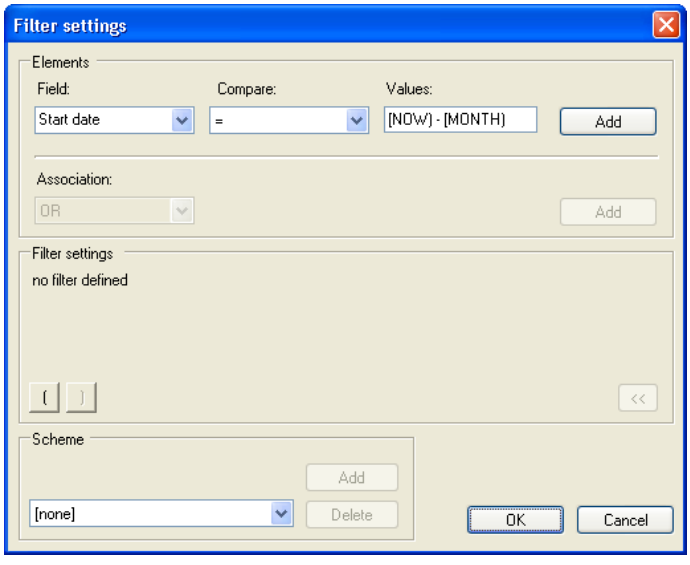


Fig. 35: **Filter settings** window with simple, freely configurable filter

The following section deals with the various possibilities made available by the filter settings.

- Close the **Filter settings** window (fig. 35) with **OK**. The defined filter(s) will then be used. The **Show measurement data** window is updated and shows only the relevant (i. e., filtered) measurement data.

Using a pre-defined scheme

- In the **Scheme** area, select the desired filter using the selection arrow.

Configuring simple, freely configurable filters

- In the **Scheme** area, select filter item **[none]**.
  You can now select or enter parameters in the **Elements** area of the screen.
- Select under **Field** the parameter (e. g. **Project**, **FAB No.**) which you want to filter in the measurement data table.
- Select under **Compare** the operand which you want to use for filtering (<, <=, = >, >=).
- Enter the desired parameter(s) in the **Values** field. Enter either the appropriate numerical values (e. . date, FAB no.) or use the following entries:

[NOW]	Wildcard for the current date
[YEAR]	Wildcard for a specific year
[MONTH]	Wildcard for a specific month
[DAY]	Wildcard for a specific day
+, -, *, /	For adding up, subtracting, multiplying, dividing
( )	Brackets for arithmetic operations

  Note: At the end of this chapter you can find two examples of how to use wildcards and operators.
- Click on the adjacent **Add** button. The filter appears in the **Filter settings** area.

Combining several single filters to a total filter

- Determine the first filter as described in the preceding section or select a pre-defined scheme.
- Select under **Association** the desired Boolean parameter (OR, AND, NOT). Click on the adjacent **Add** button. The filter appears in the **Filter settings** area.
- Determine a second filter as described in the preceding section. (You cannot use a pre-defined scheme for this.)
- You can extend now the combined filter by adding other filters and associations.

  You can undo your entries or the entire filter with **<<**.

  Use the bracket buttons **(** and **)** to define the priority of operators, if required.

Creating a new scheme

Filters which are frequently used can be stored as schemes. These schemes make working easier since you need not enter individual parameters several times. Just open the required scheme.

- Define a simple or a combined filter.
- in the **Scheme** area, click on the **Add** button. The **Save scheme** window is opened.
- Enter a scheme name in the input field and confirm with **OK**. The new system is immediately available in the table of schemes.

Deleting a scheme

- In the **Scheme** area, select the scheme which you want to delete using the selection arrow.
- Click on the adjacent **Delete** button.

Example of a simple, freely configurable filter

After entering filter

START DATE = [NOW] – [MONTH]

the data records of the last month are indicated.

Optionally, you may also define the above filter as follows:

START DATE = [NOW] + ([YEAR] – 13 * [MONTH])

Example of a combined filter

Fig. 36 shows the settings for defining the following combined filter:

FAB No. = 096 01 000001 AND START DATE >= [NOW] – 4 * [MONTH]

This filter is used to determine the measurement data of the **SePem** device with FAB no. 096 01 000001 which were measured during the last four months.

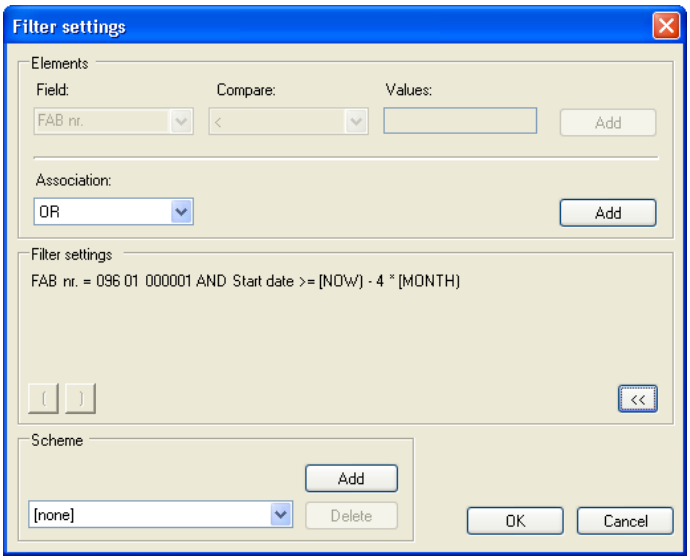


Fig. 36: **Filter settings** window with combined filter

11.1.1.6 Defining and assigning projects

Projects (or project names) are freely definable designations which can be assigned to one or several measurements. Projects help to make managing and administering measurement data easier and more efficient.

- In the **Show measurement data** window (fig. 31), select a line which you want to assign to a specific project or whose project assignment you want to change.
- Click on the **Project** button.
  The **Select project** window appears.

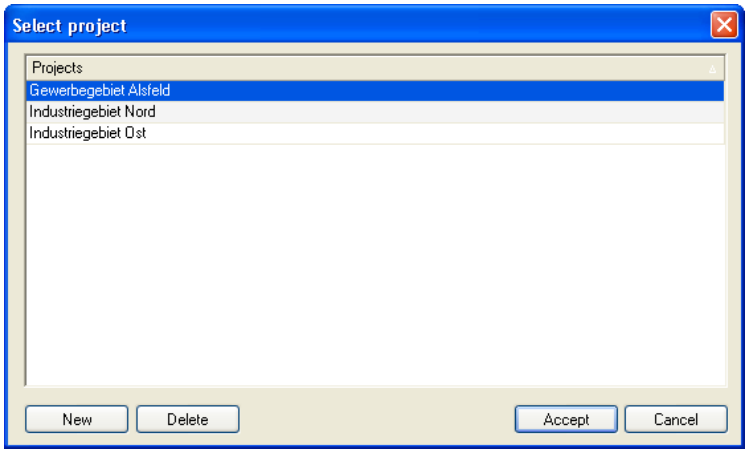


Fig. 37: **Select project** window

The **Select project** window includes all projects which are already set up.

- Select the desired project name.
- Click on **Accept**.
  The selected project name is taken over for the highlighted measurement (**Show measurement data** window).

Entering new project names

- Click on the **New** button. The **Create new project name** window is opened.
- Enter the new project name in the text field.
- Store the entry with **Accept**.

Changing existing project names

- Double-click on the project name which you want to change. The **Change project name** window appears.
- Change the entry in the text field.
- Store the change with **Accept**.

Deleting project names

- Select the desired project name.
- Click on the **Delete** button. The project name is deleted from the table of selectable projects.

  Even if the deleted project name does no longer appear in the **Select project** window, already existing links between the deleted project and the measurement data are maintained (**Show measurement data** window, fig. 31).

11.1.1.7 Defining and assigning measurement places

Measurement places and supplementary comments are used to describe the measurement data with more details. These entries can be freely defined and assigned to one or several measurements.

- In the **Show measurement data** window (fig. 31), select a line for which you want to assign a measurement place or comment or whose measurement place or comment you want to change.
- Click on **Meas. place**. The **Edit measurement places and comments** window appears.

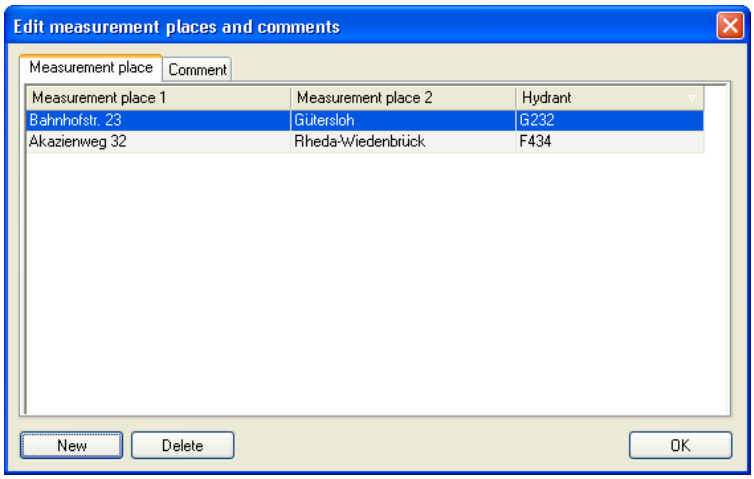


Fig. 38: **Edit measurement places and comments** window

The window has two separate tabs (**Measurement place**, **Comment**). Click on the desired tab to open it. Function-wise, both tabs are similarly structured. All measurement places and/or comments which were already entered are listed on the appropriate tabs.

- Select the desired measurement place or comment.
- Click on **Accept**.
  The selected measurement place or comment is taken over for the highlighted measurement (**Show measurement data** window, fig. 31).

Perform the steps described in the above section if you want to enter new measurement places or comments or if you want to delete or change existing entries (chapter 11.1.1.6).

11.1.1.8 Cancelling existing assignments between projects, measurement places, comments and measurement data

- In the **Show measurement data** window (fig. 31), select one or several lines whose assignment(s) you want to cancel.
- Press the letter **D** (**d**elete) on the keyboard. The **Delete entries** window appears.
- Select one or several desired options (**Projects**, **Measurement places**, **Comments**).
- Click on the **Delete** button. The assignment(s) is (are) cancelled.

11.1.1.9 Representing measurement data graphically

The **SePem** software is also capable of representing measurement data graphically. It is possible to call up the trend curves of up to four different data records at the same time.

Depending on the used type of sensor, up to four graphic display options are available:

- **Time**
- **Intensity**
- **Histogram**
- **Frequency spectrum**

Which options are available depends on the used type of sensor!

> ☞ **Note:**
> Define under **Settings** – **Program settings** – **Settings** – **Display type – Details** area the graphic type to be used as default when the **Details** windows is opened (see chapter 11.3.1.2).

- In the **Show measurement data** window (fig. 31) select one, two, three or four line(s) whose measurement data is to be represented graphically.
- Click on the **Details** button. The **Details** window is opened.

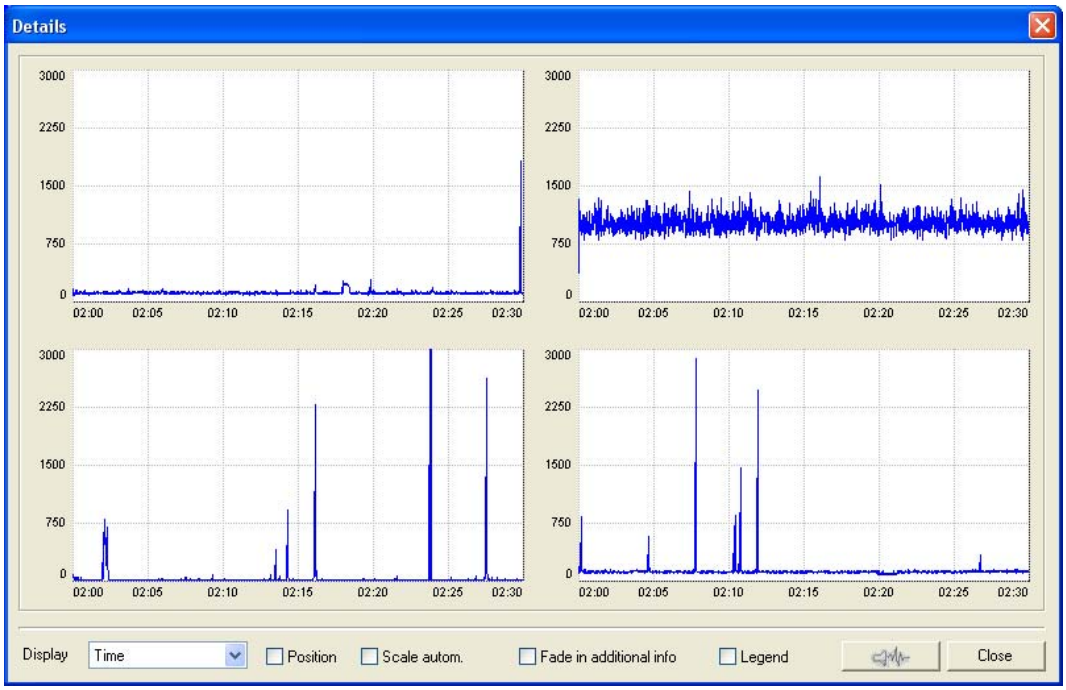


Fig. 39: Graphic display of four measurement data records

Each measurement data record is indicated as a separate diagram. **If only a single line is selected in the Show measurement data window, only a single diagram will be displayed in the Details window.**

- Select under **Display** the desired type of representation.

Supplementary functions for evaluating and analysing data	
Position	Indication of the current cursor position in the trend display (including co-ordinates on thex/ y axis)
Scale autom.	Optimised representation of the curve trend
Fade in additional info	Indication of evaluation details
Legend	Display of a legend informing about the used type of sensor
Audio function (button)	Audible play-back of measurement data; only available for noise sensors; independent of display type; technical requirement: sound card

It depends on the selected display type which supplementary function is available or not.

Display type	Available supplementary function			
	Position	Scale autom.	Fade in additional info	Legend
Time	X	X	X	X
Intensity	X	X	X	X
Histogram	X	X	–	X
Frequency spectrum	X	–	–	–

Zoom function (for enlarging the display)

You may zoom in the reading area of all display types – except for the frequency spectrum – with the help of the zooming function.

- Move the mouse over the trend display.
- Keep the mouse button pressed and move the mouse to draw a rectangle. The measurement places within the rectangle are zoomed in.
- Double-click on the rectangle to return to the standard display.

Note:
A section can only be zoomed in once. If required, return to the standard display by double-clicking on the trend display. Then, zoom in a new rectangle.

11.1.1.10 Interpreting trend curves for different display types

The following section includes information which may help you to interpret measurement details correctly. Two illustrations are available for each display type: one with leakage and one without.

> ☞ **Note:**
> All illustrations included in this chapter refer to **measurements with the noise sensor**. If other sensor types are used the trend curves may either look completely differently or are not available.

Time display for noise sensor

Time is represented on the x axis, The y axis is provided with a measurement value scale. Users can assign the indicated signal peaks to specific events.

A constantly present noise level (significantly larger than zero) may indicate a leak (fig. 40).

If the constantly present noise level is close to the zero level, it is less likely that a leak has occurred (fig. 41).
Short, high-level noise signals indicate, for example, cars which are passing by or water being drawn off by a consumer.

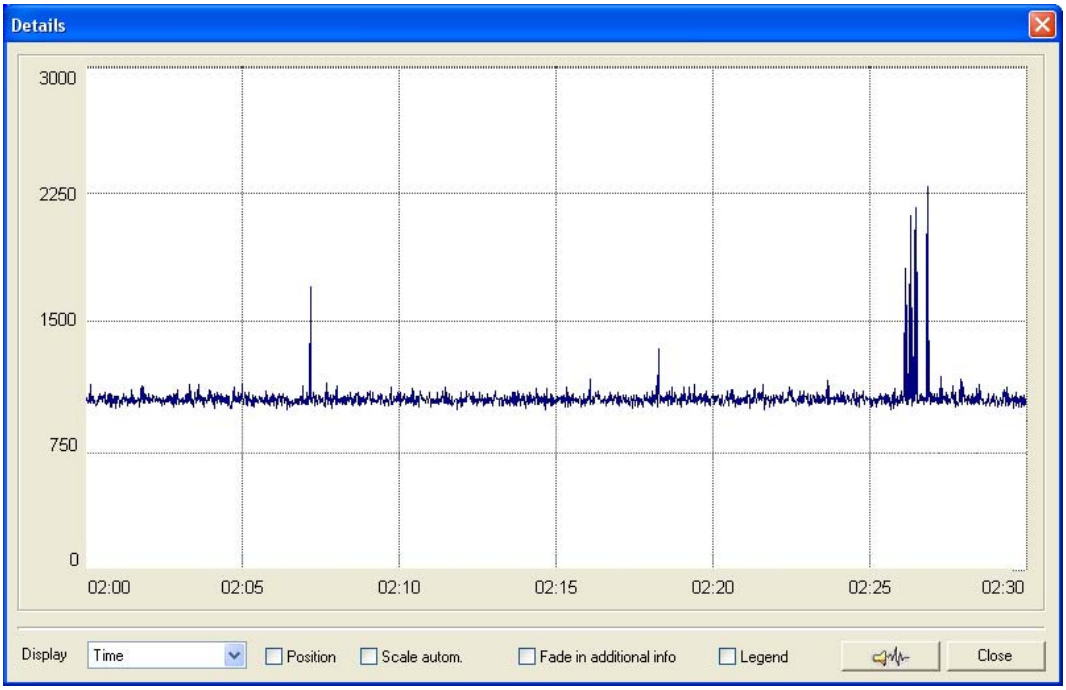


Fig. 40: Measurement data as a chronological function – high leak probability

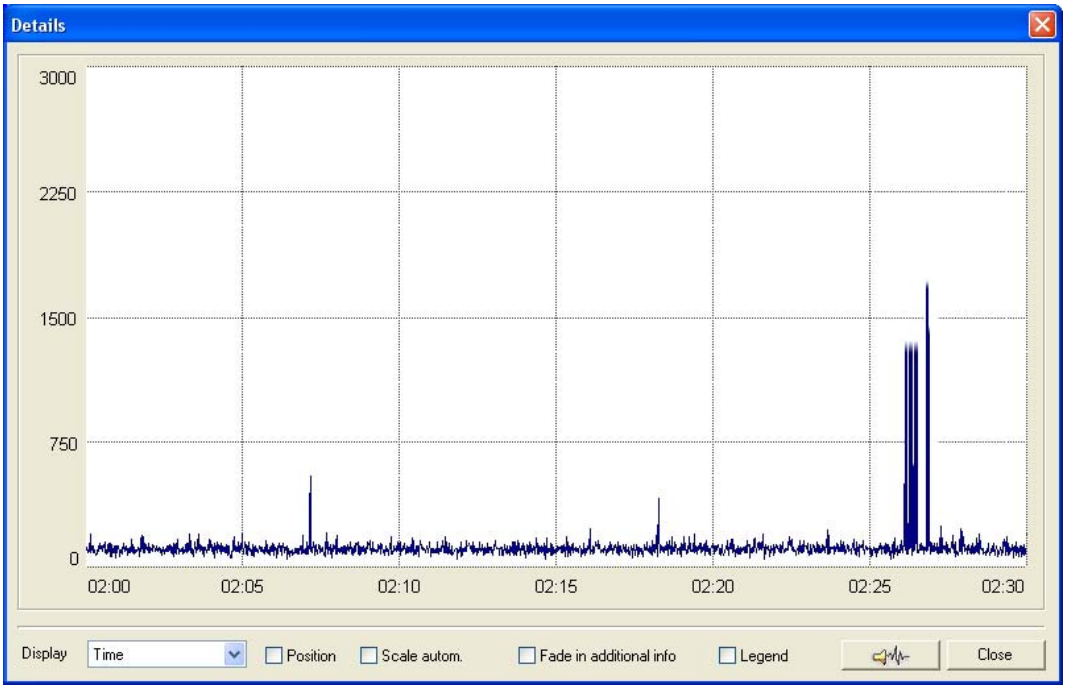


Fig. 41: Measurement data as a chronological function – low leak probability

Intensity display for noise sensor

Time is represented on the x axis, The y axis is provided with a measurement value scale. The measured levels are sorted according to their sound volume.

