Level   Pressure   Flow   Temperature   Liquid Analysis   Registration   Systems Components   Services   Solutions

Operating Instructions

ReadWin® 2000

PC Software on MS Windows®

Endress+Hauser

People for Process Automation

Revision history

Rev. #	Comment	Modifications	Date
07.01	Operating Instructions created, valid from version V1.0.0.0		01.07.01
08.04	Operating Instructions updated, valid from version V1.15.x.x	Section 5, 8, 9, 11	03.08.04
04.07	Operating Instructions updated, valid from version V1.21.x.x	Complete documentation reworked	01.04.07
10.08	Operating Instructions updated, valid from version V1.25.x.x	Section 5.2.2	28.10.08
01.10	Operating Instructions updated, valid from version V1.26.x.x	Section 1.5, 5.2.2.1	01.01.10

Contents

1 Introduction

1.1 Preface

These Operating Instructions describe a PC software package which can be used to configure modern recorders, temperature transmitters, samplers and system components, and visualize and store measured data and measured value curves. In addition, a detailed description of the installation procedure is also provided.

Please retain an electronic or paper copy of these Operating Instructions!

1.2 Symbols

Caution

This symbol is used to indicate that data can be corrupted if the instructions are not followed exactly as specified.

Note

This symbol is used to draw your attention to special information.

Cross-reference

This symbol refers to additional information in other chapters or sections of these Operating Instructions.

1.3 Concept

The PC software can be installed both on a stand-alone PC and on multiple computers in a network. The two installation concepts are illustrated in graphics overleaf.

Stand-alone concept

The PC software works on its own on a stand-alone PC. Several units can be connected to the PC and communication can take place by means of a serial interface (RS232/RS485) or a USB interface, by modem, Ethernet or using a data storage medium.
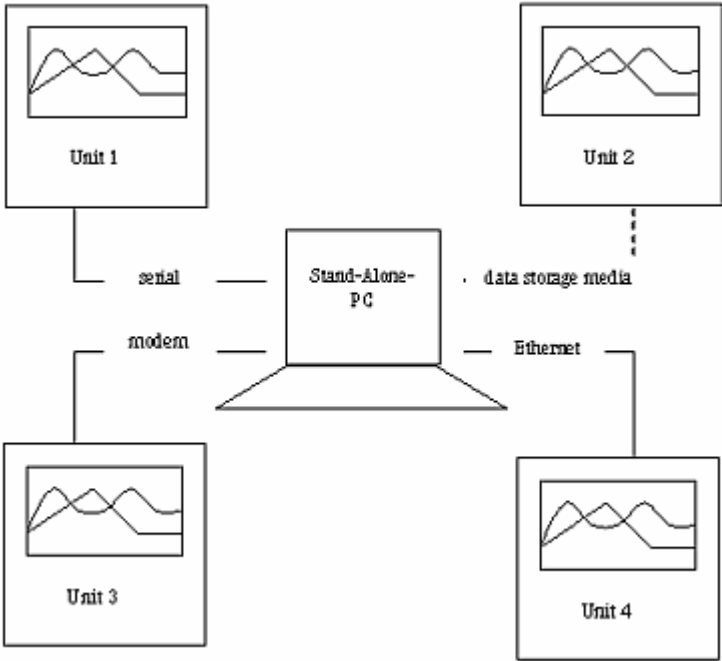
Network concept

The PC software can also run on multiple computers in a local network. Here, the data directory is stored on a network drive. A "server" PC and as many "client" PCs as required are created.
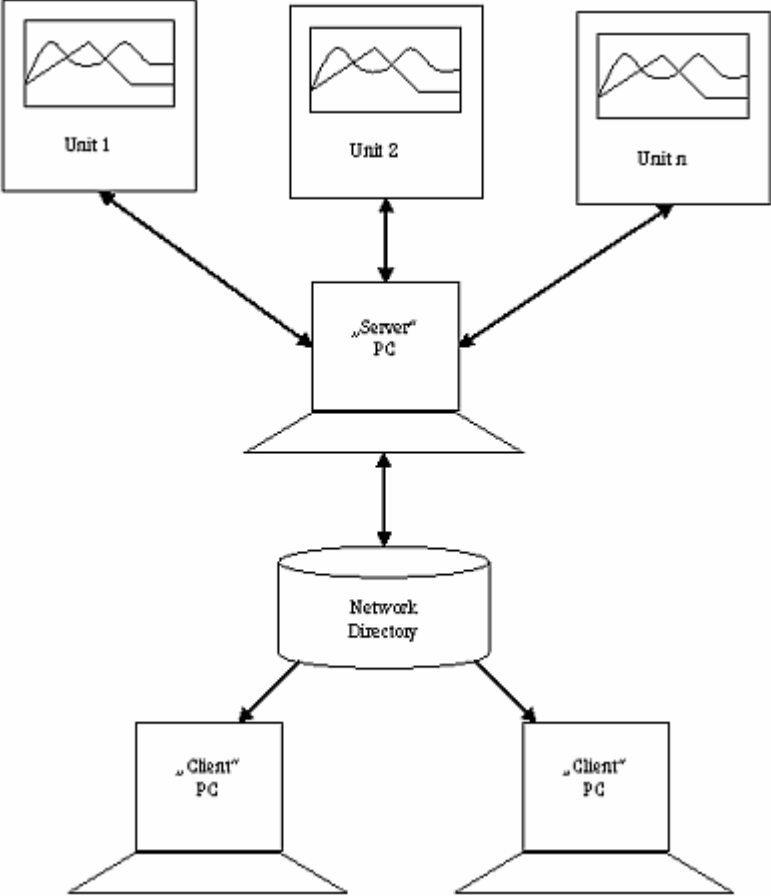
1.4 Typographical conventions

Menu items, fields and commands are written in **bold**. Menu names, menu items and submenu items are separated by a '➔'.

1.5 Hardware and software requirements

The following hardware and software requirements must be met before installing and operating the PC software:

- IBM PC or compatible PC, Pentium 600 MHz or higher
- 128 MB main memory
- 200 MB free hard disk space
- CD-ROM drive
- Screen resolution at least 800 x 600 pixels
- Microsoft Windows 2000 SP4 / XP / Vista / 7
- MS Arial Unicode font

Recommended minimum configuration

The following minimum configuration is recommended:

- Pentium 2 GHz processor or higher
- 1 GB RAM
- 200 MB free hard disk space + additional space for data
- Screen resolution 1024 x 768 pixels

All names and identifiers used can be trademarks or registered trademarks of the owner in question.

1.6 Installation

Setup

Insert the CD.

If autostart is activated, the installation is started automatically. Otherwise go to the "…\install" directory on the CD and start "Setup.exe".

Follow the instructions of the installation program.

1.7 Starting the program for the first time

Select a language

The operating language can be selected the first time the software is started. **Some** of the languages available **include**:

- German

- English

- Dutch

- French

- Danish

- Italian

- Swedish

- Polish

- Japanese

- Russian

The operating language can always be changed by means of the main menu item **Extras → Program options → Change language**.

Select the units

Once you have selected the operating language, you can choose which units should be added to the database.
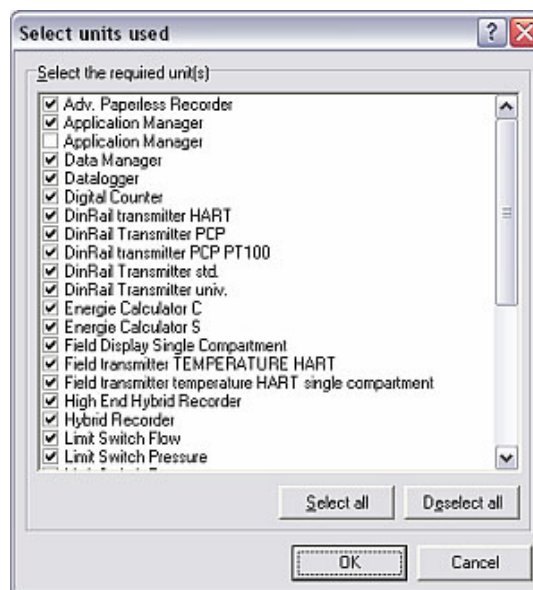
Here, you can either select individual units by simply ticking the box beside the unit name or you can also select all the units listed on the screen.

Depending on the unit type selected, the relevant functions appear on the user interface after confirming with **OK**. This provides a high degree of transparency right at the commissioning stage.

The selected units used can also be changed subsequently via the main menu **Extras → Program options → Select units used**.

The software has now been installed successfully and the program can be started.

1.8 Version update

Update

To update software version 1.17.1.0 and earlier, the software has to be uninstalled via **Start → Control panel → Software** before the new version can be installed!

Never delete installation data and files using Explorer!

Note

We recommend you make a backup of the data directory before every version update.