If the trend curve runs flat, only few interfering noise signals have occurred. The steeper the curve, the more interfering noise signals (e. g., cars which are passing by or water being drawn off) were detected.

A high starting point of the curve (t = 0) on the y axis indicates a permanent noise level, and thus also a leak (fig. 42).

If the starting point of the curve (t = 0) on the y axis lies close to zero, the leak probability is small (fig. 43).

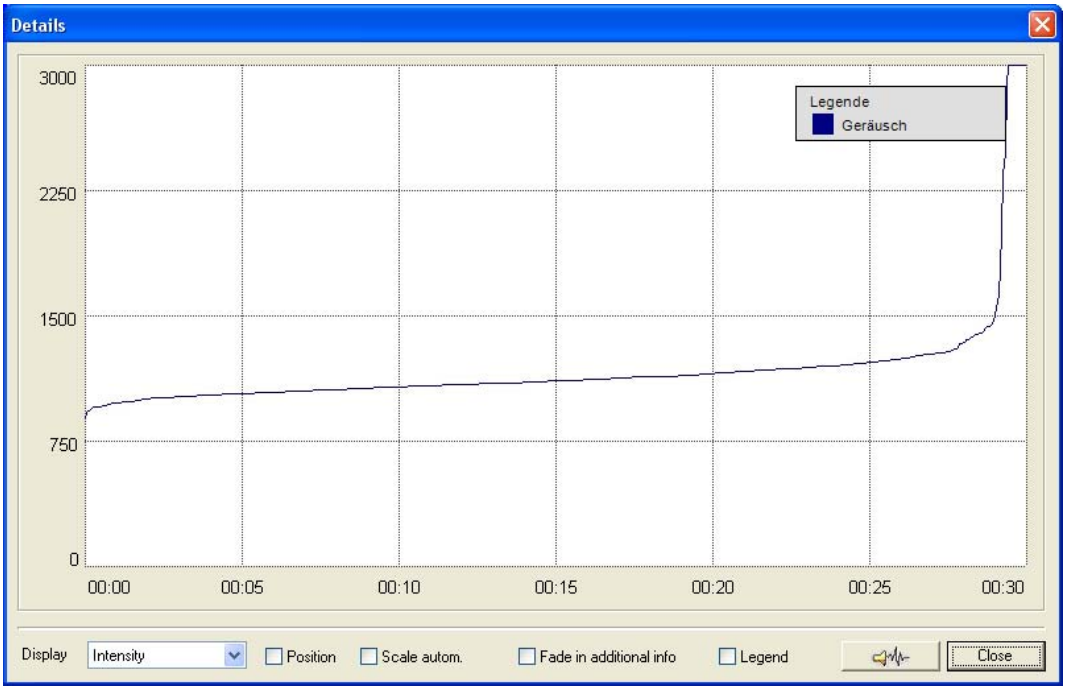


Fig. 42: Intensity display of the measurement – high leak probability

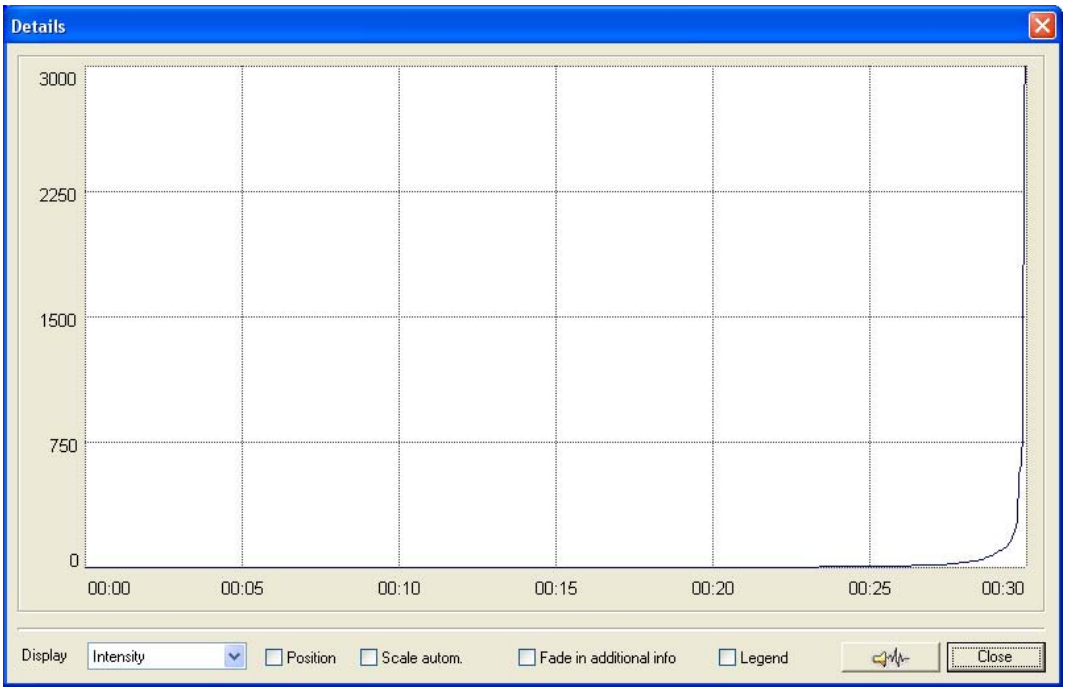


Fig. 43: Intensity display of the measurement – low leak probability

Histogram display for noise sensor

If the measurement data is displayed as histogram, the frequency of every recorded level signal is represented as percentage values. Time is represented on the x axis, percentages on the y axis.

The shape of the signal level indicates the **quality of the measurement**:

- good measurement:
  small gaps between level values = narrow cone
- bad measurement:
  large gaps between level values = wide cone

The **leak probability** depends on the distance between minimum level and zero point. The minimum level is defined as the smallest measured value represented in the percentage display (i. e. at the left edge of the trend curve). Outliers, i. e., individual small peaks deviating from the actual curve, are not considered in this case.
The leak probability is high if the gap between minimum level and zero point of the x axis is large (fig. 44).

If the minimum level lies close to the zero point of the x axis, the leak probability is small (fig. 45).

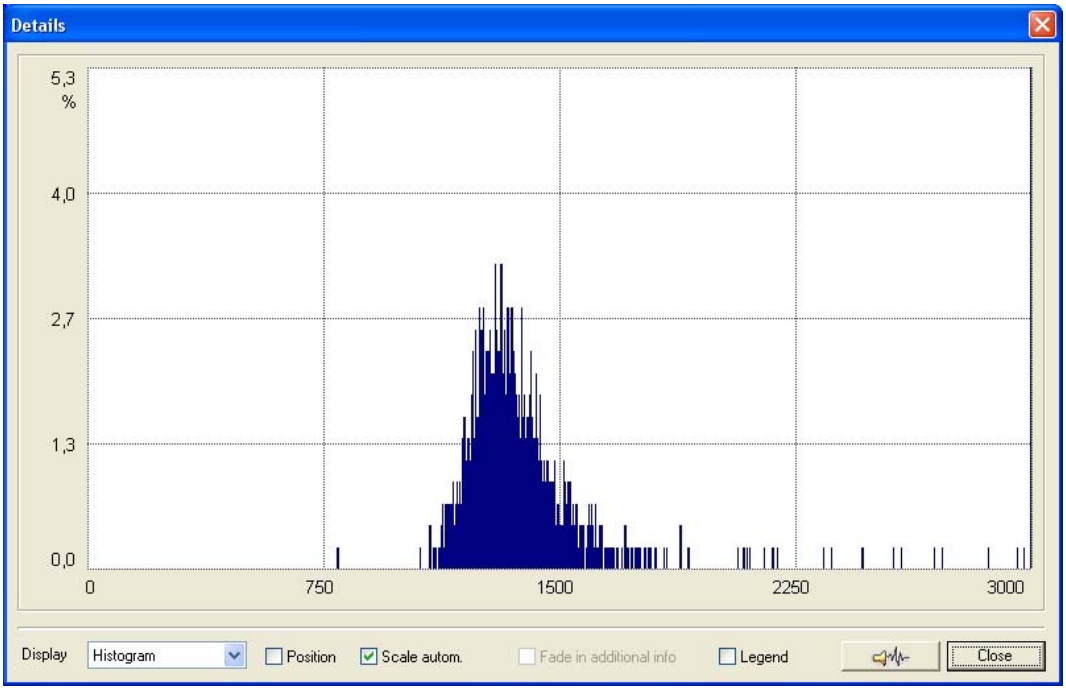


Fig. 44: Measurement data as histogram – high leak probability

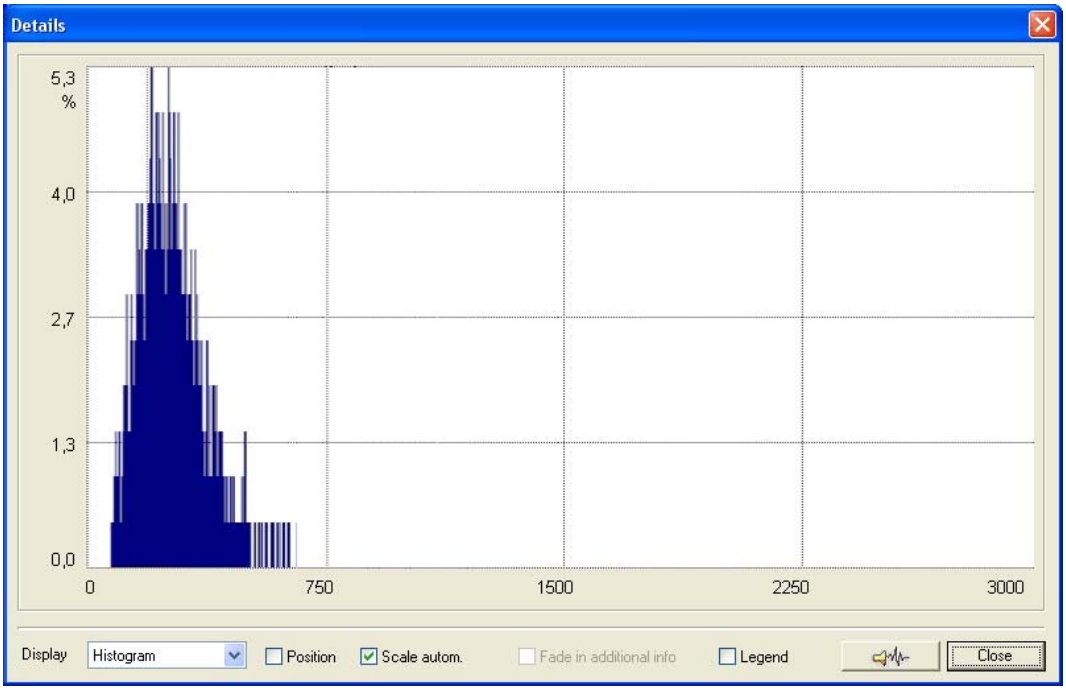


Fig. 45: Measurement data as histogram – low leak probability

Frequency spectrum display for noise sensor

This display type is used to reproduce the measured audible signals as a FFT function (FFT = Fast Fourier Transformation). The sound is analysed and broken down into individual sine tones. This means that, unlike at the other display types, not the sound volume, but the recorded sound as such is analysed.

The y axis represents the sound volume (relative values), the x axis the frequency.

If the curve has a wide, uniformly increasing/decreasing shape above the background noise, it is highly probable that the (entire) noise represents a leak (fig. 46).

If the curve, on the other hand, contains individual narrow peaks which are deviating extremely from the baseline, a leak is not very likely (fig. 47).

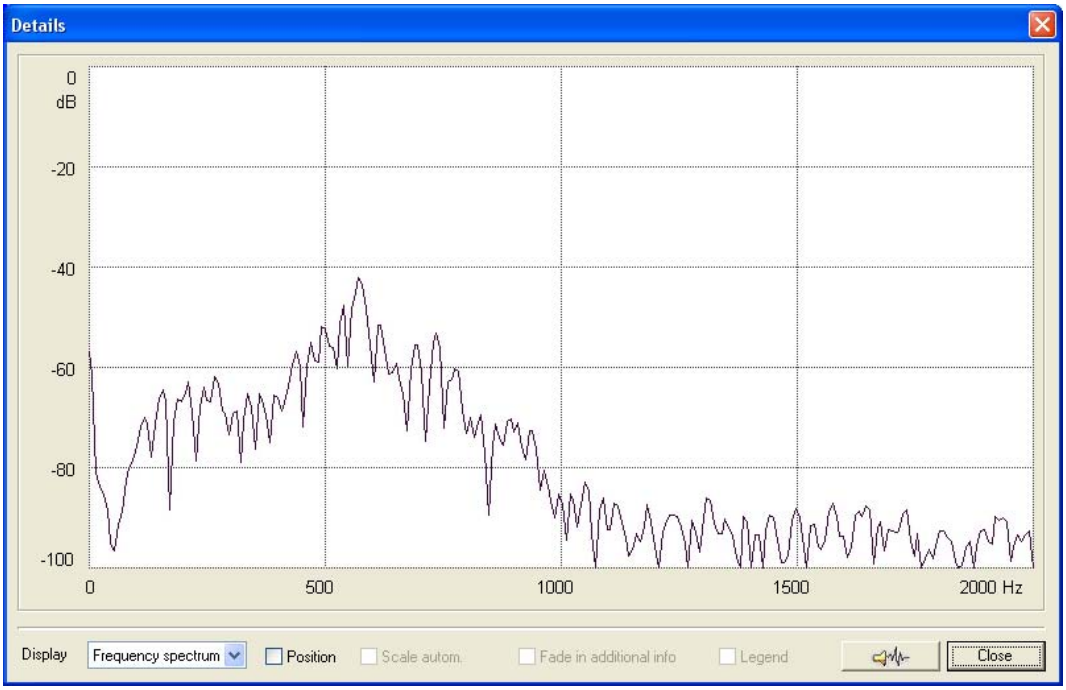


Fig. 46: Frequency spectrum of a measurement –
the sound represented in the display is probably a leak noise

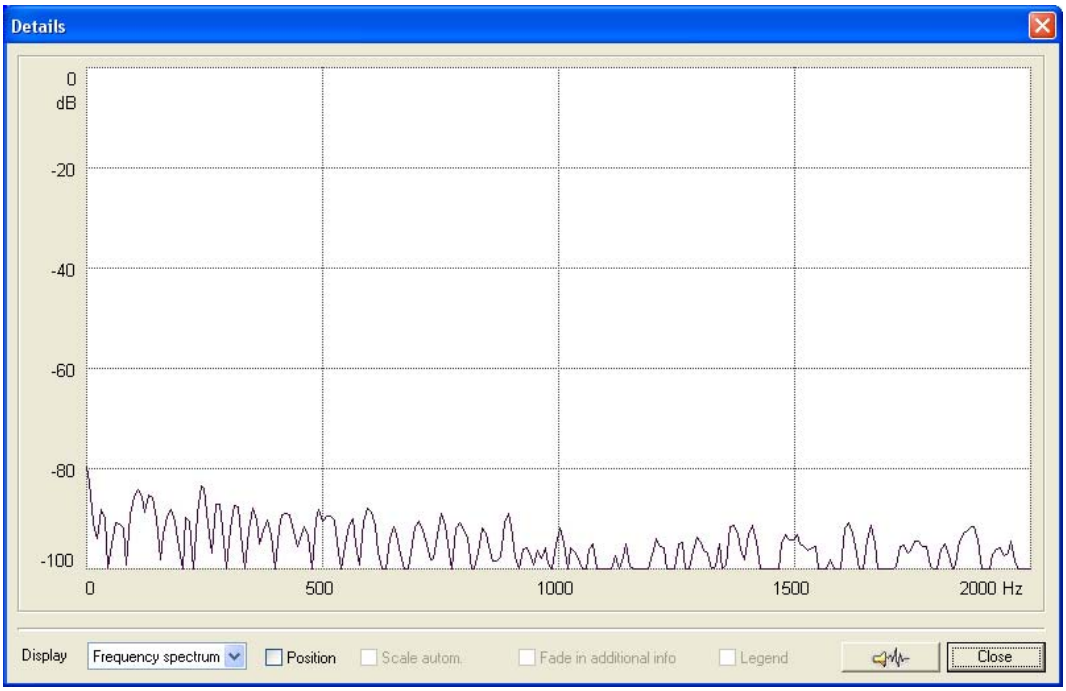


Fig. 47: Frequency spectrum of a measurement –
the sound represented in the display is no leak

11.1.2 Editing measurement places and comments

Measurement places and comments are used to describe measurement data in detail. They can be entered or deleted without independent from the relevant measurement places and comments.