1.9 User interface

The user interface of the program has the following structure:

1.9.1 Main menu bar

Main menu bar

The following main menu items are available for selection:

- Unit
- Display
- Read out
- Automatic
- Extras
- ? (Online Help)

When you click a menu item in the main menu bar or menu icon bar, a drop-down menu with a command list appears. Clicking a command opens a dialog box.
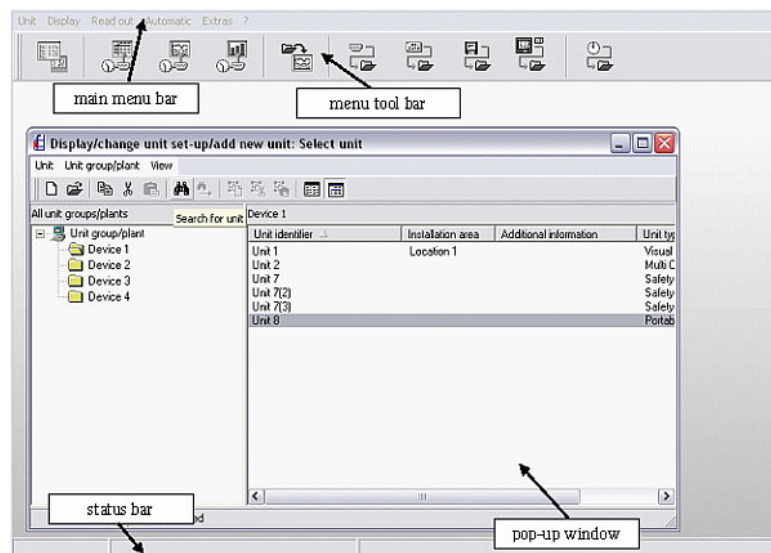
1.9.2 Menu icon bar

Menu icon bar

The following icons are available for selection:

Icon	Description
	Display/change unit setup/add new unit • Opens the unit dialog box • Alternative: Menu **Unit→ Display/change unit setup/add new unit** or function key **F2**
	Display instantaneous values: digital values • Opens the unit dialog box • Alternative: Menu **Display → Display instantaneous values: → digital values** or function key **F3**
	Display instantaneous values: curves • Opens the unit dialog box • Alternative: Menu **Display → Display instantaneous values: → curves** or function key **F4**
	Display instantaneous values: bar graphs • Opens the unit dialog box • Alternative: Menu **Display → Display instantaneous values: → bar graphs** or function key **F5**
	Display measured values from database • Opens the unit dialog box • Alternative: Menu **Display → Display instantaneous values** or function key **F6**
	Read out measured values using interface/modem • Opens the unit dialog box • Alternative: Menu **Read out → Read out measured values using interface/modem** or function key **F7**
	Read out measured values using PC card drive • Opens the unit dialog box • Alternative: Menu **Read out → Read out measured values using PC card drive** or function key **F8**
	Read out measured values using diskette • Opens the unit dialog box • Alternative: Menu **Read out → Read out measured values using diskette** or function key **F9**
	Read out memory card by interface/modem • Opens the unit dialog box • Alternative: Menu **Read out → Read out memory card by interface/modem**
	Automatic • Starts the automatic process • Alternative: Menu **Automatic → Start** or function key **F10**

Clicking one of these menu icons opens the corresponding dialog box.

Note

Individual functions are not available depending on the unit selected (see 1.7).

1.10 Directories

Measured values and unit settings that are to be read out by the software and then stored or saved are placed in special directories on the PC.

- The **data directory** is the root directory where all the data of the database are stored.

- The **import/export directory** is used for saving/exporting and importing unit settings and for storing exported measured values.

- The **automatic directory** contains the measured values of the automatic function.

Directories

Using the **Extras** main menu item, open the option **Program options → Set up**. Select the **Directory** tab in the screen that appears.
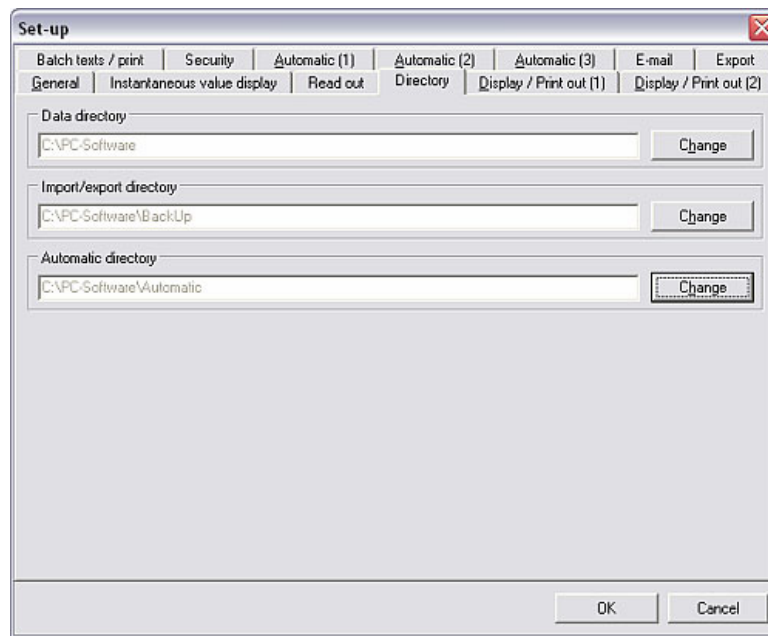
You can use the **Change** button to create the directories on a specific drive on in a specific folder or subfolder.

Note

We recommend you create all the directories in a common folder as this could otherwise result in problems with regard to database organization.

Example:

Data directory: C:\PC-Software

Import/export directory: C:\PC-Software\Backup

Automatic directory: C:\PC-Software\Automatic

Caution

If you are operating the PC software in a network and multiple computers in the network access data and measured values, you have to set up the directories in a folder on a network drive which all users can access (e.g. **Z:\...\PC-Software**). See also 1.11 Network mode.

1.11 Network mode

In the network mode, the program allows several users to access the program's database. Important initial settings have to be made.

1.11.1 Important information on the network mode

In order to avoid data loss, you must have a stable network.

Caution

When performing maintenance work on the network, it is absolutely essential to end every version of the software started beforehand. Otherwise you run the risk of data loss.

1.11.2 Specifying the data directory

A directory must be created in the network. The PC software creates the database in this directory. See also the information in 1.10.

Note

All users require read and write authorization for this directory. This is assigned by your network administrator.

1.11.3 User rights

Once you have created the directory on the network drive and every user has read and right access to this directory, you can activate the PC software backup system to protect data saved.

Cross-reference

Detailed information on how to create multiple users and assign rights to these users is provided in Section 4 Security/user administration..

1.11.4 Restrictions

Logging on

Each user can only log onto the database once. If a user tries to log on more than once, an error message is displayed and the action is aborted.

Deleting units from the database

Before a unit is deleted from the database, you must make sure that no other user is currently accessing this unit.

1.12 Data security

The measuring devices used reliably record and save the measured values and results on site. These are saved to the PC database after being transmitted correctly.

Note

Manipulated measured data are detected by the system and highlighted in color.

Date/Time	Status	Channel 1	Channel 2
		Average	Average
		°C	°C
05.04.01 06:00:00	OK	1,7	87,3
05.04.01 06:06:00	3	4,0	121,9
05.04.01 06:12:00	OK	1,7	86,1

Legend | Unit 1 (Tabular) | Unit 1 (Events)

Data integrity: Checksum error (3)

1.13 Database

Keep the database of the PC software relatively small so that the program can work to full capacity. To do so, continuously export saved measured data to an Excel file.

Caution

Exported data can no longer be imported into the database. If you want to import original data back into the database at a later date, the measured data must be **stored** beforehand. See 9.2.

Cross-reference

Detailed information on how to export data is provided in Section 2.2.4.

1.14 Data formats

Data formats

When generating files, the PC software uses specially generated data formats:

- ***.rsd**, ***.rdf** for stored measured data
- ***.stg** for stored unit settings
- ***.atd** for audit trail data
- ***.txt, *.xls, *.csv** for text files
- ***.prg** for unit program files

Caution

We strongly advise you against renaming specific data formats of the software!

File names

The file names are generated automatically by the program in such a way that the file name contains all the necessary information.

In this way, the name of the file contains the unit name and the exact start and end date of the recording or the time range.

2 Quick start – first steps in using the software

2.1 After the setup

The procedure for installing the software has been explained in detail in Section 1.6. You can now start working with the PC software.

The following section illustrates the main procedure followed when using the software. Detailed information on the individual steps is then provided in the sections referenced.

$\Longrightarrow$

Procedure

Start

$\Downarrow$

Set up a unit group ($\rightarrow$ Section 3.2.2)

$\Downarrow$

Add a new unit ($\rightarrow$ Section 3.2.4)

$\Downarrow$

Display unit setup ($\rightarrow$ Section 3.3)

$\Downarrow$

Read out measured values ($\rightarrow$ Section 6)

$\Downarrow$

Display measured values ($\rightarrow$ Section 8)

$\Downarrow$

Process measured values ($\rightarrow$ Section 9.4)

$\Downarrow$

Finish
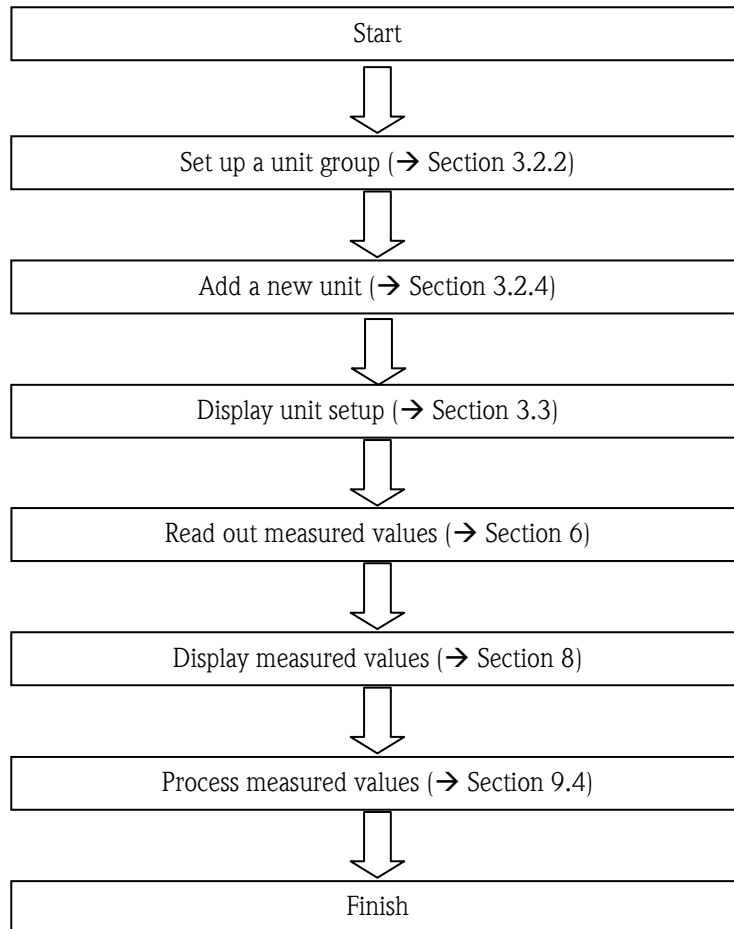
2.2 Simple example of using the application for the first time

2.2.1 Initial settings

Create a unit group

The database does not yet contain any data after the initial startup. For this reason, the program prompts you to create a unit group first of all.