You can therefore manage all measurement places or comments separately, so that you only need to assign them to the measurement data (see chapter 11.1.1.7).

- In the menu bar, click on **File** – **Handle measurement places and comments**. The **Edit measurement places and comments** window appears.

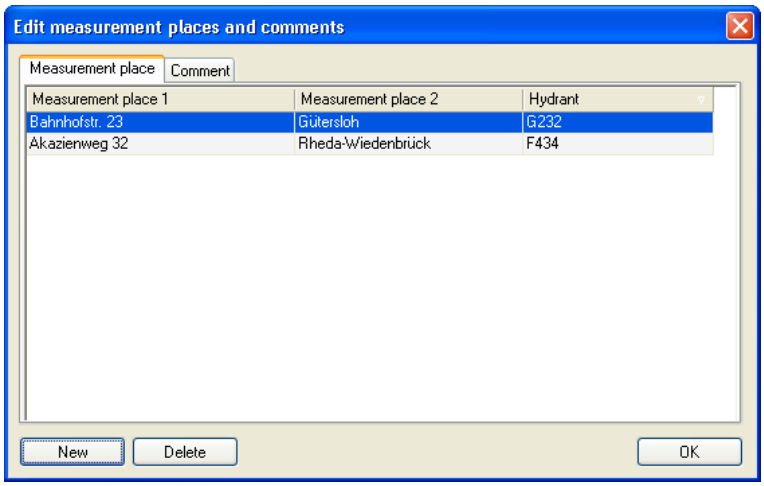


Fig. 48: **Edit measurement places and comments** window

The window has two separate tabs (**Measurement place**, **Comment**). Click on the desired tab to open it. Function-wise, both tabs are similarly structured. All measurement places and/or comments which were already entered are listed on the appropriate tabs.

- Then, close the window with **OK**. All changes are stored.

Entering new measurement places/comments

- Click on the **New** button. Either window **Create new measurement place** or **Create new comment** appears.
- Enter the new measurement place or comment in the text field.
- Store the entry with **Accept**.

Changing a measurement place or comment

- Double-click on the measurement place or comment which you want to change. Either window **Change measurement place** or **Change comment** appears.
- Perform the desired changes.
- Store the changes with **Accept**.

Deleting a measurement place or comment

- Select the measurement place or comment which you want to delete.
- Click on the **Delete** button. A message appears on screen.
- Confirm the deletion with **Yes**. The entry is removed from the list of registered measurement places or comments.
  Note that already existing links between the deleted measurement place or comment and the measurement data are maintained!

11.1.3 Repairing the database

All measurement data records are stored in the **SePem** database. This database can be **compressed and repaired in a single step.**

The repair function is particularly useful when a system error occurs during storing or loading the database.

> ☞ **Note:**
> If the **SePem** database contains a high number of measurement data records, you can reduce the access time by compressing the measurement data.

- In the menu bar, click on **File** – **Repair and compress database**. After a short time a message appears on screen that the database was compressed and repaired successfully.
- Confirm with **OK**.

11.1.3.1 Repairing the database using the program's properties dialog

If the **SePem** program cannot be started anymore, an internal error in the **SePem** database may be the cause of the problem. In this case, you may use a second option for repairing the database.

- Use the Windows user interface (desktop) for this.
- Click with the **right mouse button** on the icon of the **SePem** software. A menu pops up.
- Click on **Properties**.
  A window with the **SePem 02 properties** is called up.

- In the input field, enter a path under **Target** (**Shortcut** tab). Add the following command parameter:

  "...\SePem 02\SePem.exe" **/:RepairDB**

> **Note:**
> When entering the command, pay attention to the blank between the quotation mark (") and the slash (/).

- Confirm your entry with **OK**.
- Start the **SePem** software. After a short time a message appears on screen that the database was repaired and compressed successfully.
- Delete the entry after repairing and compressing. Otherwise the **SePem** database will be repaired automatically every time the program is started.

11.1.4 Importing measurement data

Archived measurement data which was stored in an external database beforehand (with the help of the export function; see chapter 11.1.5), can be re-imported into the **SePem** database any time.

> ☞ **Note:**
> It is only possible to import measurement data records which were saved as **MS Access 97/2000 (*.mdb)** files.
> In addition, these data records must have been exported with the function **All data** beforehand (see chapter 11.1.5).

- In the menu bar, click on **File** – **Import**. The **Open** dialogue appears.
- Select the file which you want to import. Confirm your selection with **Open**.

If you want to import measured data from an external database which was archived on CD, you must first remove the write protection of the file.

- Open the Windows Explorer for this. Copy the measurement data to the **SePem** installation directory of your hard disk.
- Click on the file with the right mouse button. A menu pops up.
- Click on **Properties**.
- Under **File attributes**, remove the tick from the **Write protected** check box.
- Confirm with **OK**.

11.1.5 Exporting measurement data

Measurement data which you do not need for your current work can be archived in the **SePem** database. This feature helps you to manage and organize your **SePem** database, therefore permitting fast and easy data access.
Archived measurement data can be re-imported any time (see chapter 11.1.4), provided that specific settings were used for exporting.

- In the menu bar, click on **File** – **Export**. The **Export measurement data** window appears.
- Click on the **Expand >>** button to access all available export options.

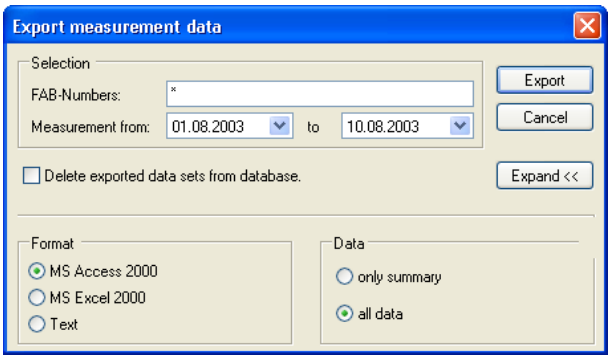


Fig. 49: **Export measurement data** window – extended view

- Determine which measurement data you want to export. At the end of this section, you find a description of all available settings.
- Click on **Export**. The **Save export file** window is opened.
- Enter a file name and select a target directory.
- Click on the **Save** button. The export may take some time depending on the file size.

Selection settings

FAB-Numbers	Enter the serial numbers of the desired **SePem** devices. You may also export the measurement data of a single **SePem** device. In this case, enter only one serial number. Use the wildcard * (asterisk) if you want to select several FAB numbers. The asterisk (*) stands for any number of signs or characters. It can either be used as the first or last sign of the character string. Use a semicolon (**;**) as separator if you want to export a specific range of FAB numbers.
Examples	If you enter **096 01***, all data records of the **SePem** devices whose FAB number begins with 096 01 are exported. When entering FAB numbers, pay attention to the blank. If you enter **096 01 1*; 096 01 7***, only the data records of the **SePem devices** whose FAB number begins with 096 01 1 and/or 096 01 7 are exported.
Measurement from ... to	Select the period of time during which the data was measured.

Format settings

MS Access 2000 **MS Excel 2000** **Text**	Select the format to be used for exporting data records.

> **Note:**
> Measurement data can only be re-imported into the **SePem** database if the option **MS Access 2000** was selected for the export beforehand.

Data settings

	Determine the extent of data of the selected measurements to be exported.
only summary	all data records, except for graphics and sound signals
all data	all data records, including graphics and sound signals

Note:
Measurement data can only be re-imported into the **SePem** database if the option **All data** was selected for the export beforehand.

Additional settings

Delete exported datasets from database	Enable this check box if you want to delete the selected measurements from the **SePem** database right after the export.

11.1.6 Printing

Use the **Print** function to print out measurement data. (Detailed information on printing out distribution lists can be found in chapter 8.3.5.) The settings for configuring the hardcopy format and margins are defined with the help of the **Adjust page settings** menu item (see chapter 11.1.6).

> **Note:**
> The print function can only be called up when the **Show measurement data** window is opened.

- Open the **Show measurement data** window (see chapter 11.1.1).
- Select all measurements which you want to print out in the table.
- In the menu bar, click on **File** – **Print**. The **Print** window is opened.

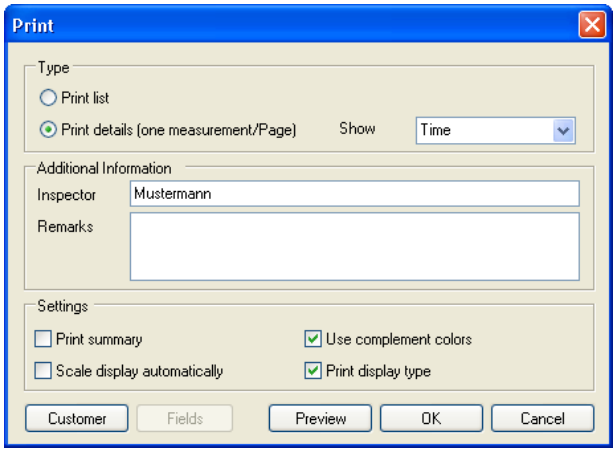


Fig. 50: **Print** window

- Decide whether you want to print out **Print list** or **Print details (one measurement/Page)**. This option may have effects on the selection of the **Display** and further **Settings**. You can find more detailed information in chapters 11.1.5.1 and 11.1.5.2.
- In the **Additional information** area you can enter supplementary information on the **Inspector** (i. e., the person who performed the measurement) and **Remarks**.
- If you have selected more than a line in the **Show measurement data** window (fig. 31), you may also enable the **Print summary** check box in the **Settings** area. Select the option (i. e., a tick appears in the check box) when the printout is to

include a separate **Result of the measurements** field above the list. This field contains an overview of the most frequent comments.

- The header of the individual printouts includes information on the customer (i. e. the submitter of the measurement). Click on the **Customer** button to check or modify the information. The **Customer** window appears.

Fig. 51: **Customer** window

The input fields contain the current entries. Change the indicated data, if required. The input fields can also be empty. In this case, only the keywords (customer, contact, etc.) are printed in the header – without the associated information.

- Accept the data in the **Customer** window with **OK**.
- The following applies only to WIN NT/2000/XP:
  Click on the **Preview** button if you want to check the layout of the printout. A window appears showing the printout in miniature. Close the window by clicking on the **Close** button.
- Start the printout with **OK**. The **Print** window is then closed automatically.

> **Note:**
> The printout can also be started from the preview window. You need to close the preview window using the **Close** button. Then, click on **Cancel** in the **Print** window.

11.1.6.1 List printout

The list printout provides a compact, precise overview of the selected measurement data. The list view is similarly structured as the **Show measurement data** window (fig. 31). The number, order and width of columns is freely selectable.
Note, however, that the selected paper format definitions (see chapter 11.1.6) also determine the available space for the list printout. This means that the number and width of columns may be particularly affected.

- Click on the **Fields** button. The **Field selection** window is opened.

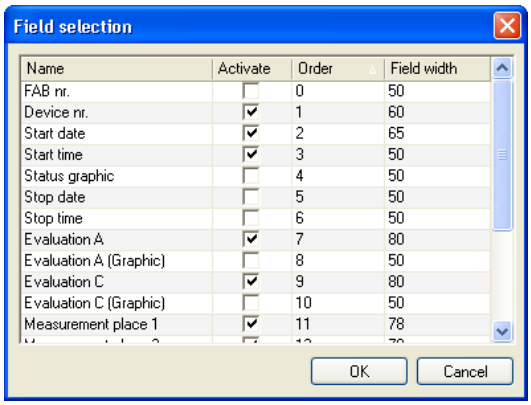


Fig. 52: **Field selection** window

Each line of the table represents an available field. If a tick is set in the **Activate** column, the appropriate field will appear as a column in the printout.

You can change the activation status, order and field width of the individual fields.

- Double-click on the line which you want to edit.
- The **Change field selection** window appears.
- Perform the desired changes. Note that you may need several runs to optimise the field **Width** (i. e., width of the column) (start a sample printout or check the layout in the preview window).
- Click on **Accept**.
- Configure the list printout according to your requirements and close the **Field selection** window with **OK**.

11.1.6.2 Detail printout

In detail printouts only a single measurement is represented per page.

- Select the type of graphic under **Show** (time, intensity, histogram, frequency spectrum) to be used in the printout.
  The graphics will be printed out as shown in **Show measurement data – Details** window.

Conventions in the settings area

- Select the **Scale display automatically** check box when the graphics are to be printed out with optimised trend curve (= zoomed in).
- Select the **Use complement colors** check box to ensure that the graphics are printed out conforming to the screen settings.

  Example:
  The graphics are indicated on the screen as yellow trend curves against a black background. If you select the complementary option, the colors are reversed (i. e. blue trend curves against a white background). The curves are easier to view on the printout and the printer consumes less ink.
- Select the **Print display type** check box if the type of graphics, which was selected under **Show** beforehand, is to be printed in the right top corner.

11.1.7 Adjust page settings

You do not need to exit **SePem** software to define paper settings (size, alignment, margins) or to select a specific printer.

- In the menu bar, click on **File** – **Adjust page settings**.
  The **Adjust page settings** window is opened.
- Enter or select the desired settings.

  Note that the width of **Margins** determines the size of the actual printout space. We recommend to set margins which are not too wide, in particular when you want to print out lists.
  Select **Horizontal** as alignment type if your printout contains many columns.
- Click on the **Printer** button when you want to select another printer than your default printer for printing.
  A new window appears. Select the desired printer and close the window for selecting a printer with **OK**.
- Take over all settings in the **Adjust page settings** window with **OK**.

11.1.8 Exiting the SePem software

- In the menu bar, click on **File** – **Close**.

OR

Press the key combination Alt+F4.

The program is immediately exited in both cases.

11.2 The Devices menu

The **Devices** menu comprises the following functions:

- **Prepare** (**SePem** devices) **for measuring**
- **Adjust** device **settings**
- **Read measurements**
- **Start diagnostic**

11.2.1 Prepare for measuring

Before placing **SePem** devices ”on the spot” (i. e., the measurement location), you need to prepare and program them appropriately. Define when, how long and in which intervals measurements are to be performed. Use the **SePem** software to set these steps. The information is then transmitted to the electronic units of the individual devices.

- In the menu bar, click on **Devices – Prepare for measuring**.

OR

Press function key F9 on the keyboard.
This starts the automatic data transfer between **SePem** Software and devices. The software checks the actual state of the devices which are currently inserted in the charging adapter. During the transfer a window is shown informing on the progress of transmission.

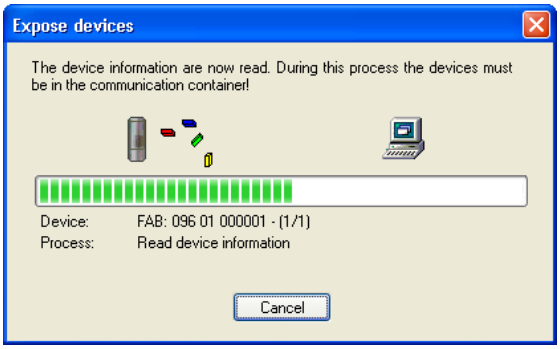


Fig. 53: Progress of the data transmission

Then, the **Expose devices** window appears.

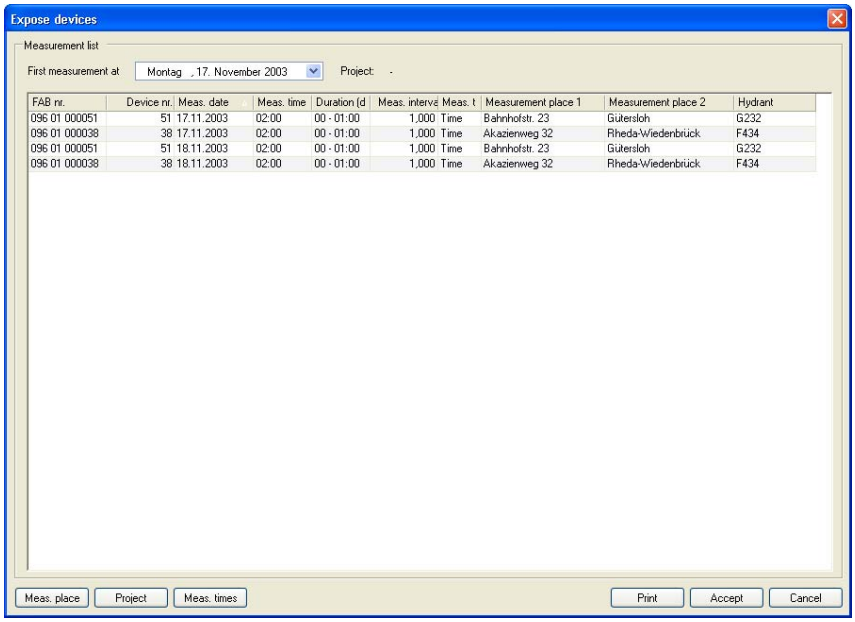


Fig. 54: **Expose devices** window

The table includes all **SePem** devices recognized by the **SePem** software. This table is structured as a **list of measurements**.

The following applies to this measurements list:

Number of entries = Nr. of devices x Nr. of measurements

> **Note:**
> The values indicated in the measurement list remain valid for all measurements until they are changed !

Preparing the **SePem** devices for exposing comprises the following steps:

- Defining **measurement times**

  All measurements are based on a **measurement time scheme**. Configure this scheme according to your requirements.
  Proceed as described in detail in chapter 8.3.2!

  Ch. 11.2.1.1 includes an overview of all adjustable parameters of measurement time schemes.

- Assigning a **measurement place**

  Project names and specifications on the measurement place (e. g. place, street, hydrant number) help you to set up a plan for placing the devices and to manage the measurement data.
  Proceed as described in detail in chapter 11.1.1.7!

If you want to use the measurement list right away without assigning measurement places, you can also assign the recorded measurement data to the measurement places later on.

- Assigning a **project**

  Project names may help you to manage the measurement data more efficiently. In contrast to measurement places (which can be assigned individually to the entries), project names are always assigned to the entire measurement list. This means that an assigned project does not appear in the individual lines of the measurement list but in its header.
  Proceed as described in detail in chapter 11.1.1.6!