The following dialog box appears under the menu item **Unit → Display/change unit setup/add new unit**:
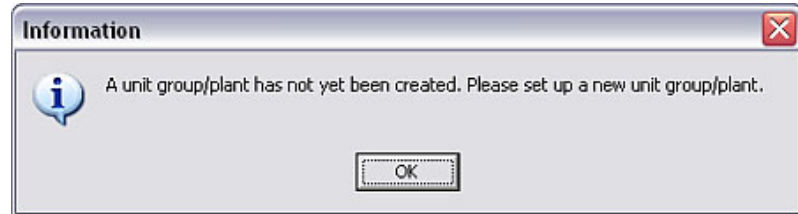
✎ **Note**

At least 1 character has to be entered for the identifier of the unit group.

Create a new unit

Once you have created a unit group, create a (new) unit in this group. In doing so, you enter the unit identifier and can also specify the installation point and additional information. In addition, the method for transmitting the unit settings must be selected.
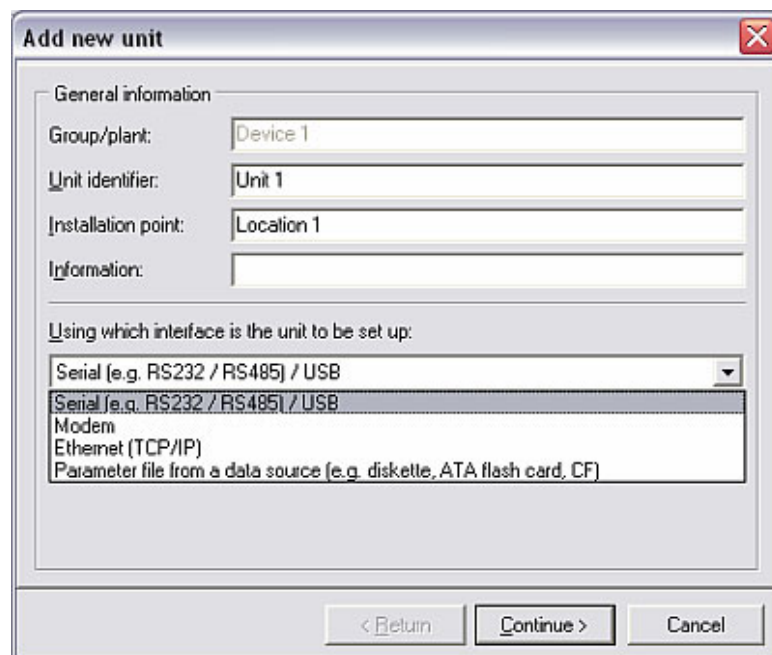
⟹ **Cross-reference**

In our example, the unit settings are transmitted by the **serial (RS232/RS485) or USB interface**. Alternatively, the settings can also be communicated by **Modem**, **Ethernet (TCP/IP)** or **Parameter files from a data source (e.g. diskette, Compact Flash, SD, etc.)**. Detailed information on this can be found in Section 3.

Configure the interface parameters

The interface parameters of the unit recently created now have to be configured. Here, you can either specify the settings manually or determine them automatically.

Note

Make sure that the four-digit release code of the measuring device is entered correctly. The code must match that of the device. Otherwise, a connection cannot be established and the error message 20005 appears.

Unit setup

You can now set up the unit using the PC software.
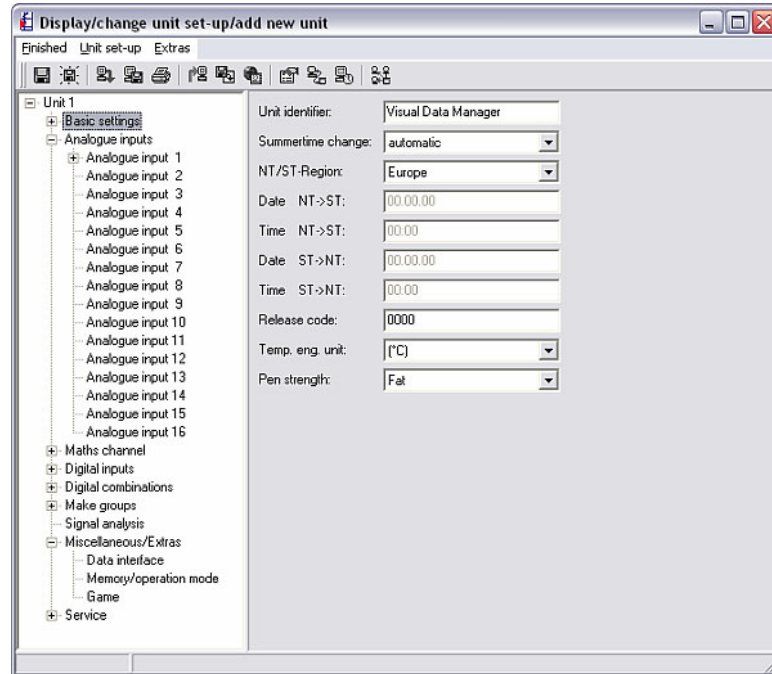
Once you have made the settings, you can send them to the device via the **Send setup to unit** command in the **Finished** menu if this device is connected to the PC.

The settings are saved in the PC software with the **Save setup in unit database** command. You can then close the application with **Close**.

2.2.2 Reading out measured values

2.2.2.1 General information

Once you have created and configured a unit, you can now read out initial measured data via the PC software. First of all, you must use the **Read out** menu item to select whether you want to read out the **measured values by interface or modem** (alternatively, press function key **F7**), from a **PC card drive** (**F8**) or from a **diskette** (**F9**).

Cross-reference

All three methods are explained in brief in the following section; a more detailed description of the procedure for reading out measured values using an interface, modem, PC card drive or disk is provided in Section 6.

Note

The target directory for the measured data read out on your computer must be specified beforehand in the **Directory** tab in the menu item **Extras → Program options → Set up** (see 1.10).

The unit must already have been entered in the database (see 2.2.1). The connection to the unit is established using the interface parameters specified there.

2.2.2.2   Reading out measured values using interface/modem

If you want to read out the measured values using the serial or USB interface, by Ethernet or by modem, select the menu item **Read out → Read out measured values by interface/modem**.

Now select the required unit from the list of units in the dialog box that opens.
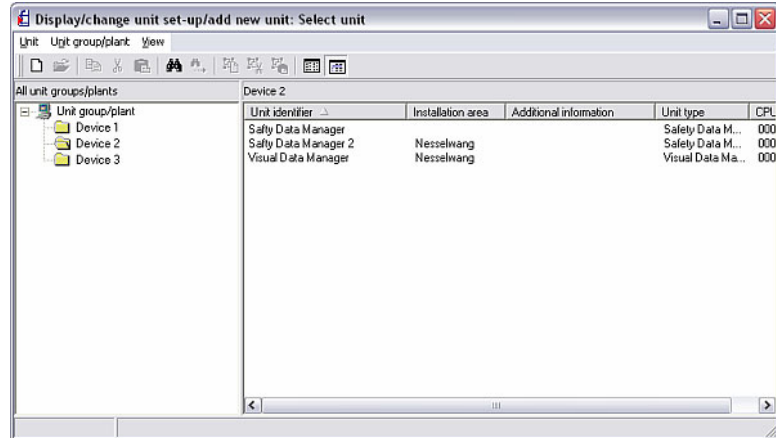
The following screen indicates that data are being transmitted between the connected unit and the PC.
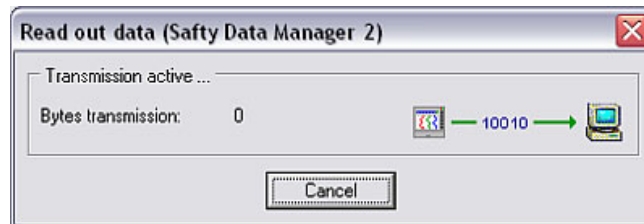
The measured data from the unit are then saved to the target directory on the PC.

2.2.2.3   Reading out measured values using PC card drive or diskette

A unit's measured values which are saved on a memory card or disk are transmitted from the internal or external PC card drive or disk of the unit in question to your PC. The commands **Read out measured values using PC card drive** (function key **F8**) and **Read out measured values from disk** (function key **F9**) can be found in the **Read out** menu.

In the dialog box that opens, you can now choose the drive and the directory where the measured data are located.
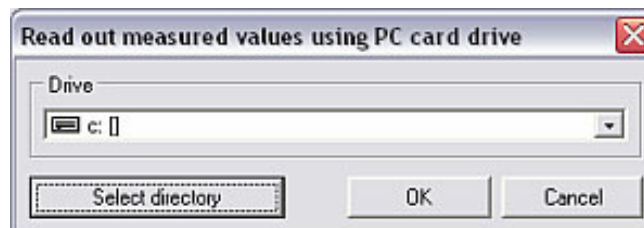
Note

The drive has to have been installed correctly beforehand. Please refer to the Operating Instructions of your PC or PC card drive for further information.

The measured data are then read from the PC card or disk to the target directory of your choice on the PC (see 2.2.2.1).

Once the data have been transferred, the program waits for you to confirm that the measured data should be deleted from the data storage medium (PC card or disk).

Note

We recommend you delete the data from the disk or PC card to be able to transfer the next batch of measured data as fast as possible.

2.2.3 Displaying measured values

2.2.3.1 General information

The software makes it possible to display the instantaneous values of the connected units. The user can choose from a range of display modes such that the measured values can be visualized as a **curve**, **digital values** or as **bar graphs**.

Note

At least one unit must be connected to the PC via interface, modem or Ethernet (TCP/IP) and the unit must have been added to the database beforehand (see 2.2.1).

The software allows several connected units to be displayed simultaneously.

2.2.3.2 Displaying measured values as digital values

If you would like to display the measured values as digital values, select the command **Display measured values: digital values** in the **Display** menu item (alternatively, press function key **F3**).

The following screen appears:
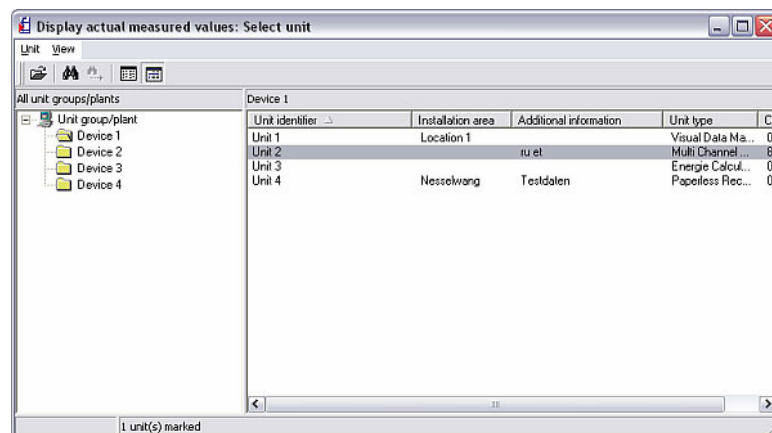
Select a unit from the list of units. The program establishes a connection to the selected unit when you double-click the unit or select **Unit → Open unit**.

Up to 20 units or 100 channels can be displayed as a digital value.

Note

If the unit is not connected to the PC, instantaneous values cannot be displayed. The message 20005 appears.

The following screen appears when a connection has been successfully established to the selected unit(s).
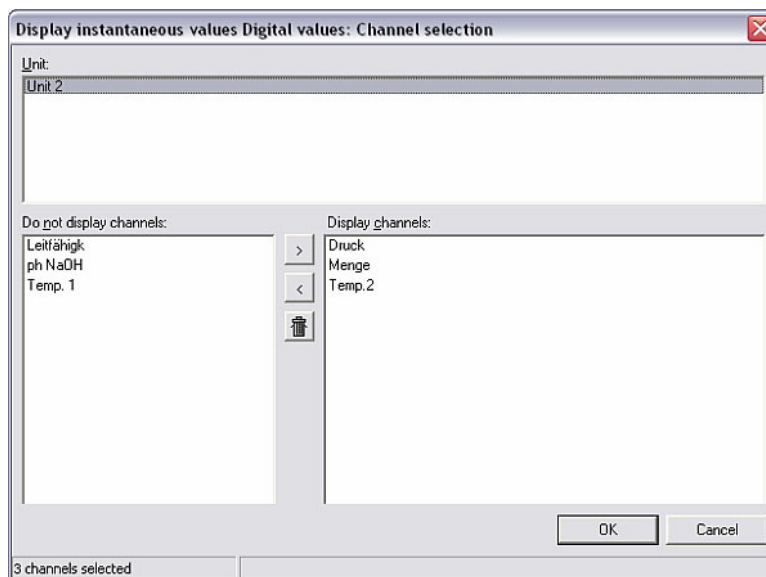
The screen is split into three fields. The units you have selected are displayed in the top field. Selecting a unit causes the unit's active channels to be displayed in the lower left-hand field. Channels can now be selected and moved to the field on the right.

If you want to select several channels at one time, simply move the cursor down the list with the channels. Click the '>' symbol to move the channels to the field on the right entitled **Display channels**. The remaining channels are not displayed.

The instantaneous measured values are displayed after confirming with **OK**. The channel name and the units configured are also displayed in addition to the instantaneous value.
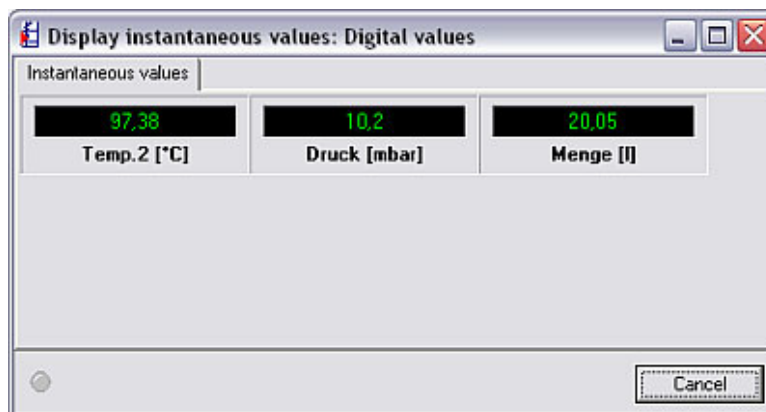
Instantaneous measured values are shown in green. The channel name is marked red if the limit value is violated which means an error can be detected quickly.

Press **Cancel** to terminate the display.

2.2.3.3   Displaying measured values as curves

If you would like to display the measured values graphically as curves, select the command **Display measured values: curves** in the **Display** menu item (alternatively, press function key **F4**).

Select the required unit or units from the list of units as explained in 2.2.3.2.

Up to 20 units or 20 channels can be displayed simultaneously as a curve.

Note

If the unit is not connected to the PC, instantaneous values cannot be displayed. The message 20005 appears.

A screen appears in which the selected units are displayed. The active channels can be moved to the **Display channels** field by selecting a unit. Channels that remain in the field on the left are not displayed.

The selected measured values are displayed in the following screen as a curve after confirming with **OK**.
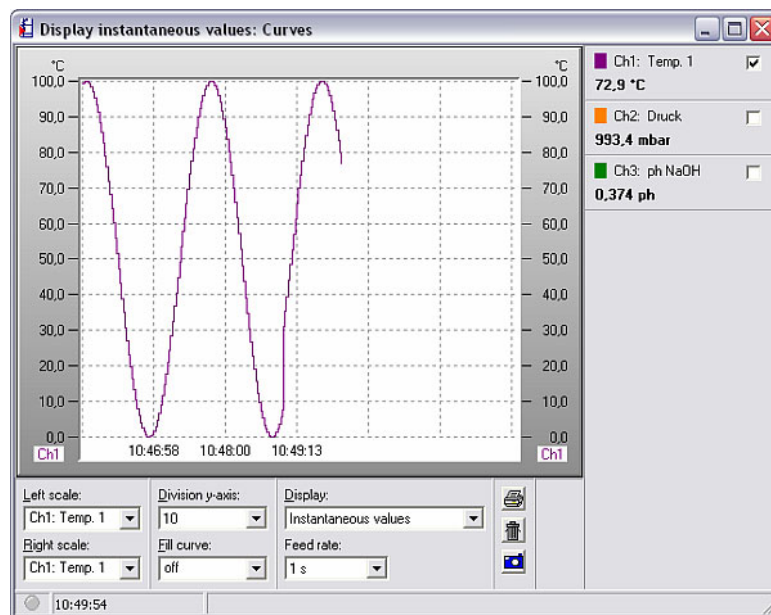
There are various ways of displaying or configuring the values:

- Scale (left and/or right)

- Division y-axis (1-10)

- Display: Display instantaneous values or display the measured value cursor. The right side of the screen either displays the values currently measured, or the values selected with the cursor if the measured value cursor is used.

- Fill curve: You can use this function to select a channel which should be filled in.

- The feed rate can be set between 1 second and 30 minutes.

Note

It is possible to hide individual channels so that they are not displayed. To do so, deactivate the check box to the right of the channel (click the box to remove the 'tick' sign). In addition, the color of the channel can be changed by simply clicking the color field on the right.

Printing the curve

The curve can be printed out on a printer. To do so, select the printer icon underneath the curve display.

Deleting a graphic

The graphic can be deleted by clicking the trash can icon. This causes recording to start again.

Snapshot

It is possible to copy the current curve to the clipboard to then insert the curve into a program of the user's choice. To generate a snapshot, click the camera icon beneath the curve display.

2.2.3.4   Displaying measured values as bar graphs

If you would like to display the measured values graphically as bar graphs, select the command **Display measured values: bar graphs** in the **Display** menu item (alternatively, press function key **F5**).