  If you want to use the measurement list right away without assigning a project, you can also assign the recorded measurement data to projects later on.

After that, you need to perform the following steps in the **Expose devices** window (fig. 54):

- Enter under **First measurement at** the date (see chapter 8.3.1) at which the first measurement of the scheme defined under **Meas. times** (see chapter 11.2.1.1) is to be started.
- Define the transfer of the **SePem** devices.
  This requires that a single measurement place was assigned to the individual devices beforehand.
  Double-click on the device which you want to prepare. The **Change measurement place** window appears (fig. 25). Enter here the desired data (see chapter 8.3.4).
- Click on the **Print** button to start the printout of the distribution list table (see chapter 8.3.5).
  This requires that a measurement place or project was assigned to the devices beforehand.
- Transmit all settings to the **SePem** devices which are inserted in the charging adapter.
  Click on the **Accept** button for this. During the data transfer a window is shown informing on the progress of transmission. After the transmission a message appears. Confirm this message with **OK**.

11.2.1.1 Input parameters for the entries of the measurement time scheme

As described in chapter 8.3.2, the **SePem** measurement time schemes consist of one or several entries. These entries include different values which are used for determining the chronological order of processing, the number of measurement repetitions and the type of measurement which is to be recorded.

> ☞ **Note:**
> Fig. 22 shows the **New entry** window which is described in the following section. This window is used to set up the measurement time scheme.

Settings for Measurement times

Date offset	Determines the date of the measurement, since **Measurement data =** Date **First measurement at** + **Date offset**
Format	**yy-mm-dd**, i. e., year - month - day Caution! The input fields are programmed in such a way that **you do not to enter a leading zero in the one-digit range of numbers**.
Example	**0-2-0** ... The measurement is performed 2 months after the date defined under **First measurement at**
Meas. time	Start time of the measurement
Format	hh:mm (hours : minutes) Caution! Click on the appropriate input field to select either hours or minutes. **Only highlighted numerical values can be modified, either by entering new values or by using the UP/DOWN arrow.**
Duration	Duration of a measurement, i. e., the interval during which the individual measured values are determined.
Format	**dd-hh:mm**, i. e. day - hours : minutes Pay attention to the notes on entering values for date offset and measurement time !

Interval	Interval between the recording of two separate measured values
Format	**sec.**, i. e. seconds
Remark	The values in the list field depend on the used type of sensor.

Settings for Number of repeats

This option helps you to prepare a measurement time scheme with many identical entries which have all the same time difference of one day.

No repeats

- Uncheck the check box (no tick displayed) if you want to take over the entries from the **Meas. time** area.
- Enter **Date offset 0**-**0**-**0**.

days

- Enter the number of consecutive days during which the basic scheme is to be repeated.

Example

4 ...
The measurement time scheme contains **5** identical entries with only one difference: the date offset of one day (1 basic entry + 4 repetitions).

Settings for Recording

Meas. type	The type of measurement (**Time**, **Stationary**, **Event**) (see overview in the following section)

Description of measurement types

Time	Data recording over a determined period of time (measurement duration)
Stationary	Permanent monitoring; data is recorded around the clock (24 h) with a defined measurement duration
Event	Monitoring over longer periods; data is only recorded when a specific event occurs (see definition of events in chapter 11.2.2.2); this option is particularly useful when pressure sensors are used.

11.2.2 Adjust settings

It depends on the type of device which device parameters can be changed, i. e., they may affect the configuration of single or all **SePem** devices.

- In the menu bar, click on **Devices** – **Adjust settings**.

OR

Press function key F12 on the keyboard.
This starts the automatic data transfer between **SePem** Software and devices. The software checks the actual state of the devices which are currently inserted in the charging adapter. During the transfer a window is shown informing on the progress of transmission.

The **Adjust device parameters** window appears.

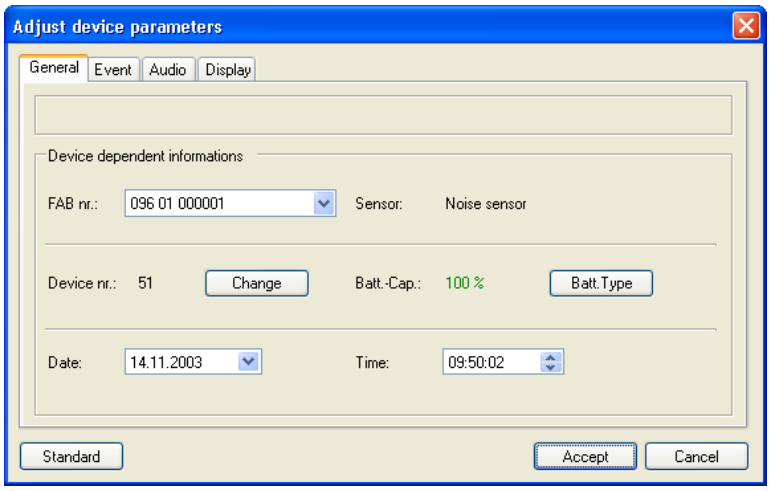


Fig. 55: Adjust device parameters

It contains four tabs for setting up the following parameters:

- **General** (device-specific)
- **Event** (concerning all devices)
- **Audio** (concerning all devices)
- **Display** (concerning all devices)

Note:
If the tabs **Event**, **Audio** and **Display** are not shown on screen, you may have to alter the default settings. You can set up the tabs for display any time by changing the default setting (**Settings** – **Program settings** – **Settings** – **Deactivate** area).

The tab setting options are described in detail in the following chapters.

- Click on the **Standard** button if you want to return to the default settings (i. e., the tabs **Event**, **Audio** and **Display** will be displayed).
- Transmit all settings to the **SePem** devices which are inserted in the charging adapter.
  Click on the **Accept** button for this. During the data transfer a window is shown informing on the progress of transmission. After the transmission a message appears. Confirm this message with **OK**.

11.2.2.1 General device parameters

> **Note:**
> **General device parameters** are set up for **individual devices**. They refer only to the **SePem** device whose **FAB number** is currently selected.
> This means that certain entries need to be defined for every single **SePem** device which is to be used.

- In the **Adjust device parameters** window (fig. 55), click on the **General** tab.
  The information indicated in the top line is taken from the user data (see chapter 11.3.1.1).

Settings for Device dependent information

FAB nr.	Serial number of the **SePem** device which you want to configure
Sensor	Indication of the sensor type
Device nr.	User-definable number required for the effective identification of the device
Change	Click on this button if you want to change the indicated number. Pay attention to the recommendation listed in chapter 5! Caution! The button may be disabled, depending on the selected default setting (see chapter 11.3.1.2)
Batt. Cap.	Indication of the remaining capacity of the inserted batteries or accumulators If the accumulators are not yet completely charged, a bar display appears.
Batt. Type	Setting of the battery or accumulator type See chapter 13 for further information.
Date **Time**	Date and time transmitted to the relevant **SePem** device The display corresponds to the system clock of the computer, provided that you have selected option **Synchronize device clock automatically** under **Settings** – **Program settings** – **Settings**.

11.2.2.2 Event parameters

The parameters on the **Event** tab refer to the **Measurement type – Event**. (See chapter 11.2.1.1 for information on how to select the measurement type).
This type of measurement is only started when a particular event occurs – in contrast to time measurements and stationary measurements. The settings on this tab determine the characteristics of the event triggering the start of the recording.

> **Note:**
> Event parameters refer to all connected **SePem** devices.

- In the **Adjust device parameters** window (fig. 55), click on the **Event** tab.

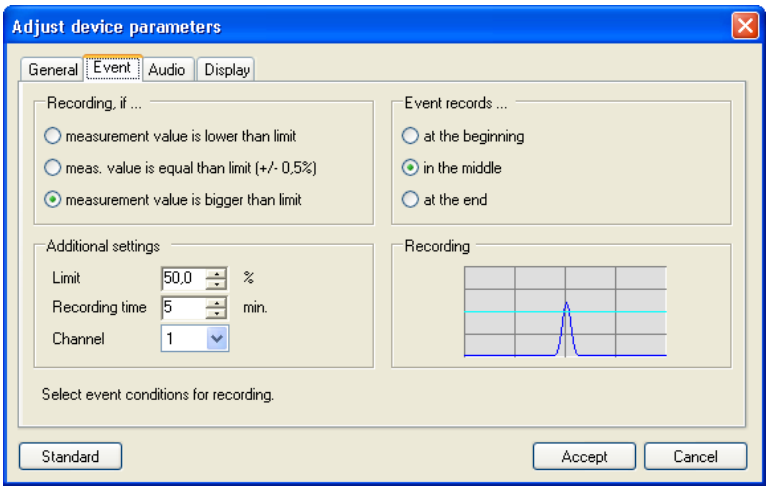
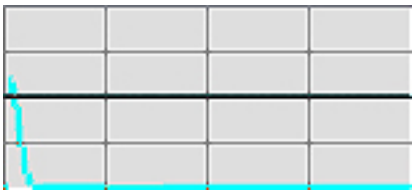
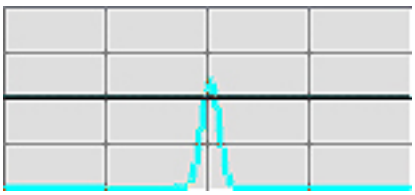
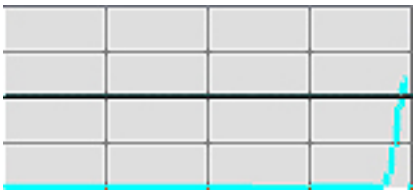


Fig. 56: Event parameters

Settings for Recording, if ...

This setting determines when an event is to be recorded, depending on the specific **limit value**.

Settings for Event records ...	Display under Recording
at the beginning The trace of the curve is particularly interesting **after** the event has occurred	
in the middle The trace of the curve is particularly interesting **before** and **after** the event	
at the end The trace of the curve is particularly interesting **before** the event occurs	

Additional settings

Limit	Percentage value indicating the condition whether an event is present or not
Format	**%** of the final value
Recording time	Duration of the event recording; must be shorter than the measurement duration
Format	**min.**, i. e. minutes
Channel	Measuring channel

Example for an Event measurement

Assumption	A water supply network is to be checked for surges (> 10 bar)
Consideration	Monitoring interval 24 h Set the shortest possible measuring interval to ensure that also short surges are detected
Conclusion	Event measurement is the optimum type of measurement Why are time measurements unsuitable? Together with the settings described in the following section, the volume of data would be 165 MB for single measurement with a duration of 24 h!]

Setting up the event parameters (fig. 56)

- Recording starts when the measured value is **larger** than the limit value
- Event should occur in the **middle** of the measurement
- Limit value: **50.0** % of end value
- Recording time **8** min.

Setting up the measurement time scheme (fig. 21)

- Date offset **0-0-0**
- Measurement time **00:00**
- Measuring duration **1-00:00**
- Measuring interval **0.001** sec.
- No repetitions **(tick** indicated in check box)
- Measurement type **Event**

11.2.2.3 Audio parameters

On the **Audio** tab you can determine whether sound is to be recorded over a specific interval – in addition to the actual recording of measured values. Sound recordings are **always performed at the lowest noise level**.

> **Notes:**
> Sound can only be recorded with noise sensors!
> Sound parameters refer to all connected **SePem** devices.

- In the **Adjust device parameters** window (fig. 55), click on the **Audio** tab.

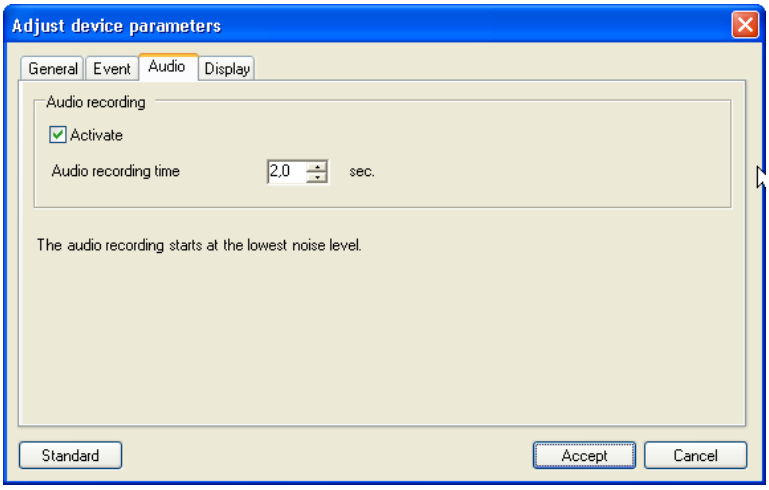


Fig. 57: Sound parameters

- Select the **Activate** check box if sound is to be recorded.
- Define under **Audio recording time** how many seconds the sound is to be recorded (0.2 s< t <8 s).
  Note that the duration of the recording is directly linked to the volume of actual data. We recommend to select a medium duration (for example 2 s).

11.2.2.4 Display parameters

All **SePem** devices are delivered with pre-set signal indicators (see chapter 10.3.2). You can change the display parameters of the red and green LEDs. The parameters of the yellow LEDs are fixed and cannot be changed.

> **Note:**
> Display parameters refer to all connected **SePem** devices.

- In the **Adjust device parameters** window (fig. 55), click on the **Display** tab.

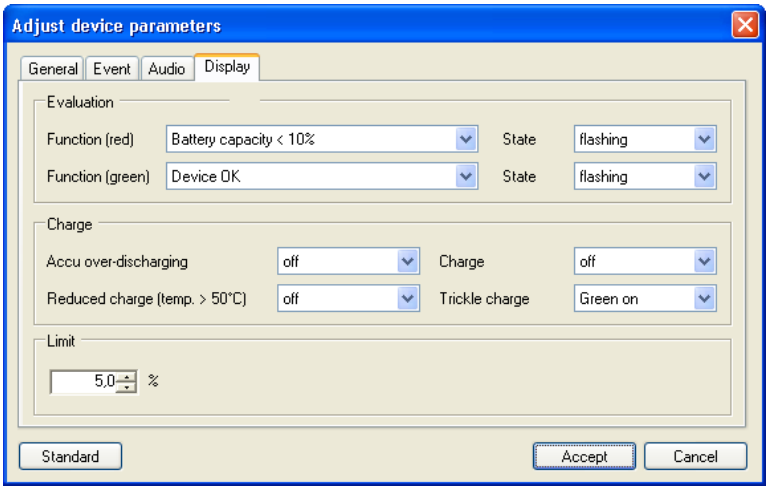


Fig. 58: Display parameters

Settings for Evaluation	
Function (red)	Selection of a function for the red LEDs (e. g., memory for measured values is full)
State	Optionally either **flashing** or continuously **ON**
Function (green)	Selection of a function for the green LEDs
State	Optionally either **flashing** or continuously **ON**

Settings for Charge

	These settings refer to the **charging state displays of the accumulators**. Select a LED for every individual charging state (**off** = none, **red**, **green**) and its corresponding display state (**ON**, **flashing**) when you do not want to use the default settings (see chapter 10.3.2).
Accu over-discharging	Accumulators are completely discharged (the normal discharge state is by far exceeded)
Charge	The accumulators are charged
Reduced charge (temp. > 50° C)	The accumulators are too hot, they are therefore charged with reduced charging current
Trickle charge	The accumulators are completely charged, they are only periodically recharged for charge retention

Settings for Limit

	The limit value refers to the **Evaluation** area. If a function is selected in this area whose threshold value is used as reference value (e. g., battery capacity < limit value), the value set in this field will be valid.
Format	**% of the final value**

11.2.3 Reading out the devices

This function is used to transmit all measurement data recorded by the **SePem** devices to the computer for further evaluation.
This feature may help you to save a lot of time, since the sound data (noise) is not transmitted with this function. You may read out the sound data of selected measurements later on (see chapter 11.2.3.1).

- In the menu bar, click on **File** – **Read measurements**.

OR

Press function key F10 on the keyboard.
This starts the automatic data transfer between **SePem** Software and devices. The software queries the measurement data of the **SePem** devices which are inserted in the charging adapter. During the transfer a window is shown informing on the progress of transmission.

Then, the **Show measurement data** window appears (fig. 31). The list contains both, old and new measurement data records.

> ☞ **Note:**
> In the **Show measurement data** window, proceed as described in chapter 11.1.1 (fig. 31).

11.2.3.1 Reading out individual sound data records

The function for reading out individual sound data records is based on the following assumptions:

- The relevant option is defined in the default settings (**Settings** – **Program settings** – **Settings**– **Miscellaneous** area, see chapter 11.3.1.2)
- The **SePem** devices have not yet received the corresponding measurements, i. e., they are not yet re-programmed

The **Show measurement data** window must be opened to permit reading out sound data (fig. 31):

- Select the desired measurement(s).
- Press the **A** key (for **A**udio data) on the keyboard. During the transfer a window is shown informing on the progress of transmission.

11.2.4 Start diagnostics

Every individual **SePem device** can be checked for errors. Certain error conditions are automatically detected and immediately eliminated while the diagnosis is still running.
Use the diagnostic function when error messages are displayed and for routine checks of the **SePem** devices.

> ☞ **Note:**
> The diagnostic function only checks whether the individual components respond to a signal or not (basic check). Measuring errors and errors which are only occurring once in a while cannot be detected with the diagnostic function.

During the diagnosis, the following components and functions are checked one after the other:

- **SePem** base unit (basic system, RAM, watchdog, data memory, clock)
- Sensor (instrument transformer, memory)
- Communications
- Battery charger (LED activation, accumulator)

Before the diagnostic function is started, it is required that the **SePem** devices which you want to check are placed in the charging slots.

- In the menu bar, click on **File** – **Start diagnostic**.

  The **Device select** window appears. The table includes all **SePem** devices which are currently inserted in the charging adapter.
- Select the desired device.
- Click on **OK** to start the diagnosis.
  The **Device diagnostic** window appears indicating the progress of transmission.