Select the required unit or units from the list of units as explained in 2.2.3.2.

A maximum of 20 units or 100 channels can be displayed as a bar graph.

Note

If the unit is not connected to the PC, instantaneous values cannot be displayed. The message 20005 appears.

A screen appears in which the selected units are displayed. The active channels can be moved to the **Display channels** field by selecting a unit. Channels that remain in the field on the left are not displayed.

The selected measured values are displayed in the following screen as a bar graph after confirming with **OK**.
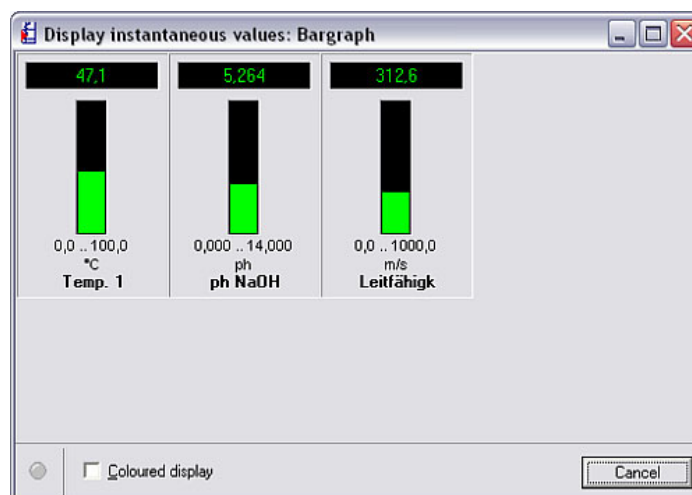
The bar graphs can either be displayed in green or in multiple colors. For multicolored display, select the command **Colored display**.

2.2.4 Exporting measured values for further processing

The program allows the user export measured values from the database to use them in other applications (e.g. to analyze the values in spreadsheet programs etc.).

Caution

Exported measured data can no longer be imported into the database.

⟹   **Cross-reference**

To keep the unit database small, measured data can be stored to the import/export directory. See Section 9.2 for this purpose.

Select the command **Export measured values** in the **Extras** menu item. The following screen appears:
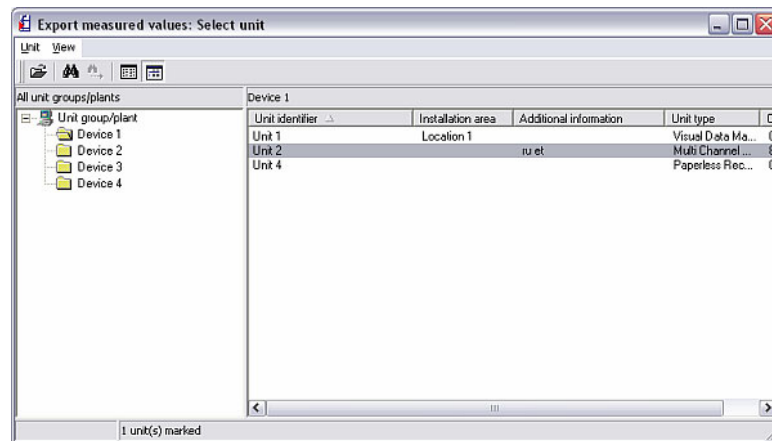
From the list of units, select the unit whose measured values are to be exported. The following screen appears:
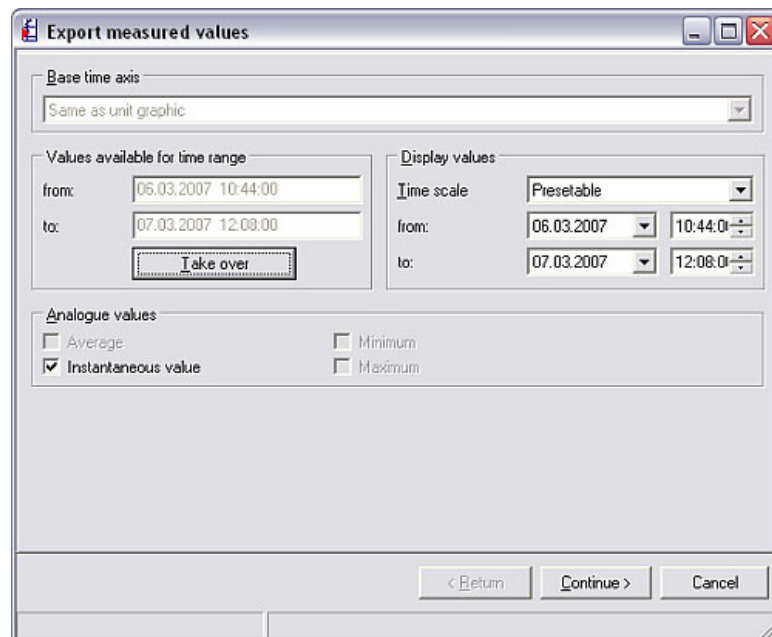
You have the option of setting the base time axis for measuring period values, daily values or monthly values or have it the same as the unit graphic. In addition, you can choose the time scale you want to export in the **Display values** section.

Click **Continue >** to select the desired channels.
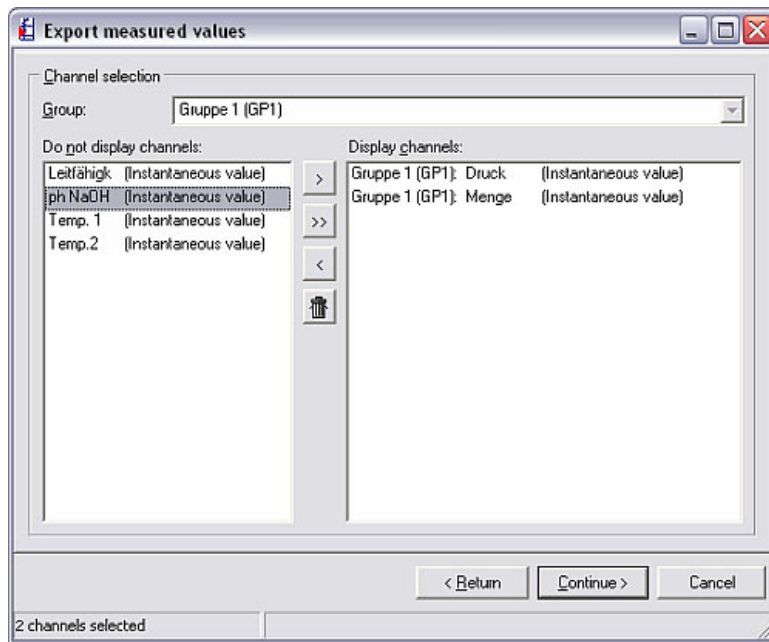
To do so, select the channels required in the field on the left and click the '>' arrow symbol to move the channels to the **Display channels** field. You can also click the double–arrow symbol '>>' to move all the available channels at once. In addition, you can use the back–arrow symbol '<' to move channels back to the **Do not display channels** field.

Pressing **Continue >** takes you to the following screen:
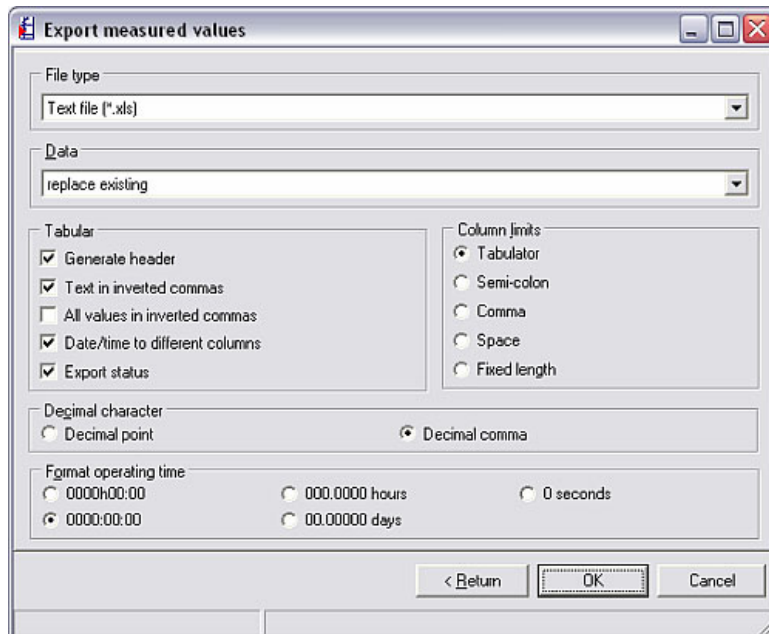
You can make the following settings here:

- **File type:** You can save the data to be exported as a *.txt file, *.xls file or *.csv file. All three file formats are compatible with MS Excel.

- **Data**: The data to be exported can be appended to the file or the existing file can be replaced.

- **Tabular**: You can select various options for displaying in the tabular view. To do so, simply check the boxes beside the options.

- **Column limits**: Select how the columns should be delimited, e.g. tabulator, semicolon or comma.

- **Decimal character**: Here you can choose whether a comma or a decimal point acts as the decimal character.

- **Format operating time**: Select the format for displaying the operating time.

When you press **OK**, the screen where you select the storage location and the name of the file generated appears. If you selected the command **Data: replace existing** in the previous screen, you must confirm that the existing file should be replaced.

You can now open the generated file in MS Excel, for example, and view, edit and analyze the measured data in the table.

3 Creating and managing a unit database

3.1 General information

The functions listed in Section 2 are explained in more detail below.

Generally speaking, the **Unit** main menu item is used for managing the unit database.