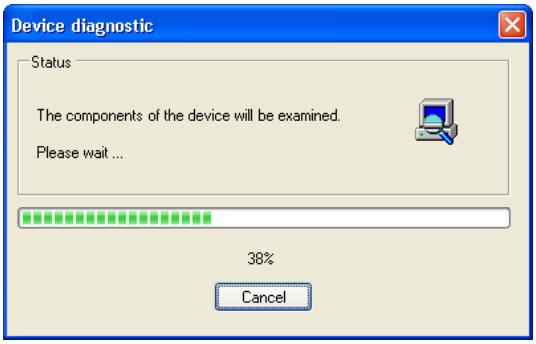


Fig. 59: Running diagnose of a **SePem** device

After a short moment, the software continues with checking whether the **LEDs are correctly functioning**.
The Device diagnostic window changes its appearance.

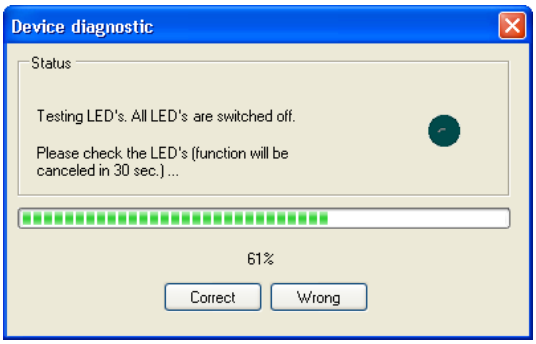


Fig. 60: LED test for the selected **SePem** device

Instead of the **Cancel** button (for cancelling the diagnosis), the buttons **Correct** or **Wrong** are now displayed.

- The software proceeds with testing all LEDs.
  Sequence of testing:
  all LEDs **off** > **green** LED **> red** LED > **yellow** LED

  Check the displayed text and the LED indicator panel/area of the charging adapter at the same time.

  Click on **Correct** if the diagnosis text does correspond to the state of the appropriate LED. **The interval for inspection is 30 seconds in each case.**

- After completing all diagnostic steps, the **Result of the device diagnostic** window appears.

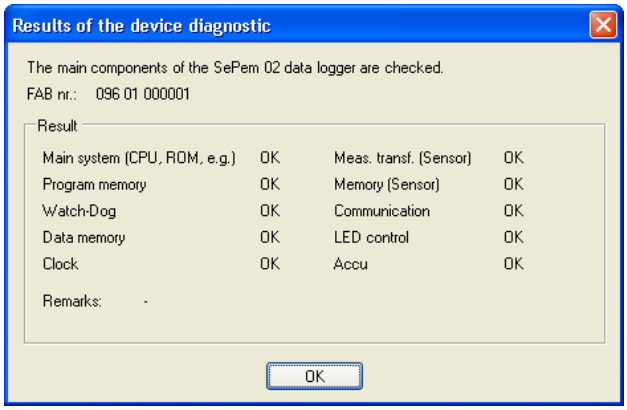


Fig. 61: **Results of the device diagnostic** window

All components/functions for which **OK** is indicated are functioning properly.

When an error message is indicated, proceed as follows:

Faulty component	Possible cause/troubleshooting
SePem device (**main system**, **program memory**, **watch-dog**, **data memory**, **clock**)	Send **SePem** device to manufacturer for inspection
Sensor (**measure-ment transformer, memory**)	Send sensor to manufacturer for inspection
Communication	An electro-magnetic interference source may be the cause of the trouble (e. g., a mobile phone which is switched on in the vicinity of the **SePem** system). Switch off these interference sources. Then re-start the diagnosis.
LED control	In many cases, a diagnositic error is the cause of the error. Repeat the diagnosis. If the error occurs again, repeat the diagnosis once again with another **SePem** device. If the error occurs now with the other device, return the charging adapter to the manufacturer. If the error does not re-occur during the 2nd inspection, the **SePem** device which was tested first is defective. Return it to the manufacturer.
Accu	Replace the accumulators.

11.3 The Settings menu

The **Settings** menu comprises the following functions:

- Entering or modifying **Program settings**
- Calling up the **Help assistant**

11.3.1 Program settings

The **SePem** software can be configured according to the user requirements.

- In the menu bar, click on **Settings** – **Program settings**. The **Default settings** window is opened with the **User data** tab.

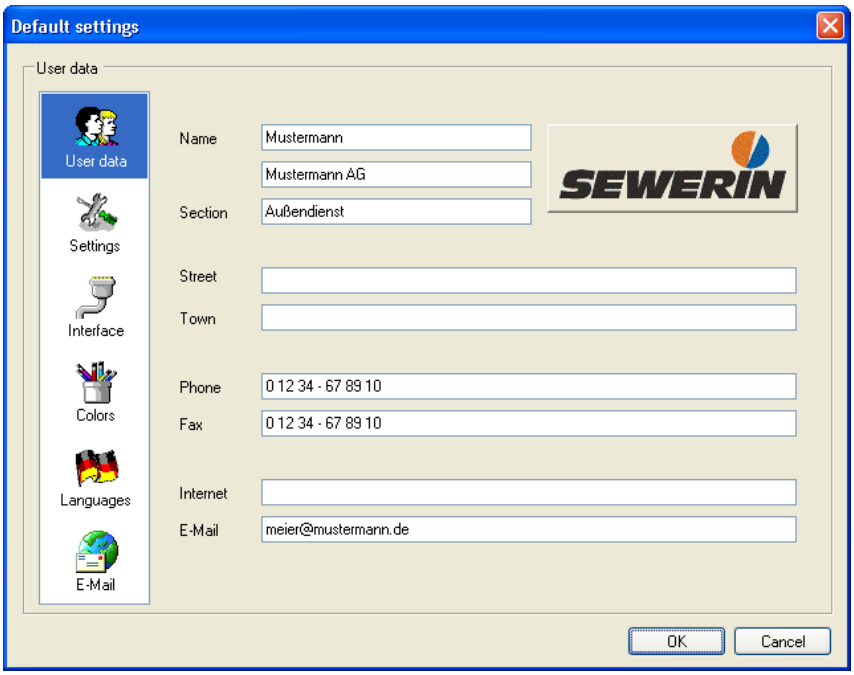


Fig. 62: **Default settings** window with User data tab

At the left edge of the window, various tabs are arranged. You can open the following tabs by clicking on the associated icons:

- **User data** (personal settings)
- **Settings** (general display options)
- **Interface**
- **Colors**
- **Languages**
- **E-Mail**

11.3.1.1 User data

Use the **User data** tab to manage your personal settings. These settings apply to the printout of distribution lists and measurement data – provided that the corresponding information was entered in the appropriate input fields beforehand.

- Click on **User data** in the vertical tab selection area of the **Default settings** window (fig. 62).

  Following data can be entered or managed:

  - **Name**
  - **Section** (i. e., department)
  - Address (**Street**, **Town**)
  - **Phone**, **Fax**
  - **Interne**t address, **E-Mail** address

- Confirm your entries with **OK**.

Company logo

In the right top corner of the **Default settings** – **User data** tab (fig. 62); you find the logo which will be displayed in the printouts (distribution lists, measurement data printouts).

As default, the SEWERIN logo is pre-set in the **SePem** software. **Note that if you want to use another logo, you may only select BMP files. The max. dimensions of the picture are limited to 189 x of 67 pixels.**

Proceed as follows when you want to change the logo:

- Click on the logo displayed on the **Default settings** – **User data** tab (fig. 62). The **Select your company logo** dialogue appears.
- Select the desired file. Click on **Open**. The new logo appears in the preview of the **Default settings** – **User data** tab.

11.3.1.2 Settings (general default settings)

The general default settings refer to:

- Selection of the default display type for the detailed display of measurement data
- Available functions in the **Expose devices** and **Adjust device parameters** windows
- Warning to be triggered when the battery/accumulator capacity falls below a defined level
- Miscellaneous

All default settings apply to every use of the program and remain valid until they are changed. The settings for **Display type – Details** can be changed for the currently displayed measurement data with the program running.

- Click on **Settings** in the vertical tab selection area of the **Default settings** window (fig. 62).
  The selected tab is opened.

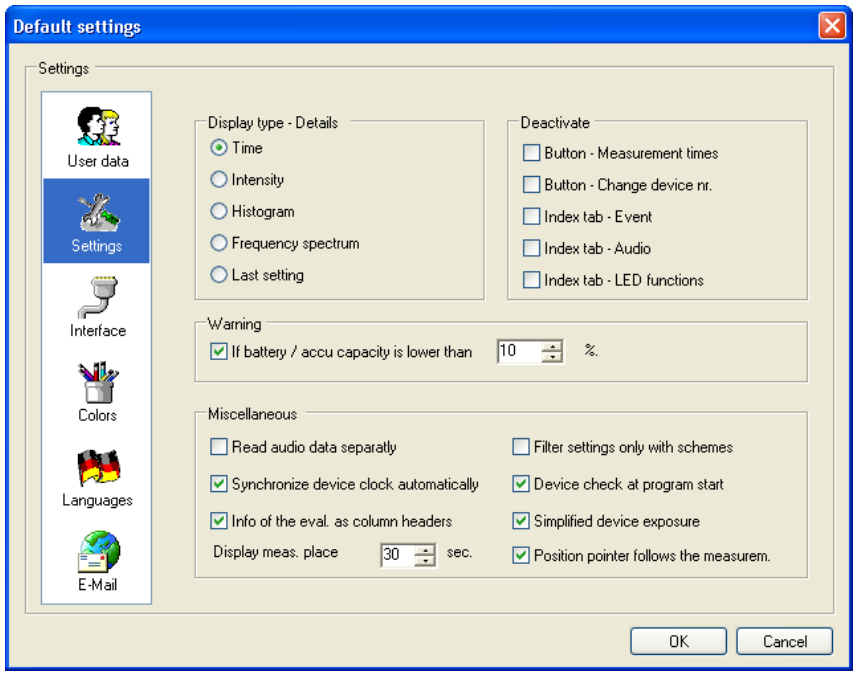


Fig. 63: General settings

- Enter or select the desired settings. All available options are described in the following overview.
- Confirm your settings with **OK**.

Settings for Display type – Details

	Default setting to be used when the **Show measurement data – Details** window is opened (fig. 39). See chapter 11.1.1.9 for more information on the display types.
Time	Chronological trend of the measurement
Intensity	The measured levels are sorted according to their sound volume
Histogram	Display of the number (i. e., frequency) of the recorded level values as percentages
Frequency spectrum	applies only to noise sensors, Display of the recorded sound as FFT function
Last setting	The last used graphics type is used when a display is opened

Settings for Deactivate

Selection of functions which are to be **disabled** in specific program parts.

Tick in the check box	**disables**	**the following in window**
Button – Measurement times	button **Measurement times**	**Expose devices** (fig. 54)
Button – Change settings devices nr.	button **Change**	**Adjust device** - Index tab **General** (fig. 55)
Index tab – Event parameters	Index tab **Event**	**Adjust device** (fig. 55)
Index tab – Audio	Index tab **Audio**	
Index tab – LED functions	Index tab **LED functions**	

Settings for Warning

	Default setting for determining if and when a warning message is output referring to the remaining capacity of the battery/accumulator.
If battery/accu capacity is lower than	● Enable the option (tick in check box) when a warning message is to be output.
%	● Enter a value for the remaining capacity. When the capacity falls below the set threshold the warning message is output.

Settings for Miscellaneous

Read audio data separately	This option helps to save time when reading out measurement data; it is possible to read out sound signals later on, provided that the corresponding messages are still stored in the **SePem** devices (see chapter 11.2.3.1)
Synchronize device clock automatically	The internal clock of the **SePem** devices is controlled by the system clock of the computer
Display meas. place	The duration of the interval how long the most important measurement data is indicated in **Show measurement data – Details** window when the mouse pointer is moved out of the graphics area (this setting does not apply to histograms)
Format	**sec.**, i. e. seconds
Maximum value	30 seconds
Filter settings only with schemes	This option can be used to block the use of freely defined filters (see chapter 11.1.1.5)
Device check at program start	automatic inspection of the **SePem** devices which is performed when the **SePem** software is started; includes a check for device errors, capacity of batteries/accumulators and whether a scheduled service deadline has been excemeded
Position pointer follows the measurement	The cursor position in the graphic display (**Show measurement data – Details**) is directly linked to the trace of the curve; this permits to determine the exact co-ordinates of individual measurement points

11.3.1.3 Interface

As default, the **SePem** software is able to detect and identify automatically the interface to be used for the data transfer between **SePem** device(s) and computer.
In addition, an interval (**Time-Out time**) is pre-set during which the internal communication between computer and **SePem** device has to occur (i. e., the time for data transmissions). The default time applies only to individual devices. It may be necessary to set a higher time value when an older computer with limited resources is used.
Both default settings can be changed.

- Click on **Interface** in the vertical tab selection area of the **Default settings** window (fig. 62).
  The selected tab is opened.

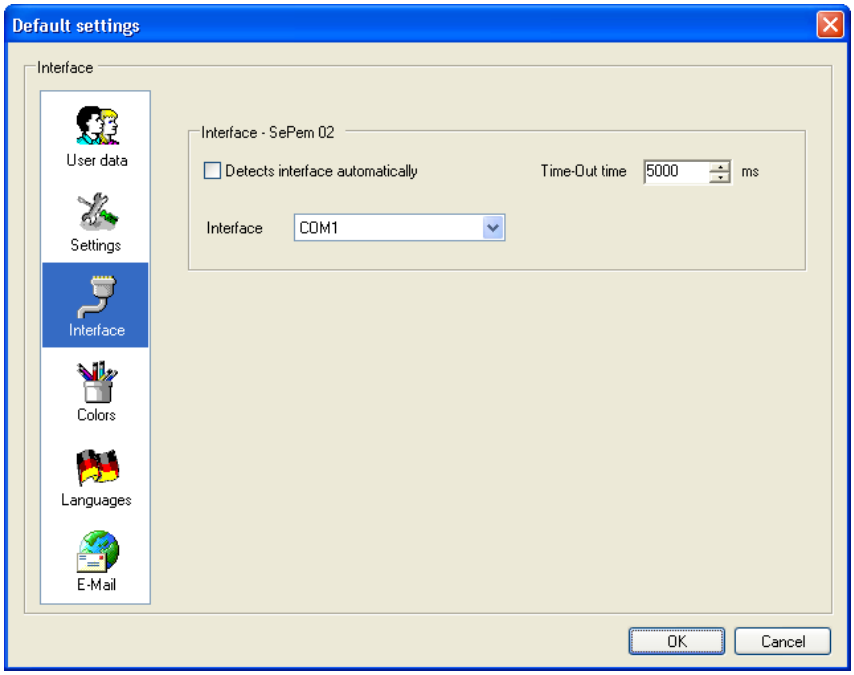


Fig. 64: Interface

- Disable the option **Detects interface automatically**, (i. e., no tick in check box) if you want to define the interface manually.

  Select the relevant item under **Interface**.
- If required, change the value displayed for **Time-Out time**.
- Confirm your settings with **OK**.

Alternatively, you may also determine the interface manually by entering a parameter in the **Program properties** dialog.

- Use the Windows user interface (desktop) for this.
- Click with the **right mouse button** on the icon of the **SePem** software. A menu pops up.
- Click on **Properties**. A dialog with the **SePem 02 properties** is called up.
- In the input field, enter a path under **Target** (**Shortcut** tab). Add the following command parameter:

  "...\SePem 02\SePem.exe" ***/*:COM1**

> **Note:**
> When entering the command, pay attention to the blank between the quotation mark (") and the slash (/).

  Parameter **COM1** stands for the interface which you have determined for the data exchange. Enter another parameter (**COM2**, **COM3**, **COM4**), if required.

- Confirm your entry with **OK**.

11.3.1.4 Colors

The colors used for the graphic displays and measurement data table can be freely selected.

- Click on **Colors** in the vertical tab selection area of the **Default settings** window (fig. 62).
  The selected tab is opened.

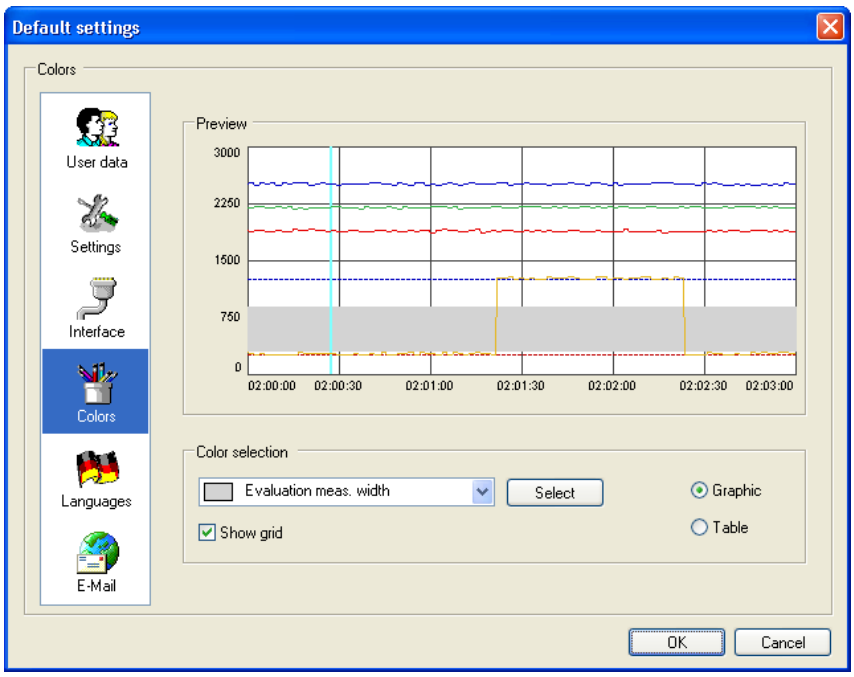


Fig. 65: Colors for graphic displays

Select item **Graphic**. The preview window shows the colors which are selected for use in the **Show measurement data – Details** window (fig. 39).

Enable option **Show grid** (i. e., a tick appears in the check box) when the graphics are to be displayed with a grid matrix.

- Click on **Table** to change the on-screen layout of the table lines in the **Show measurement data – Details** window (fig. 31).

  The principle of color selection is identical for both items, Graphic and Table (see end of this section).

- Confirm your settings with **OK**.

Steps for determining color for a parameter

- Select the parameter in the **Color selection** area as follows: Click on the selection arrow to open the list box. Then, select the parameter whose color you want to change (for example, Background, Channel 1, odd lines).
- Click on the **Select** button. The **Colors** window is opened.
- Select a color which is suitable for the on-screen display and confirm your choice with **OK**.
  The parameter is immediately shown with the selected color in the list field and in the preview window.

11.3.1.5 Languages

To make operation more user-friendly, different languages are available for the **SePem** software.
Note that the program is immediately exited after changing the language so that it has to be restarted.

- Click on **Language** in the vertical tab selection area of the **Default settings** window (fig. 62).
  The selected tab is opened.

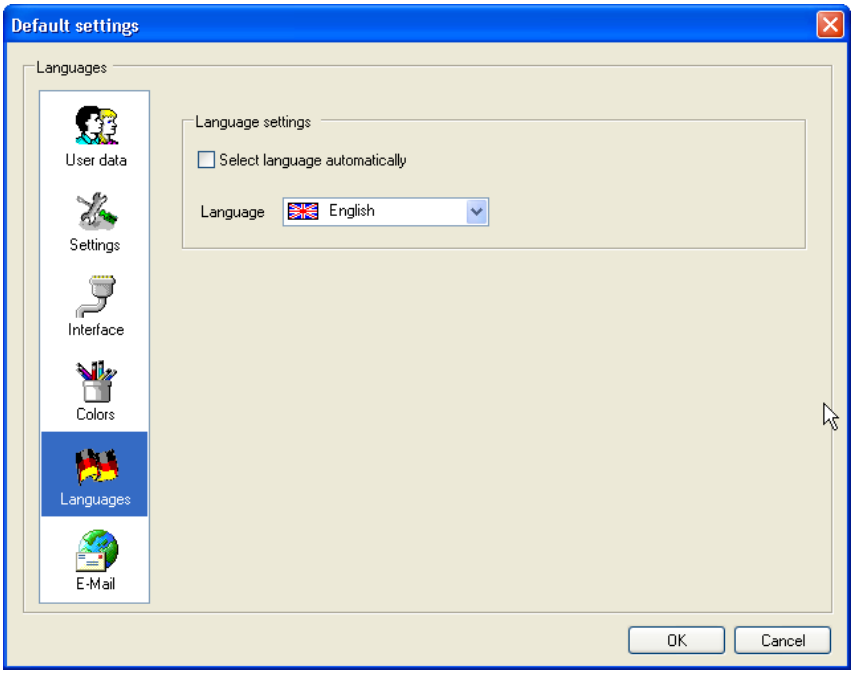


Fig. 66: Language of the user interface

As default, the check box **Select language automatically** is selected. In this case, the **SePem** software takes over the language of the installed operating system.
If the operating system uses a language which cannot be recognized by the **SePem** software, English is automatically used as default language.

- Disable option **Select language automatically** (no tick in check box) if you want to select a language manually.
- In the **Language** area, select the desired language using the selection arrow.
- Click on **OK**. A message appears informing you that the program will be closed due to the language change.
- Confirm the message with **OK**.
- Start the **SePem** software. All texts (menus, buttons, etc.) are displayed now with the selected language.

11.3.1.6 E-mail settings

The **SePem** software is provided with a feature for sending E-mails so that do not have to use another program. This function is necessary for sending error messages or to get in touch with the manufacturer. It is planned to use this feature also for the data exchange with GSM modules.
The function for sending E-mails can only be used if you enter your E-mail address.

> **Notes:**
> The E-mail function is currently not available for computers on which Windows 98/NT is used as operating system.
> The E-mail settings depend on the technical specifications of your EDP equipment.
> Therefore, we recommend that you carry out the default settings together with your system administrator.

- Click on **E-Mail** in the vertical tab selection area of the **Default settings** window (fig. 62).
  The selected tab is opened.

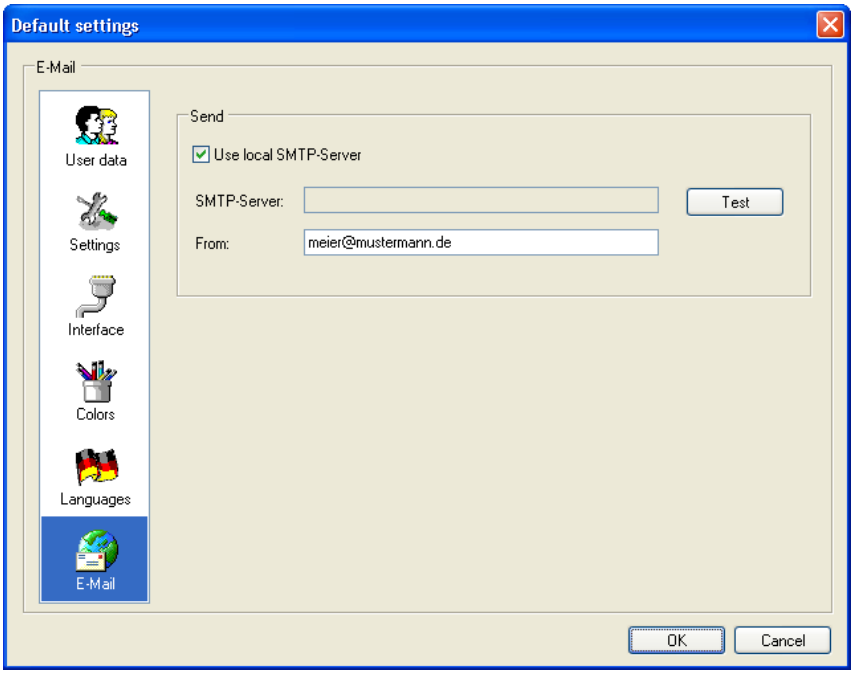


Fig. 67: E-mail settings

As default, option **Use local SMTP-Server** is selected. With this option, the **SePem** software uses the SMTP mail server which is integrated in Windows 2000/XP.

- Disable the option (i. e., no tick in check box **Use local SMTP-Server**) when you want to use another server.

  Enter the name of the desired server in the **SMTP-Server** input field.

- Enter your own E-mail address in the **From** field.
- Confirm your settings with **OK**.

Test of the E-mail function

We strongly recommend to send a test E-mail to an external receiver (outside of your company) immediately after entering the E-mail settings. This test helps you to check whether all parameters are entered correctly and whether the E-mails can really be received by persons who are not working for your company.

- Click again on **Settings – Program settings – E-Mail**.
- Click on the **Test** button. The **Send test mail** window appears.

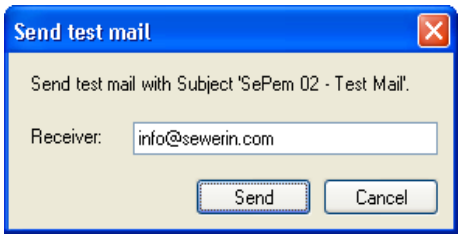


Fig. 68: **Send test mail** window

- In the **Receiver** field, enter an external E-mail address.
- Click on **Send**.
- Get in touch with the receiver of the test mail to check whether he or she has received the mail.

11.3.2 Help assistant

You can use this menu item to fade in/out the Help Assistant.

- Click on **Settings – Help assistant**.

OR

Click on the **Enable/disable help agent** button in the icon bar.

> **Note:**
> You can find more detailed information on the use and availability of the help assistant in chapters 8.2 and 12.1.

11.4 The View menu

The **View** menu comprises the following functions:

- Fading in/out the **symbol bar** (icon bar)
- Fading in/out the **status bar**

Both functions can be used to toggle between the available options (i. e., for fading in or out).

11.4.1 Information on the symbol bar

The symbol bar – also referred to as icon bar – is located at the top of the screen below the menu (see fig. 17).
You can call up the associated software functions by simply clicking on the appropriate icon.

Meaning of icons

	Show stored measurements
	Print out measurement data
	Program measurement times required for exposing devices
	Reading out **SePem** devices
	Show help
	Enable/disable the Help Assistant

11.4.2 Information on the status bar

The status bar is located at the bottom of the screen (see fig. 17). It informs continuously on the current status of the **SePem** system.

Meaning of messages and signals

	Indication	Description
Status field	OK	No device error
	Warning	A scheduled service deadline is exceeded or the battery/accumulator capacity is insufficient
	Error	A device error has occurred
Signal field	yellow	Data exchange between **SePem** device(s) and software is running
	red	No data exchange between **SePem** device(s) and software
	yellow-red devices	Software detects connected **SePem**

A supplementary field is shown between status field and signal field. This field indicates the number of **SePem** devices which are currently placed in the charging adapter.

11.5 The Help menu

The **Help menu** (indicated by **?** in the menu bar) comprises the following functions:

- **Help**
- **Direct contact**
- **Info about SePem 02 ...**

> **Note:**
> If you work with the demo version of the **SePem** software (this means that the software is not yet released), the **Direct contact** item is not available. Instead of this, the **Help** menu includes an item for releasing the program.

11.5.1 Calling up the Help menu

You can only use this feature when the Acrobat Reader (version 4.0 or higher) is installed on your computer.

- Click on **?** – **Help**.

OR

Press key F1 on the keyboard.

The operating instructions appear in a separate window as a PDF document. The text is provided with bookmarks (for navigating, at the left screen edge) and linking options, permitting to go to any page of the manual by just clicking on the relevant keyword in the table of contents or index. In addition, you can also search for specific words with the help of key combination CTRL+F.

> **Note:**
> You can call up the **Help** menu anytime. It plays no role which window, item or function you have currently enabled or opened in the **SePem** program. Just press the F1 key on your keyboard to open the **Help** window.

11.5.2 Establishing direct contact

We are always trying to improve our products to meet the demands of our customers.
For this, we need your support. Therefore, your feedback, questions – but also criticism – on the **SePem 02** system are always welcome.

To make getting in touch with us as easy as possible, the **SePem** software is provided with a function which you can use to send E-mails directly to the SEWERIN customer service.

> **Note:**
> Note that you can only use the **Direct contact** feature after entering the required E-mail parameters (chapter 11.3.1.6).

- Click on **?** – **Direct contact**. The **Direct contact** window appears.

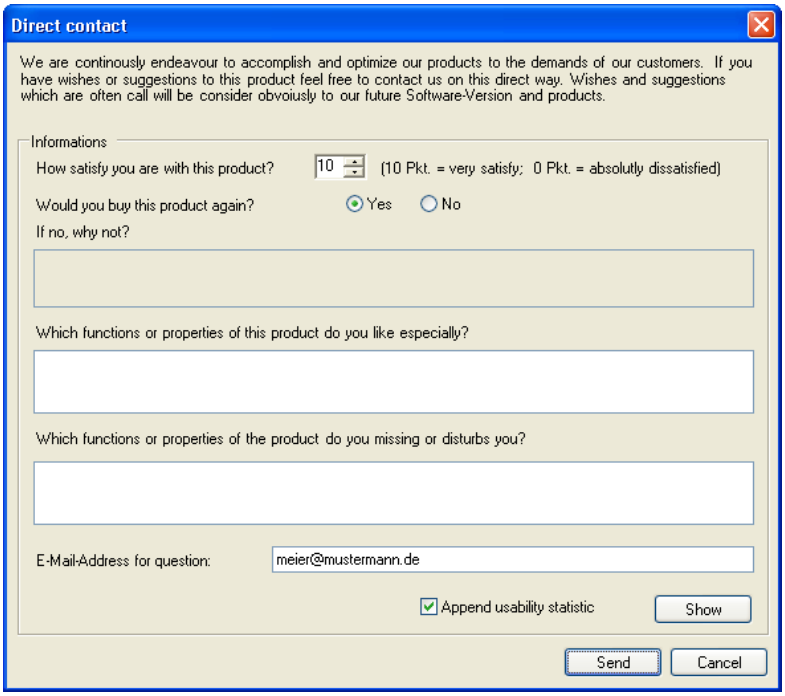


Fig. 69: **Direct contact** window

- We would be very obliged if you could fill in all fields. The more input we receive, the more effort we can put in improving our product.
- The setting for **E-mail address for question** is automatically taken from the E-mail settings. It can be replaced by another valid E-mail address.
- Enable item **Append usability statistic** if you would like us to receive statistics with information on how the program is used. These statistics are then attached to your E-mails.
  In chapter 11.5.2.1 you can find detailed information on why these usability statistics are important for us. In addition, you can find an overview of the transmitted data.
- Click on **Send.**

11.5.2.1 Usability statistics

The usability statistics help us, at SEWERIN, to continue with optimising the **SePem** software and to configure it to the demands of our customers. It can be transmitted to us via E-mail using the **Direct contact** option.

The usability statistics contain the following data:

- Operating system, display settings, storage capacity
- Information on the used **SePem** hardware version
- Information on the installed **SePem** software version
- Date of production
- Operating hours of the **SePem** software
- Temperature minimum/maximum during application of the devices
- Number of measurements performed with the different measurement types (manual, time-controlled, stationary, periodic, event-related)
- Operating hours with accumulators or batteries

Note:
We guarantee that only the mentioned data is contained in the usability statistics and that no further information (on measurement data, projects, orders, etc.) will be transmitted to SEWERIN.

You can check anytime which data records were collected for transmission by simply clicking on **Usability statistic**.

- Click on **?** – **Direct contact – Show** button. The **Usability statistic** window appears.

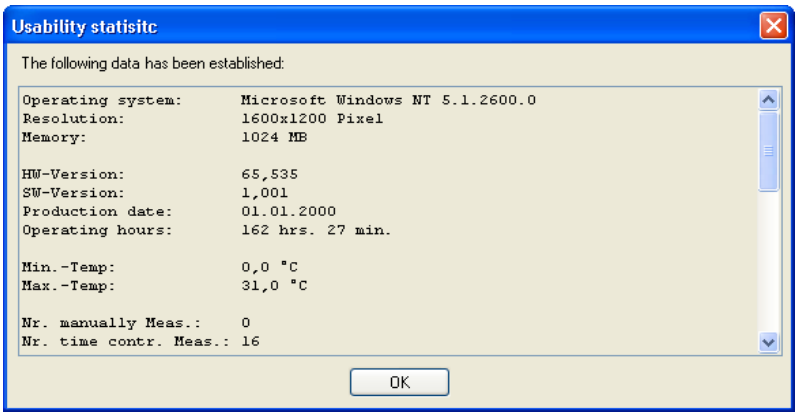


Fig. 70: **Usability statistic** window

11.5.3 Info about SePem 02

Under **?** – **Info about SePem 02 ...** you can access the following specifications:

- Information on the software
  (Version, build number, communication component)
- Release code
- Free capacity of hard disk and main memory (RAM
- Address, phone number, fax number, Internet address of SEWERIN

How to establish contact with SEWERIN when a problem with the SePem software has occurred

Always have the first two items ready (software data, release code) for check-backs and questions.

SEWERIN in the Internet

You can call up **www.sewerin.com** directly from the running **SePem** program to access the SEWERIN Website – provided that the required data transmission is installed on your computer. You can use the Website to view or download up-to-date information on all SEWERIN products.

12 Help and Advice

This chapter includes information on troubleshooting and useful advice which may help you to optimise work with the **SePem** system.

12.1 Frequently Asked Questions

When you cannot solve a problem with the help of the following questions and answers, also consult chapter 12.2 for further advice.

What can I do if the user dialogue of the SEWERIN CD-ROM does not start up automatically during installation?

- In the Windows Explorer, call up the start.exe file. You can find this file in the root directory of the SEWERIN CD-ROM.

What can I do if a message appears during installation referring to the MS Internet Explorer?

The SePem software requires the MS Internet Explorer, version 5.01 or higher. During the installation procedure, the software checks whether the correct version of the MS Internet Explorer is installed on your computer.

- Confirm the message with OK. The installation procedure will then be cancelled. Install the required version of the MS Internet Explorer. Re-start the installation of the SePem software.

What can I do if I have deleted SePem files by mistake?

If you have deleted files by mistake which are important for the proper program run and if these files cannot be restored by the program itself, you must re-install the SePem program. Before re-installing, it is absolutely required to de-install the damaged SePem software beforehand (see chapter 4.4).

Why does the Help Assistant not come up when I'm clicking on the button?

The Help Assistant is only available after installing it.

- Under Microsoft Windows ME/2000/XP and/or office 2000/XP the assistant is automatically installed.
  When you are using Office 2000/XP, it is optional to install the Assistant. If appropriate, check whether the Assistant is really installed.
- In all other cases, you can download the Help Assistant from the Internet (http://www.microsoft.com/msagent/resources.htm, keyword "Downloads").

If you have not installed the Microsoft Help Assistant - or if do not want to use it - you can use all software functions nevertheless. Just select the desired items and functions from the **SePem** menus.

What can I do if a SePem device is not recognized?

- Check whether the number of SePem devices currently inserted in the charging adapter corresponds to the number of devices indicated in the status bar (see chapter 11.4.2).

If the values do not coincide, you need to narrow the source of error as follows:

- Check whether the software is really released or whether you are working with the demo version.
- Is the power supply unit (or the car connection cable) connected to the charging adapter?
- Is the charging adapter connected to the PC with the connection cable?
- Check whether the electrical contacts of SePem device and charging adapter are soiled. If required, clean the contacts.
- Check whether the correct interface is selected (see chapter 11.3.1.3).
- Restart the PC if you have worked with other programs beforehand.

If you cannot correct the error, please contact our customer service (address see chapter 12.3).

What can I do if a SePem device does not record measurement data?

- Perform the steps listed under **”What can I do if a SePem device is not recognized?”**.
- Check whether the inserted batteries are empty or whether the accumulators are still sufficiently charged **(Devices - Adjust settings)**.
- Check whether the system time is set correctly (see chapter 11.2.2.1).
- Check whether the devices are correctly prepared for placing (see chapter 7.2).

If you cannot correct the error, please contact our customer service (address see chapter 12.3).

Why does it take so much time to recharge SePem devices?

If you have the carrying-case version of the charging adapter, the **cover must stay open during charging.**
If the cover is closed, the accumulators are charged extremely slowly due to the increased heat development.

Why can’t I make use of all functions of the SePem software?

You have not yet released the **SePem** software. Therefore, only the demo version is available. See chapter 4.5 for information on releasing the software.

Can I use the SePem software within a network?

Yes. Refer to chapter 4.3.1 for more information.

What can I do if no mains connection is available at the installation site?

In this case, connect the charging adapter to the cigarette lighter of your vehicle. You can use the car connection cable for this (accessory).

What can I do if columns are missing in the printout of measurement data?

- Select the horizontal format for printing when your **Show measurement data** window contains many columns.
- If you want to print out data in the list format, hide all columns which you do not need (see chapter 11.1.1.3).