Note

Units that are to be configured, managed, read out or displayed with this software have to be added to the unit database beforehand. Afterwards, all the settings and values are available by simply selecting the unit.

The **Unit** main menu is split into the following submenus:

- **Display/change unit setup/add new unit**

- **Exit program**

You can close the entire application with the **Exit program** command.

3.2 Creating unit groups and units in the database

3.2.1 Unit dialog box

Unit dialog box

If you select the **Display/change unit setup/add new unit** command in the **Unit** menu, the unit dialog box is automatically opened.

In the main menu bar, click a menu item in the unit dialog box. This opens a drop–down menu with the dialog commands. Clicking a menu icon in the menu icon bar causes this command to be executed immediately without opening the drop–down menu.

The following icons are available for selection in the tool bar of the unit dialog box:
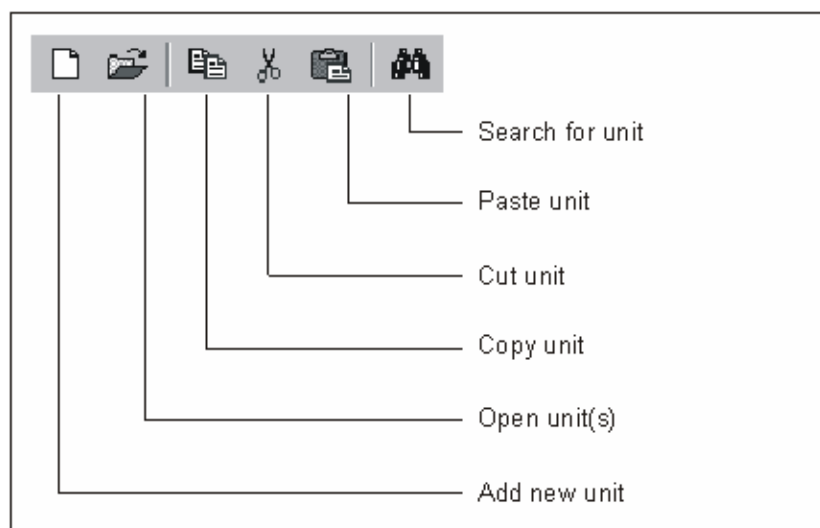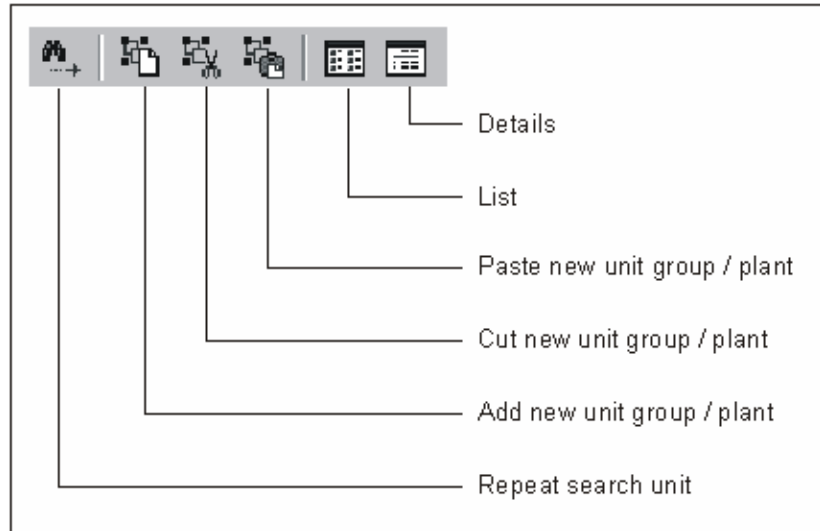
Note

The commands listed below from the drop-down menus of the main menu items **Unit** and **Display** are the same in every unit dialog box.

Unit

Open unit

Select **Open unit** to establish a connection to the selected unit.

Search for unit

Select the command **Search for unit**. Enter the desired unit identifier in the text field and click **OK** to confirm. If the unit you are searching for is found, the cursor moves to the unit group and displays the unit found. The search is aborted if no unit could be found in the database with the unit identifier entered.

If the exact unit identifier is not known, you can enter just a part of the name and then an asterisk *, e.g. data*. The cursor then goes to the first unit with the corresponding unit identifier.

Repeat search unit

Additional units are displayed with **Repeat search unit** or function key **F3**.

Select all units

Click the **Select all units** command to activate all the units in the unit list of the selected folder of the dialog box.

Cancel

Select **Cancel** to close the unit dialog box.

View

Details

To get a detailed view of the unit in the unit dialog box, click the **Details** command or the corresponding menu icon.

List

If you only want to see the unit list, select the **List** command or click the corresponding menu icon. The activated setting is ticked in the drop-down menu.

The unit dialog box view is refreshed with function key **F5**.

Directly selecting a unit

Direct unit selection   Click a unit directly in the unit list. Press the right mouse button to directly activate the drop-down menu of the **Unit** menu item.

3.2.2   Creating a new unit group

Creating a new unit group   A unit group has to be created before a unit can be added to the database. Go to **Unit → Display/change unit setup/add new unit** to open the unit dialog box.

First highlight the field on the left **Unit group/plant** and then right-click to select **Add new unit group/plant**.
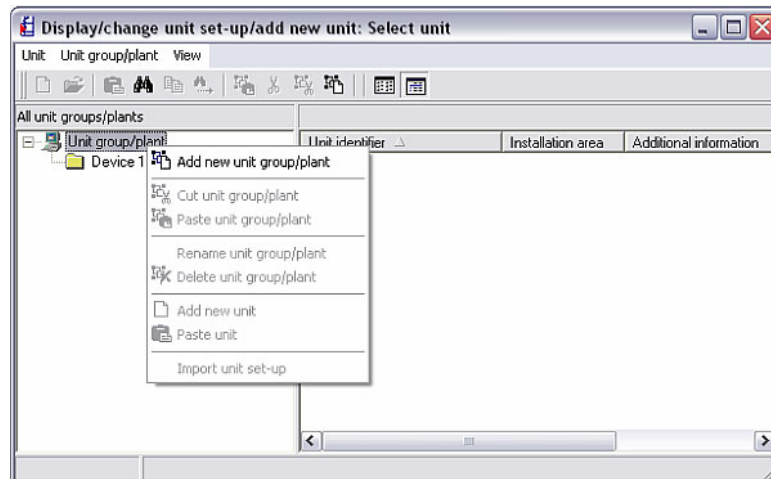
The following screen appears:

Note

You have the option of saving your units to various directories and subdirectories, known as **unit groups**. Here, the name of the group can be selected at random by the user and the group can be renamed at any time. This increases transparency if a number of units are to be managed.

At least one character must be entered in the text field!

3.2.3   Existing unit group

In the PC software, you can **move**, **cut** or **paste**, **rename** or **delete** an existing unit group.

If you select the **Display/change unit setup/add new unit** function in the **Unit** menu item, the unit dialog box appears which is split into two fields. The field on the left contains a list of the existing unit groups while the units within a unit group appear in the field on the right.

3.2.3.1   Moving a unit group

To move a group to another higher-order group or subgroup, you first have to highlight the desired unit group in the field on the left. Using the drag&drop function, this group can be moved to another group; all the units that are in this unit group are also moved automatically.

3.2.3.2   Cutting/pasting a unit group

You can also use the **Cut unit group/plant** and **Paste unit group/plant** commands to move a unit group within the list to another higher–order group or subgroup. To do so, simply select the group in question and run the commands above with the right mouse button.
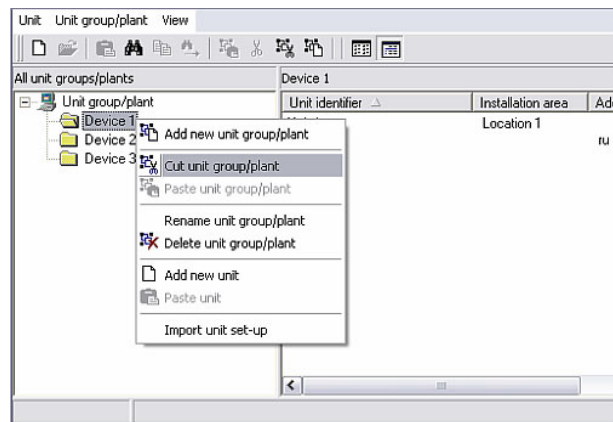
3.2.3.3   Renaming a unit group

Unit groups can be renamed at any time. To do so, select the unit group in question from the list in the field on the right in the unit dialog box. With the right mouse button, run the **Rename unit group/plant** command to open a new screen where you can change the name of the group. Press **OK** to accept the new name.

Note

The name of the unit group must be unique. Unit groups of the same name are not accepted.

3.2.3.4   Deleting a unit group

If you want to delete a unit group from the list, you have to select the group from the right–hand field of the unit dialog box. The group is deleted from the list with the right mouse button using the command **Delete unit group/plant**.

Note

Only empty unit groups can be deleted. Thus, all subgroups or units have to be deleted beforehand!

Caution

If an item is deleted, the delete action cannot be reversed. For this reason, every delete must be confirmed with '**Yes**'.

3.2.4 Creating a new unit

If you want to create a new unit, you have to assign it to an existing unit group or a new unit group. Detailed information on how to create a new unit group is provided in Section 3.2.2.

Proceed as follows to create a new unit:

In the **Unit** menu item, open the unit dialog box using the command **Display/change unit setup/add new unit** (alternatively, press function key **F2**). This opens the unit dialog box. In the field on the left of the screen, select the unit group where the new unit should be created. Clicking **Unit → Add new unit** opens the following screen:

Unit identifier

A **Unit identifier** first has to be entered. This identifier must contain at least 1 character. In addition, the **installation point** and other **information** on the unit can also be specified.

Note

The text entered in the **Unit identifier** field must be different for every unit managed with this software. If this is not the case, the following error message appears which tells you to choose another identifier for the unit.
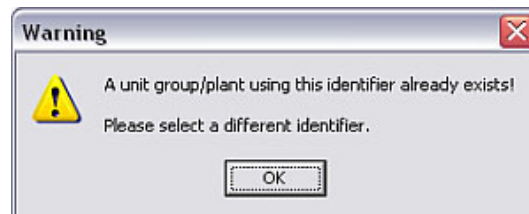
Transmission modes

Before you can read in the unit setup in the program, you have to specify how the unit settings are transmitted. In doing so, you can choose between the following transmission modes:

- Serial via RS232/RS485 or USB

- Modem

- Ethernet (TCP/IP)

- Parameter file from a data source

$\Longrightarrow$

Cross-reference

Once you have selected the transmission mode, you can configure the interface parameters of the new unit. This and other information on the individual transmission modes are described in detail in Section 3.3, as is the process for reading in the unit setup.

3.2.5   Existing unit

If you have already created the unit, you can also move or copy the unit to another unit group. In addition, you can rename or delete the unit.

3.2.5.1   Cutting/pasting a unit

This function can be used to move a unit to another unit group.
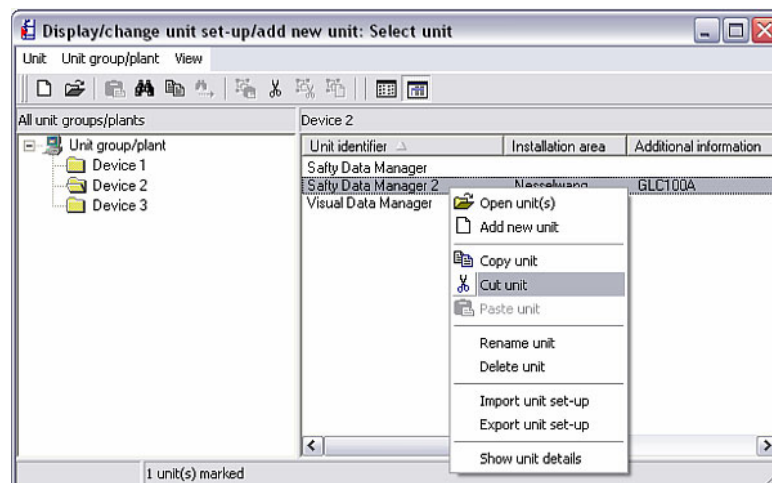
Cutting/pasting a unit

In the unit dialog box, select a unit from the unit list. Using the right mouse button (alternatively, using the **Unit** menu item), the unit can be removed from the current group with the **Cut unit** command. Select the new unit group and run the **Paste unit** command or use the **Unit** menu item to paste the unit to the preferred group. The unit can be moved to any unit group or subgroup.

Note

All the **unit settings** and **measured values** pertaining to the unit are moved.

3.2.5.2   Copying a unit

In the unit dialog box, select a unit from the unit list. Using the right mouse button (alternatively, using the **Unit** menu item), the unit can be copied from the current group with the **Copy unit** command. Select the new unit group and run

the **Paste unit** command or use the **Unit** menu item to paste the unit to the preferred group. The unit can be copied to any unit group or subgroup.

Note

Measured values are not copied! A number is appended to the unit identifier to indicate that a unit has been copied since each identifier can only be used once in the system (e.g. **Unit 2(2)**).

3.2.5.3   Moving a unit

In the **Unit dialog box**, select the unit that you want to move from the current unit group to another unit group.

There are two ways of moving a unit:

Moving a unit using drag&drop function

- Move the unit using the drag&drop function. To do so, highlight the unit with the left mouse button and drag the highlighted object to the new folder. For security purposes, the following message is displayed. This message must be confirmed with '**Yes**'.
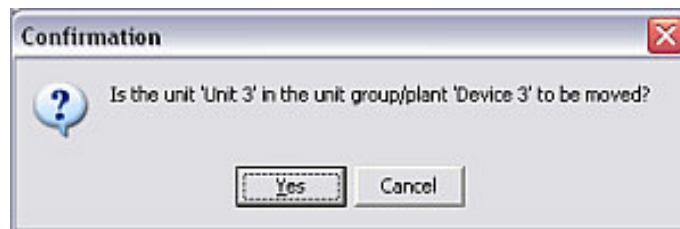
Moving a unit using a command

- Select the unit and, using the right mouse button, select the command **Cut unit**. Now go to the folder to which the unit should be moved. In the **Unit** menu item, complete the operation with the **Paste unit** command.
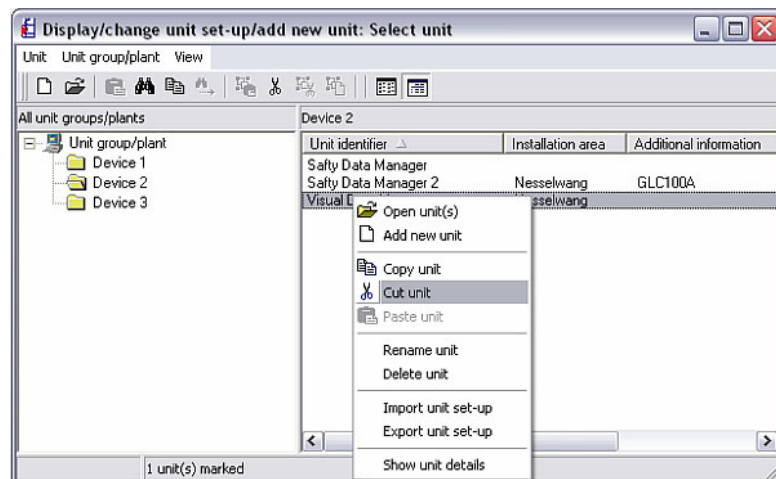
3.2.5.4   Renaming a unit

Renaming a unit

Select the unit to be renamed from the unit list in the **unit dialog box**. The **Rename unit** command opens a screen where you can enter the new name of the unit in the text field.

Note

The unit identifier/unit name has to be unique. Identical names are not permitted. The following error message is displayed.
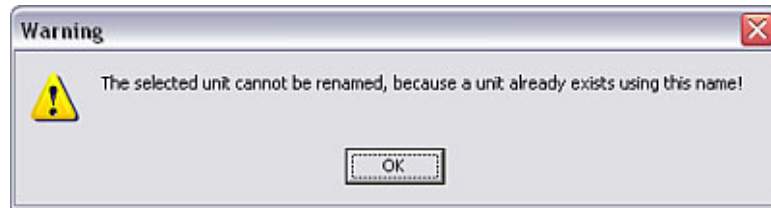
3.2.5.5 Deleting a unit

Deleting a unit

If you want to delete a unit from the unit database, you first have to open the unit dialog box via the menu item **Unit → Display/change unit setup/add new unit: select unit**. From the unit group, now select the unit that you would like to delete. Select the unit and select the **Delete unit** command via the **Unit** menu item. The following warning appears. This warning must be confirmed with **'Yes'**.
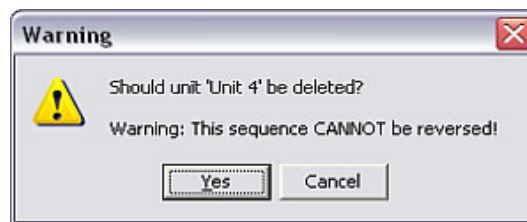
Caution

If an item is deleted, the delete action cannot be reversed. All the settings and measured values of the unit are deleted!

3.2.6 Exporting unit setup

The PC software allows users to export (copy) the settings of a selected unit from the unit database. The data/settings are not deleted from the database here.

Import/export directory

First configure the target directory where the data are to be stored. Stored data should be placed in the import/export directory. In the **Extras** main menu item, you can create the **Import/export directory** on your PC in the **Directory** tab using the command **Program options → Set up**.

Cross-reference

See general information on the **directories** in 1.10.

Exporting unit setup — Using the menu item **Unit → Display/change unit setup/add new unit: select unit,** from a unit group select the unit whose settings you would like to export or copy. The **Export unit setup** command in the **Unit** menu opens a screen where you enter the file name and save the data in the import/export directory. The file must have the extension ***.stg**.
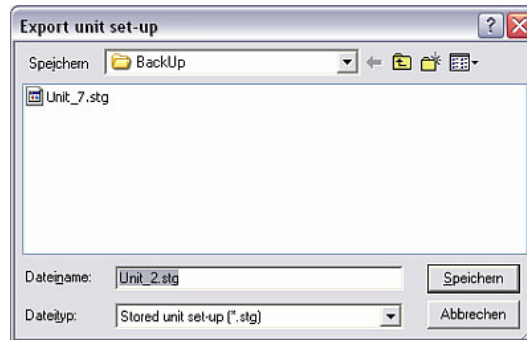
3.2.7 Importing unit setup

In addition to exporting unit settings, exported parameter files can be imported from the **Import/export directory** into the unit database.