Why does it take so long until the measuring data is built up on-screen?

Depending on the number of stored data sets, it may take some time to open the database.

- You can speed up access on measurement data by compressing the database (see chapter 11.1.3).
- Reduce the size of your database by deleting data sets from the database after archiving them **(File - Export - Delete exported data sets from database)**.
- Use a filter to display only the measurements which you really need.

What can I do if I cannot import a SePem database?

The **SePem** software can only import databases which were archived with the Export function beforehand.

Before exporting a database, always make sure that the option **All data** is selected (see chapter 11.1.5).

Why does the yellow LED flash during charging?

The **SePem** device has detected a device error. The error may result from fat (coming from the O-ring) which has polluted the contact, thus making charging impossible.

- Clean all contacts (battery/accumulator, lid) thoroughly using spirit and a lint-free cloth.

Why can't I start a printout?

The **Print** menu and button are only available in the following windows:

- **Show measurement data**
- **Expose devices**

In all other cases the **Print** menu, and the button in the icon bar, are disabled and cannot be selected.

If the **Print** menu cannot be opened in the specified windows, check whether a printer is really connected to your computer.

Before you can start a printout in the windows mentioned above, further actions need to be taken (selection of measurements, for example). For detailed information refer to chapters 8.3.5 and 8.8.

12.2 How to ...

Problem	Solution
Measurement database cannot be opened	● In the **File** menu, select the function **Repair and compress database** (see chapter 11.1.3).
SePem Software can no longer be called up	● Repair the measurement database using parameter **RepairDB** (see chapter 11.1.3.1).

12.3 If you cannot cure a fault ...

Your SEWERIN contact is gladly at your disposal.

13 Maintenance (Replacing Batteries and Accumulators)

The **SePem** system requires only minimum maintenance, provided that you adhere to the following instructions.
The required maintenance procedures include:

- Replacement of empty batteries
- Replacement of accumulators if the charging level falls below the permitted threshold value

> **CAUTION!**
> Batteries and accumulators may only be replaced by trained personnel.
> If the described procedures are incorrectly performed, injuries and damages to the **SePem** devices cannot be ruled out.
> Carry out all works in a **clean environment.**
> **Never** perform the described works **directly at the measurement place.** If you adhere to this, neither moisture nor dirt can enter the devices which may otherwise cause considerable damages.

When selecting batteries and accumulators for replacement, pay attention to the following notes:

> **CAUTION! EXPLOSION HAZARD!**
> **Do not use NiMH accumulators!**
> Hydrogen escapes during charging NiMH accumulators. Due to the air-tight encapsulation of the device, oxyhydrogen gas collects in the interior of the device during charging! If a spark is generated during opening the device, or if you are near an open fire, the oxyhydrogen gas may explode.
>
> **Alkaline-Mangan batteries**
> **Never use this battery type when the operation temperature exceeds 50° C!**

> **Note:**
> Always replace **all** batteries or accumulators of a single **SePem** device at the same time.

Replacing batteries/accumulators - procedure

You only need to perform the **first three steps** if you are also **changing the type** of battery/accumulator. When using the same type of battery/accumulator, you do not need to change the settings.

- In the **Devices** menu, select the **Adjust settings** option or press F12 on the keyboard. The **Adjust device parameters** window is opened.
- Click on **Batt. Type.** The **Change battery/accu type** window is opened.

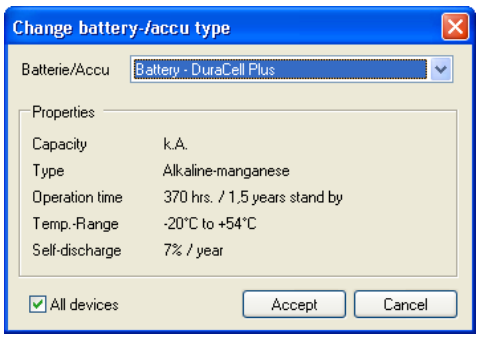


Fig. 71: Setting or changing the battery/accumulator type

- Select the new battery type in the **Battery/Accu** pull-down menu. Click twice on **Accept.**
- Make sure that no measurements are running.
- Take the appropriate device from the charging slot.
- Clean the device under running water to remove dirt (grains of sand, etc.). Then, dry the device completely.
- Unscrew the device lid to de-energize the device
- Remove the old batteries/accumulators.
- Insert the new batteries/accumulators. Pay attention to the correct polarity. Accumulators which are inserted incorrectly may leak.
- Set the switch for battery/accumulator operation to the correct position.

CAUTION!
Make sure that the switch for battery/accumulator operation on the **SePem** device is set to the correct position. If the switch is set to the wrong position, the device can be damaged by leaking cells.

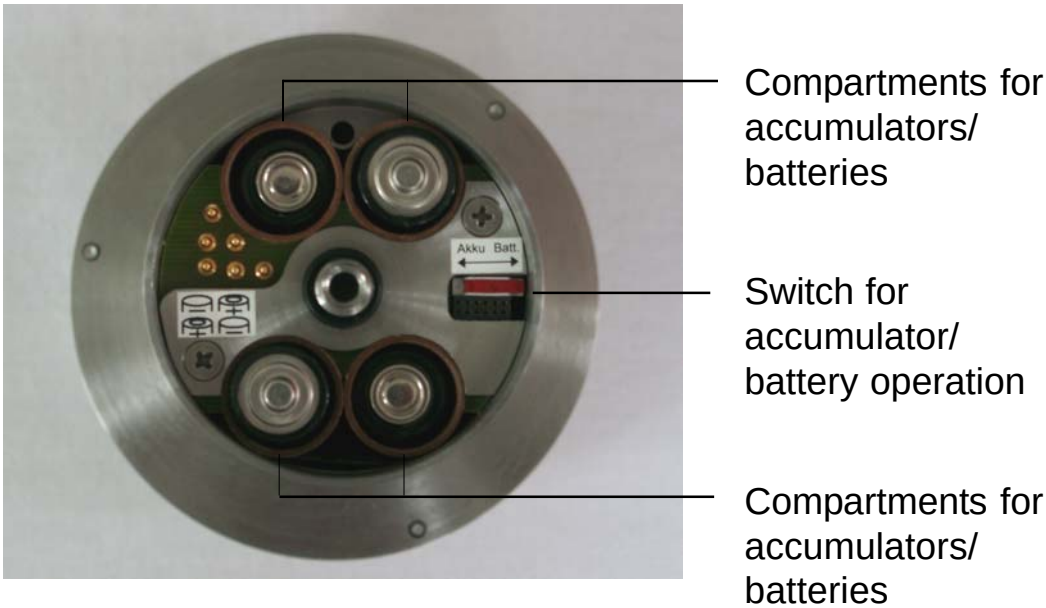


Fig. 72: Switch for accumulator/battery operation

- Replace the red O ring **in the lid.**
- The device must be de-energized **for min. 15 seconds** (i. e. without lid) to permit that the new set of batteries/accumulators is correctly registered.
  Then, put on the device lid and retighten it.

CAUTION!
The lid must lock into the base unit absolutely watertight!
There may be absolutely no dirt or deposits between lid and device (e. g. small grains of sand).
Otherwise moisture may enter the device, causing severe damage.

- Wait another **five seconds** before re-inserting the device into the charging slot.

14 Exchanging the Sensor

Optionally, the **SePem** system can be combined with different sensor types (noise, pressure, etc.).

CAUTION!
Sensors may only be replaced by trained staff.
If the described procedures are incorrectly performed, injuries and damages to the **SePem** devices cannot be ruled out. Carry out all works in a **clean environment.**
Never perform the described works **directly at the measurement place.** If you adhere to this, neither moisture nor dirt can enter the devices which may otherwise cause considerable damages.

Exchanging the sensor - procedure

- Make sure that no measurements are running.
- Take the appropriate **SePem** device from the charging slot.
- Clean the device under running water to remove dirt (grains of sand, etc.). Then, dry the device completely.
- Unscrew the old sensor.
- The green O ring on the sensor is used as sealing. It can only be used once.
  Therefore, replace the green O ring on the new sensor. (Provided that you want to insert a new sensor.)
- Screw the new sensor on the base unit (**SePem K**) and tighten it.

CAUTION!
The sensor must lock into the base unit absolutely watertight!
They may be absolutely no dirt or deposits between sensor and device (e. g. small grains of sand). Otherwise moisture may enter the device, causing severe damage.

Technical Data / Features

SePem device

Construction:	stainless steel housing
Ingress protection:	waterproof model submersible up to a water depth of 1 m (IP 68)
Data memory:	1 MB capacity, internal
Sampling rate:	1 ms ... 1 min, adjustable (depending on the sensor)
Communication:	SEWERIN Bus system

Power supply

Batteries / accumulators:	4 AA cells (LR6, AA, AM3)
Service life of accumulators:	typical 100 h
Service life of batteries:	typical 375 h
Charging method:	100 ... 240 V ~ or 12 V =
Weight:	approx. 980 g
Dimensions (H x Ø):	100 mm x 55 mm
Operating temperature:	- 30° C ... + 60° C (depending on the used cell type)
Storage temperature:	- 30° C ... + 85° C (without batteries)

Interfaces

SePem device:	SEWERIN Bus system
Charging slots - PC:	RS-232, serial / 9-pin

Ingress protection of housings

SePem device:	IP 68
Charging adapter:	IP 20
Plug-in power supply 230/12 V:	IP 20

Structure and layout of important SePem files

All user data registered by the **SePem** software is stored in the tables of a database.
This database is saved in MS Access format and stored under the name **SEPEM 02 DATA.MDB** in the installation folder.

On the following pages, you can find a detailed description of the structure of the individual user-data tables. For each database table the following information is listed:

- Columns
- Relations
- Table indices

Notes:
We strongly recommend that only experienced users and system administrators perform changes on the Access tables listed on the following pages. Any inexpert change may result in corrupting the database so that it can no longer be used.
Only the tables listed on the following pages may be modified.
If other tables are changed, the SePem software may be damaged and therefore become useless. Before performing any change make a backup copy of the database.

1. Table - SelectData

Columns

Name	Type	Size
ID	Long Integer	4
Link	Long Integer	4
FAB	Text	13
DeviceNr	Integer	2
SensorInfoCh1	Text	60
SensorInfoCh2	Text	60
SensorInfoCh3	Text	60
SensorInfoCh4	Text	60
SensorNextService	Date/Time	8
SensorPreviousService	Date/Time	8
Status	Text	100
StatusCode	Long Integer	4
StatusImage	OLE-Object	-
EvaluationA	Single	4
EvaluationB	Single	4
EvaluationC	Single	4
EvaluationAPicture	OLE-Object	-
EvaluationBPicture	OLE-Object	-
EvaluationCPicture	OLE-Object	-
EvaluationAInfo	Text	50
Evaluation*BInfo	Text	50
EvaluationCInfo	Text	50
MeasurementPlace1	Text	100
MeasurementPlace2	Text	100
Hydrant	Text	100
Project	Text	255
Remark	Memo	-
TransferDate	Date/Time	8
Temperature	Single	4
MemoryType	Text	20
StartDate	Date/Time	8
StartTime	Date/Time	8
StopDate	Date/Time	8
StopTime	Date/Time	8
ActivationDateTime	Date/Time	8
DeactivationDateTime	Date/Time	8
MeasInterval	Single	4

Relations

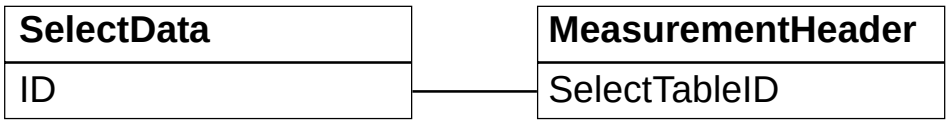


Table indices

ID (Primary Key)
Link
FAB
DeviceNr
SensorInfoCh1
SensorInfoCh2
SensorInfoCh3
SensorInfoCh4
SensorNextService
SensorPreviousService
Status
EvaluationAInfo
EvaluationBInfo
EvaluationCInfo
MeasurementPlace1
MeasurementPlace2
Hydrant
Project
TransferDate
Temperature
MemoryType
StartDate
StartTime
StopDate
StopTime
ActivationDateTime
DeactivationDateTime
MeasInterval

2. Table - MeasurementHeader

Columns

Name	Type	Size
ID	Long Integer	4
SelectTableID	Long Integer	4
SensorVersion	Single	4
SensorType	Integer	2
SensorExDevice	Bool	1
SensorFAB	Long Integer	4
SensorEvaluation	Long Integer	4
SensorManufacturingDate	Date/Time	8
SensorOpCounter	Long Integer	4
SensorMinTemp	Single	4
SensorMaxTemp	Single	4
SensorMinInterval	Single	4
SensorCh1Description	Integer	2
SensorCh1Unit	Integer	2
SensorCh1MinNorm	Single	4
SensorCh1MaxNorm	Single	4
SensorCh2Description	Integer	2
SensorCh2Unit	Integer	2
SensorCh2MinNorm	Single	4
SensorCh2MaxNorm	Single	4
SensorCh3Description	Integer	2
SensorCh3Unit	Integer	2
SensorCh3MinNorm	Single	4
SensorCh3MaxNorm	Single	4
SensorCh4Description	Integer	2
SensorCh4Unit	Integer	2
SensorCh4MinNorm	Single	4
SensorCh4MaxNorm	Single	4
NrOfMeasValues	Long Integer	4
NrOfCIassData	Long Integer	4
NrOfAudioData	Long Integer	4
DeviceIsCharged	Bool	1
DeviceHasExtDevices	Bool	1
NrOfChannels	Byte	1
MemoryType	Byte	1
MeasurementNr	Byte	1
EventLimit	Integer	2
AudioStartAddress	Long Integer	4

Relations

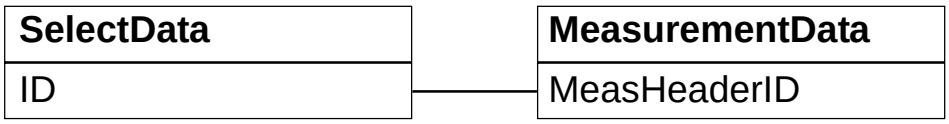


Table indices

ID (Primary Key)
SelectTableID

3. Table - MeasurementData

Columns

Name	Type	Size
ID	Long Integer	4
MeasHeaderID	Long Integer	4
PageNumber	Byte	1
DataType	Byte	1
PacketSize	Integer	2
Data	OLE-Object	-

Relations

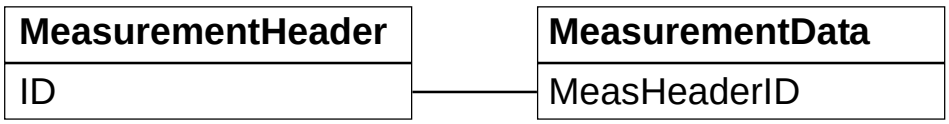


Table indices

ID (Primary Key)
MeasHeaderID
PageNumber

4. Table - Places

Columns

Name	Type	Size
ID	Long Integer	4
MeasPlace1	Text	100
MeasPlace1	Text	100
Hydrant	Text	100

Table indices

ID (Primary Key)
MeasPlace1
MeasPlace2
Hydrant

5. Table - Remarks

Columns

Name	Type	Size
ID	Long Integer	4
Remark	Memo	-

Table indices

ID (Primary Key)

6. Table - Projects

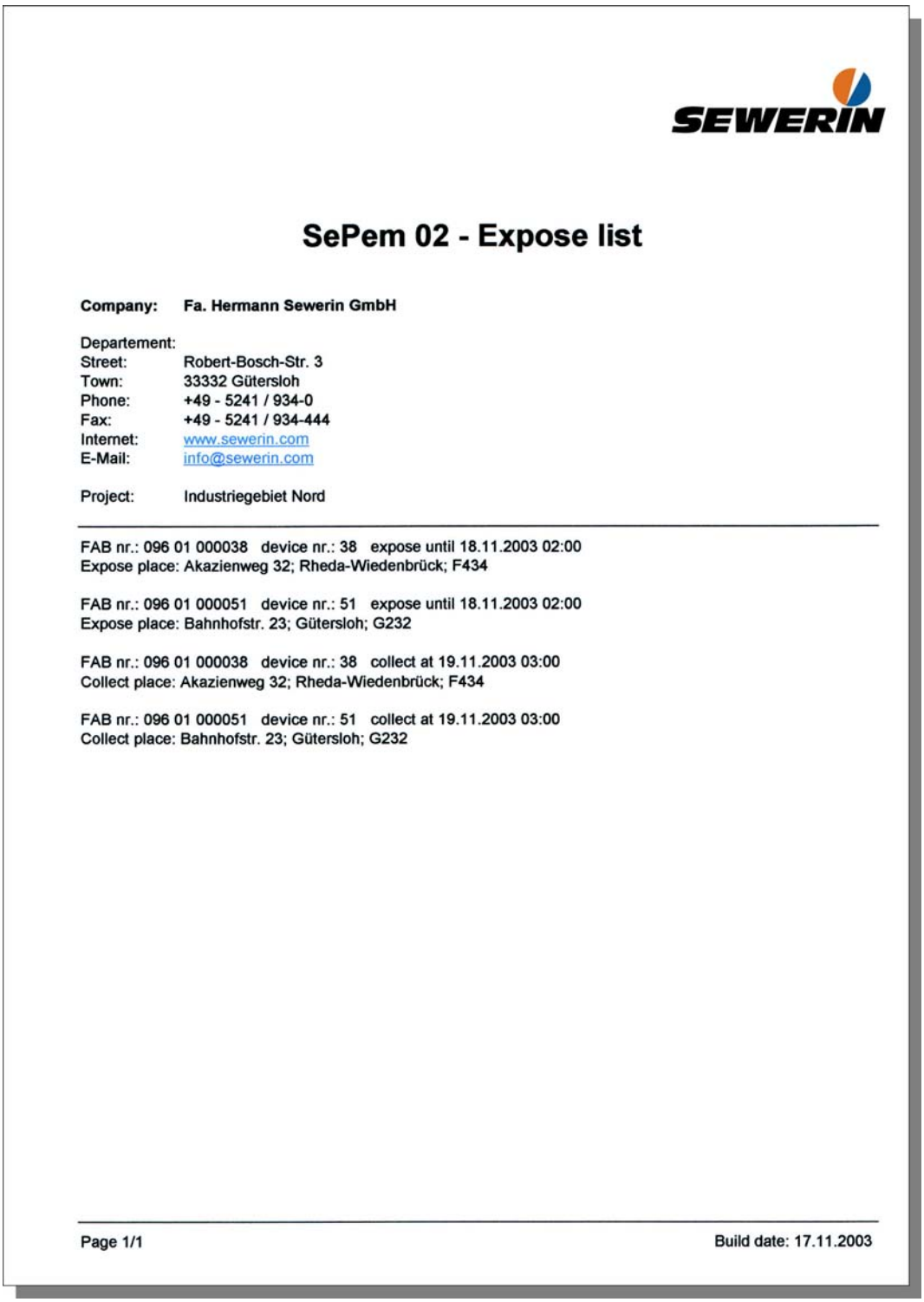
Columns

Name	Type	Size
ID	Long Integer	4
Project	Text	255

Table indices

ID (Primary Key)
Project

Example of a distribution list



SEWERIN

SePem 02 - Expose list

Company: **Fa. Hermann Sewerin GmbH**

Departement:
Street: Robert-Bosch-Str. 3
Town: 33332 Gütersloh
Phone: +49 - 5241 / 934-0
Fax: +49 - 5241 / 934-444
Internet: www.sewerin.com
E-Mail: info@sewerin.com

Project: Industriegebiet Nord

FAB nr.: 096 01 000038 device nr.: 38 expose until 18.11.2003 02:00
Expose place: Akazienweg 32; Rheda-Wiedenbrück; F434

FAB nr.: 096 01 000051 device nr.: 51 expose until 18.11.2003 02:00
Expose place: Bahnhofstr. 23; Gütersloh; G232

FAB nr.: 096 01 000038 device nr.: 38 collect at 19.11.2003 03:00
Collect place: Akazienweg 32; Rheda-Wiedenbrück; F434

FAB nr.: 096 01 000051 device nr.: 51 collect at 19.11.2003 03:00
Collect place: Bahnhofstr. 23; Gütersloh; G232

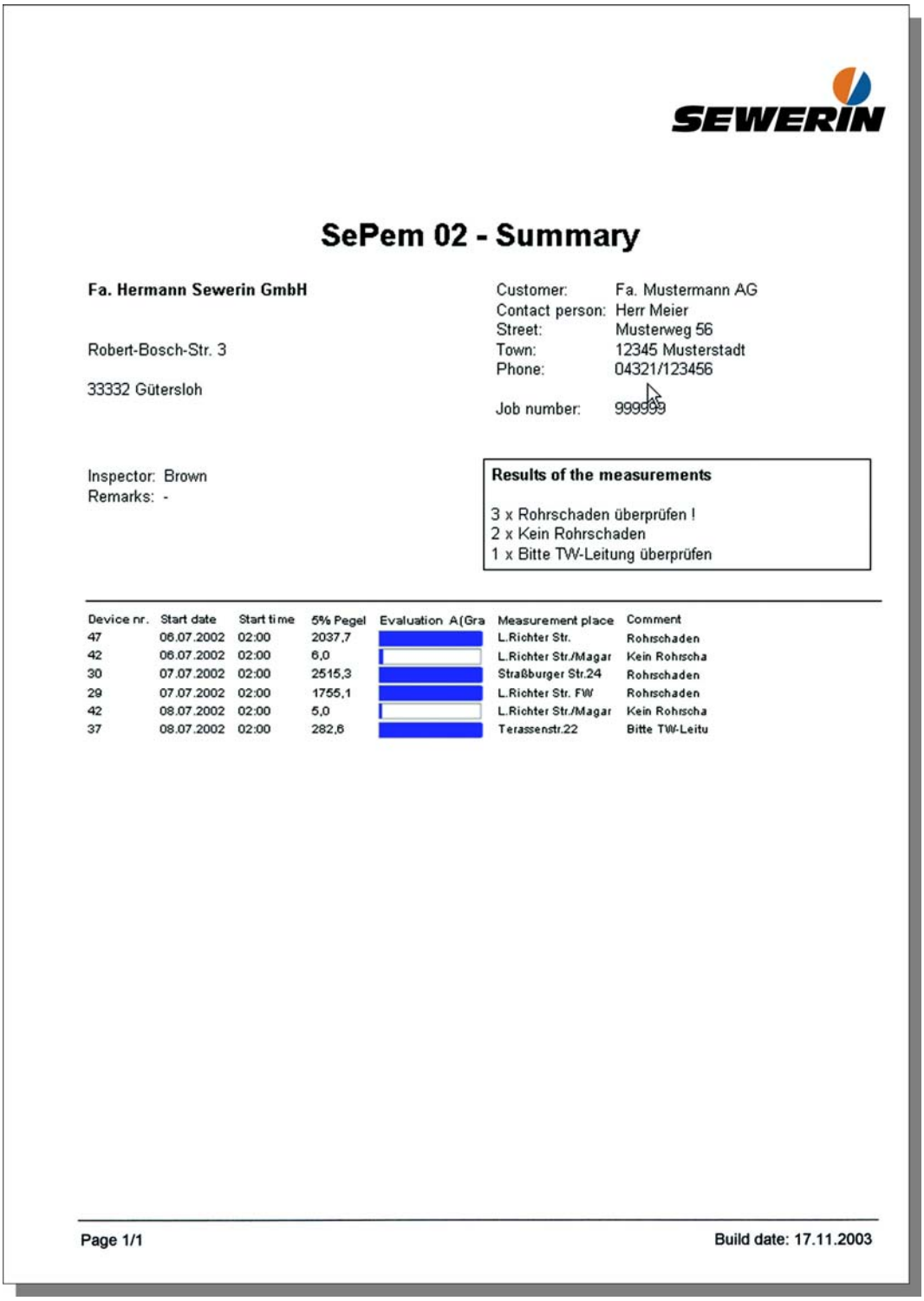
Page 1/1 Build date: 17.11.2003

Proceed as follows to adjust the distribution list to your requirements:

Supplementary information	**Settings - Program settings - data**
Company logo	**Settings - Program settings** - in the **User data** window, click on the logo - select a new logo in the **Select your company logo** window
Distribution data	**Devices - Prepare for measuring**

Note:
In chapter 8.3.5 you can find more detailed information on printing out a distribution list.

Example of a measurement data printout - compact list format



SEWERIN

SePem 02 - Summary

Fa. Hermann Sewerin GmbH

Robert-Bosch-Str. 3

33332 Gütersloh

Customer: Fa. Mustermann AG
Contact person: Herr Meier
Street: Musterweg 56
Town: 12345 Musterstadt
Phone: 04321/123456

Job number: 999999

Inspector: Brown
Remarks: -

Results of the measurements

3 x Rohrschaden überprüfen !
2 x Kein Rohrschaden
1 x Bitte TW-Leitung überprüfen

Device nr.	Start date	Start time	5% Pegel	Evaluation A(Gra	Measurement place	Comment
47	06.07.2002	02:00	2037,7		L.Richter Str.	Rohrschaden
42	06.07.2002	02:00	6,0		L.Richter Str./Magar	Kein Rohrscha
30	07.07.2002	02:00	2515,3		Straßburger Str.24	Rohrschaden
29	07.07.2002	02:00	1755,1		L.Richter Str. FW	Rohrschaden
42	08.07.2002	02:00	5,0		L.Richter Str./Magar	Kein Rohrscha
37	08.07.2002	02:00	282,6		Terassenstr.22	Bitte TW-Leitu

Page 1/1

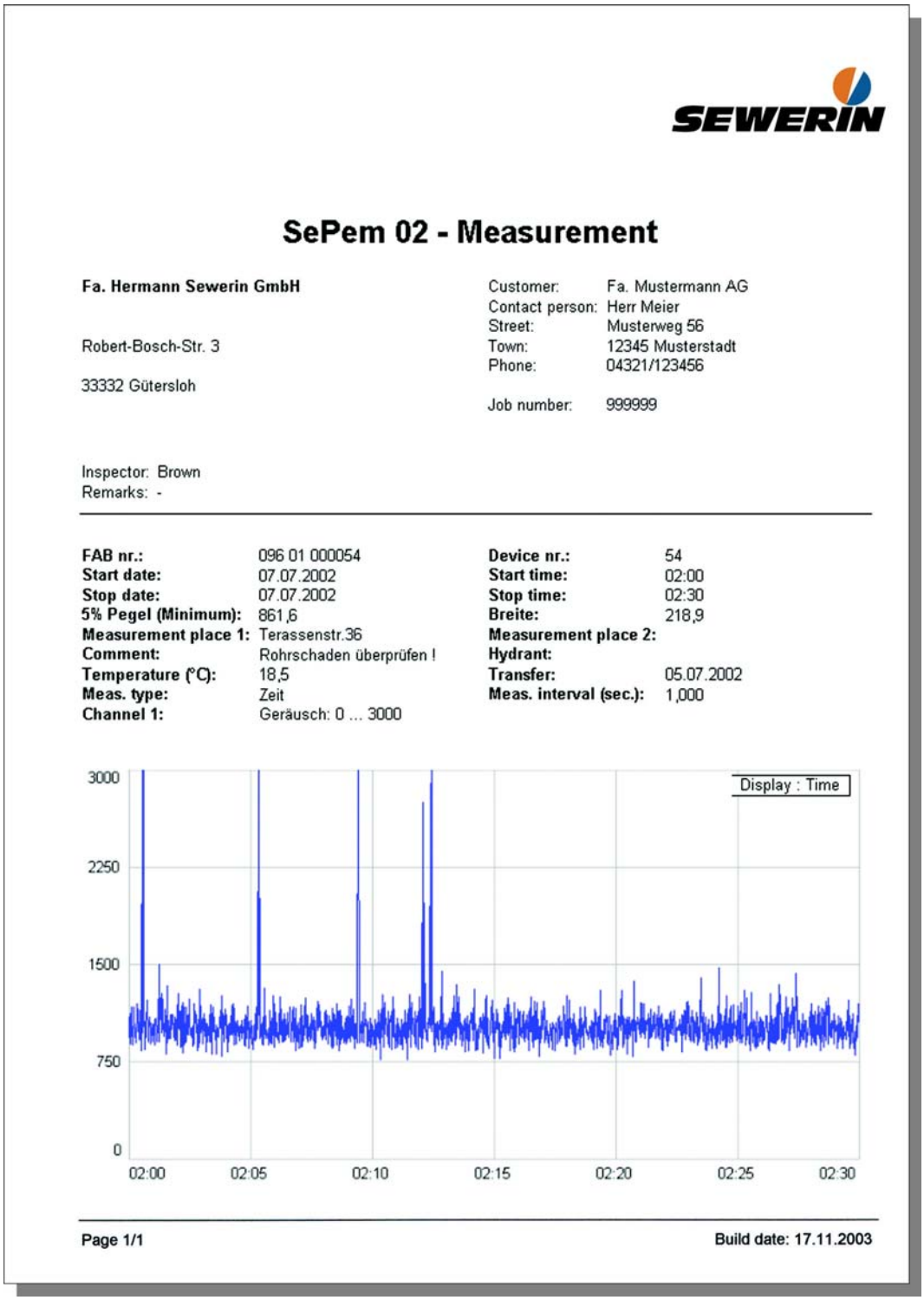
Build date: 17.11.2003

Proceed as follows to adjust the printout of measurement data to your requirements:

Supplementary information	**Settings - Program settings - User data**
Company logo	**Settings - Program settings** -in the **User data** window, click on the logo - select a new logo in the **Select your company logo** window
Information on the inspector or remarks	**File - Show measurement data** - select at least one measurement - click on the Print icon - in the **Print** window, change information entered under **Inspector** or **Remarks**
Information on the customer	**File - Show measurement data** - select at least one measurement - click on Print icon - in the **Print** window, click on the **Customer** button - then enter or change data in the **Customer** window
Summary of measurement results	**File - Show measurement data** - select at least two measurements - click on the Print icon - in the **Print** window, select checkbox **Print summary** by clicking on it
Selection of measurement data (columns)	**File - Show measurement data** - select at least one measurement - click on the Print icon - in the **Print** window, select option **Print list** - click on the Fields button - select columns

Note:
In chapter 8.8 you can find more detailed information on printing out measurement data.

Example of a measurement data printout - detailed list format



SEWERIN

SePem 02 - Measurement

Fa. Hermann Sewerin GmbH

Robert-Bosch-Str. 3

33332 Gütersloh

Customer: Fa. Mustermann AG
Contact person: Herr Meier
Street: Musterweg 56
Town: 12345 Musterstadt
Phone: 04321/123456

Job number: 999999

Inspector: Brown
Remarks: -

FAB nr.:	096 01 000054	**Device nr.:**	54
Start date:	07.07.2002	**Start time:**	02:00
Stop date:	07.07.2002	**Stop time:**	02:30
5% Pegel (Minimum):	861,6	**Breite:**	218,9
Measurement place 1:	Terassenstr.36	**Measurement place 2:**	
Comment:	Rohrschaden überprüfen !	**Hydrant:**	
Temperature (°C):	18,5	**Transfer:**	05.07.2002
Meas. type:	Zeit	**Meas. interval (sec.):**	1,000
Channel 1:	Geräusch: 0 ... 3000		

Page 1/1

Build date: 17.11.2003

Proceed as follows to adjust the printout of measurement data to your requirements:

Supplementary information	**Settings - Program settings - User data**
Company logo	**Settings - Program settings** -in the **User data** window, click on the logo - select a new logo in the **Select your company logo** window
Information on the inspector or remarks	**File - Show measurement data** - select at least one measurement - click on the Print icon - in the **Print** window, change information entered under **Inspector** or **Remarks**
Information on the customer	**File - Show measurement data** - select at least one measurement - click on Print icon - in the **Print** window, click on the **Customer** button - then enter or change data in the **Customer** window
Selection of measurement data	**File - Show measurement data** - click on the table using the right mouse button - click on the **Adjust table** menu item - select the measurement data

Note:
In chapter 8.8 you can find more detailed information on printing out measurement data.

Konformitätserklärung / Declaration of Conformity

Gerätebezeichnung: *Type of Product:*	**batteriebetriebener Datenlogger** **battery-operated Data Logger**
Geräte-Typ: *Product Name:*	**SEPEM 02**
Fabrikations-Nr.: *Fabr.No.:*	**096 01 xxxx**

Hiermit erklären wir, dass oben genanntes Produkt mit der/den folgenden Norm(en) oder normativen Dokument(en) übereinstimmt. Bei einer mit uns nicht abgestimmten Änderung des Produkts verliert diese Erklärung ihre Gültigkeit.

We hereby declare that the above product complies with the following norms or standardized directives. In case of any modification of this product which has not been authorized by us, this declaration becomes invalid.

Norm(en) / Norm(s):

DIN EN 61000-6 Teil 3 und 4	*EMV – Fachgrundnorm Störaussendung* *Generic Emission Standard*
DIN EN 61000-6 Teil 1 und 2	*EMV – Fachgrundnorm Störfestigkeit* *Generic Immunity Standard*

Gemäß den Bestimmungen der Richtlinie(n) / The unit is in accordance with:

89/336/EWG	*EG-Richtlinie : Elektromagnetische Verträglichkeit* *EG-Directive: Electromagnetic Compatibility*
92/31/EWG	*Änderung dazu /amendment to above*
93/68/EWG	*Änderung dazu /amendment to above*

Gütersloh, den 16.10.02

HERMANN SEWERIN GMBH

(Geschäftsführer/Managing Director)

Abbreviations and glossary

Data logger	Device for the collection of data; contains one or several sensors as well as a memory for storing the measured values. **SePem** devices are data loggers.
FAB No.	Serial number of the manufacturer; this number cannot be changed by the customer.
Device number	Number with max. two digits for identifying the **SePem** devices during application. This number is user-configurable. It is recommended to use the last two digits of the FAB number. (The **SePem** software is pre-set conforming to this recommendation.)
GSM module	Currently valid standard for mobile communication used for the digital D- and E-networks with a transmission rate of 9.6 kBit/s. GSM stands for ”Global System for Mobile Communication” and was introduced in Germany in 1993.
Charging adapter	Carrying case or box used for charging **SePem** devices and for the data exchange between **SePem** devices and software.
Measurement scheme	User-definable scheme for setting the start time, duration and cycles of **SePem** measurements.
SePem G	Noise sensor of the **SePem 02** system.
SePem K	Base unit of a **SePem** device.
SePem device	Compact, robust and waterproof unit integrated in a stainless steel housing. Consists of the base unit **(SePem K)** and the exchangeable, easily detachable sensor unit (e. g. **SePem G**).
SePem component	Individual part of the **SePem 02** system, e. g. **SePem** device, charging adapter and **SePem** software.
SePem system	Entirety of all **SePem** components.

Software release history

Version	Date	Note
1.0	05/12/2002	Basic version of **SePem 02**
1.1	26/02/2003	
1.2	17/06/2003	

Accessories - SePem 02

SePem device noise	SD01-10001
Adapter	
Hydrant adapter	4001-0006
Hydrant combi adapter	ZM14-10200
Eye bolt M5	SD01-Z0800
Magnet D55 with M10 thread	SD01-Z5000
Adapter for overground hydrants	
SePem protecting tube	EM16-Z0100
Fixed coupling Storz, B-G2”	2430-0018
Fixed coupling Storz, C-G2”	2430-0019
Padlock, even-sided locking mechanism	2599-0006
Blanking flange, G2”-M10 mm	4000-0610
Charging / data exchange / transport	
Plug-in power supply 100-240 V / 12 V= / 2.5 A	LD25-10000
Communication cable charging adapter<-> charging adapter	SD01-Z0600
Car connection cable 12 V/12 V	ZL05-10600
SePem 02 voltage generator	SD01-Z8000
SePem 02 transport case, for carrying up to 12 **SePem** devices	SD01-Z7001
Spare parts and consumable components	
Set of accumulators, NiCd, 4 pieces, AA cells	SD01-Z0940
Set of batteries, Alkaline, 4 pieces, AA cells	SD01-Z0920
Set of batteries, Lithium, 4 pieces, AA cells	SD01-Z0930
Set of **SePem 02** consumable components including 3 x 6 O rings for exchanging batteries and sensors	SD01-Z0950
Stick-on labels with digits (0-9)	7457-0011

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