Importing unit settings — Using the menu item **Unit → Display/change unit setup/add new unit: select unit** open the **Unit dialog box**. Now select the unit group into which the exported unit settings are to be imported. The menu item **Unit → Import unit setup** opens the following screen.
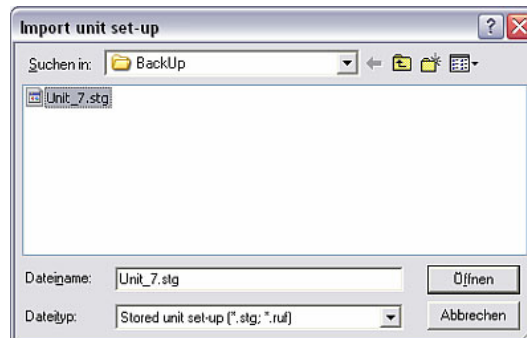
In the screen that opens, select the **Import/export directory** which contains the file with the settings. The file must have the extension ***.stg**. or ***.ruf.**

Once you have opened the selected file, the settings are imported and the unit is displayed in the unit list of the **unit dialog box**.

3.3 Reading in the unit setup

3.3.1 Reading in the unit setup/displaying for new unit

With the PC software, communication between the unit and the PC can be performed in various ways. The unit setup can either be transmitted via the **serial interface** by **RS232/RS485** or **USB**, by **modem** or by **Ethernet TCP/IP** as well as by means of a **Data source (disk, CompactFlash).**

Using the menu item **Unit → Display/change unit setup/add new unit: select unit**, open the unit dialog box and select the unit group where the new unit should be created.

⟹   **Cross-reference**

If a group does not yet exist for the new unit, you first have to create a new unit group. This is described in detail in Section 3.2.2.

Select the command **Add new unit** in the **Unit** menu item. A screen appears in which you can specify the unit identifier, i.e. the unit name, installation point and additional information. The way in which the unit setup is transmitted is then selected.

3.3.1.1   Serial transmission via RS232/RS485 or USB interface

If the unit is connected to the PC using the serial or USB interface, select **Serial (e.g. RS232 / RS485) / USB** and click **Continue >**.

You can now specify the settings of the interface parameters manually or check them automatically:

Checking the interface parameters automatically

• **Check automatically**

The software automatically checks the exact settings for the interface parameters. In the factory setting, the **device address** is set as '01'. The release code only has to be entered if the code is activated in the unit.

✎   Note

The release code in the PC software must match that in the unit. Otherwise error message 20005 is displayed.

Manual interface parameter configuration

• **Manual entry**

If you select the **Set up manually** option, you can configure all the relevant interface parameters yourself. Here, you can give the unit a name and also specify the **PC port**. The settings **baudrate**, **data bits**, **parity** and **stop bits** have to be identical to the settings of the connected unit.

Once the settings have been confirmed, the unit settings of the new unit are saved in the database and can be called up at any time.

Note

If the unit settings of several units are transmitted via the RS485 interface, a different address has to be entered for each unit! Numbers from 01 to 99 are valid; the address has to be entered at the unit and in the software.

Note

When transmitting data by USB, it is recommended to always use the same USB interface on your PC since the interface driver is automatically installed for this.

Note

Make sure that the four-digit release code of the measuring unit is entered correctly. The code must match that of the unit. Otherwise, a connection cannot be established and the error message 20005 appears.
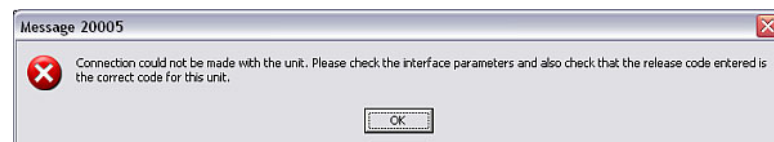
3.3.1.2   Serial transmission by modem

The unit setup can also be transmitted by modem. For this purpose, a modem has to be connected to both the unit and the PC.

Setting up modem for connection to unit

When transmitting data by modem, the modem connected to the unit must be set up for transmission. For this purpose, certain settings are made in the modem and saved.

First connect the modem to your PC. To do so, use the cable provided with the modem. Using the main menu item **Extras**, select the command **Set up modem for connection to unit**.

In this dialog box, configure the interface parameters set in the unit and the initialization string for your modem. Activate or deactivate the checkbox to choose whether modem initialization should be automatic or selected from the drop-down menu. After confirming with **OK**, the modem is configured for use at the unit.

Note

Please refer to the modem Operating Instructions.

The modem that is linked to the unit now has to be connected to the unit with a special modem cable.

Note

This special modem cable has to be ordered separately. When connecting the modem to the unit, pay particular attention to the instructions in the cable Operating Instructions.

To transmit the data to your PC by modem, connect the modem for the PC to your computer. Proceed as specified in 3.3.1. Select **Modem** as the transmission mode and click **Continue >**. The interface parameters have to be entered in the screen that appears. In contrast to transmitting data by RS232/RS485/USB (3.3.1.1), only manual configuration is possible when using a modem to transmit data.

First enter the unit address and the release code.

Note

If the unit settings of several units are transmitted by modem, a different address has to be entered for each unit! Numbers from 01 to 99 are valid; the address has to be entered at the unit and in the software.

Note

Make sure that the four-digit release code of the measuring unit is entered correctly. The code must match that of the unit. Otherwise, a connection cannot be established and the error message 20005 appears.
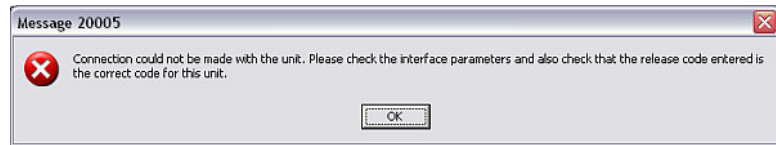
You can then give the unit a name and also specify the **PC port**. The settings **baudrate**, **data bits**, **parity** and **stop bits** have to be identical to the settings of the connected unit.
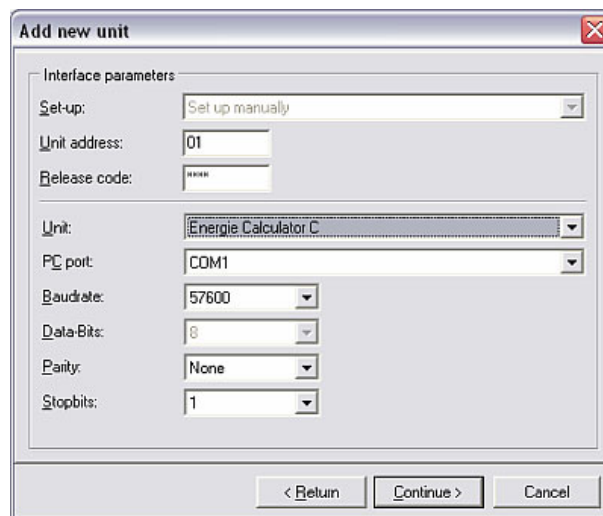
The modem settings are then entered. In the **Telephone no.** field, enter the number of the unit to be dialed or of the connected modem.

For the **Dial system**, you can also choose between the options **MFV (tone dial system), IWV (pulse dial system)** or **Wireless modem/cellular phone**. The **Line number** and the number of seconds after which the dial sequence can be aborted can also be configured.
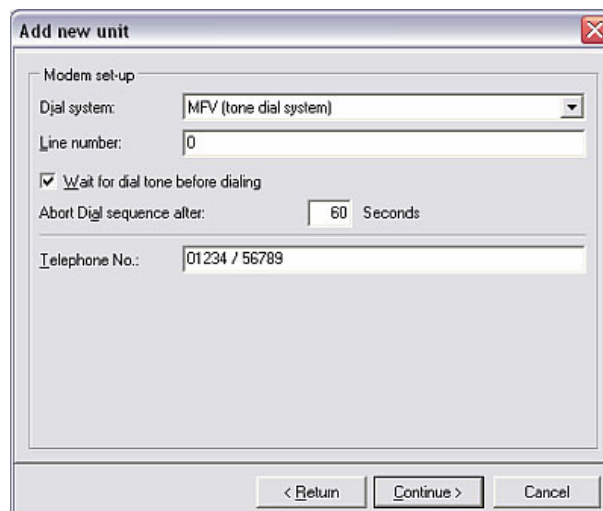
Clicking **Continue >** opens a screen summarizing all the settings made. The settings are confirmed with **OK**.

3.3.1.3   Serial transmission by Ethernet TCP/IP

If the unit has an Ethernet connection, the unit setup can also be transmitted directly over the local network by **Ethernet TCP/IP**.

Firstly, proceed as outlined in 3.3.1. Select **Ethernet (TCP/IP)** as the transmission mode and click **Continue >**. In the screen that is displayed, a 4‑digit **IP address, Port**, **Release code** and **Unit address** now have to be entered.

Clicking **Continue >** opens a screen summarizing all the settings made. The settings are confirmed with **OK**.

Note

If the unit settings of several units are transmitted by Ethernet, a different address has to be entered for each unit! Numbers from 01 to 99 are valid; the address has to be entered at the unit and in the software.

Note

Make sure that the four‑digit release code of the measuring unit is entered correctly. The code must match that of the unit. Otherwise, a connection cannot be established and the error message 20005 appears.
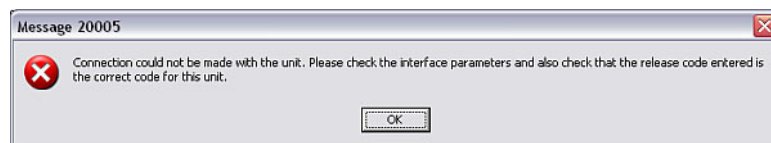
3.3.1.4   Unit setup from a data source

If you do not want to establish a direct connection between the unit and PC, it is also possible to load the unit setup from a data source. **Disks**, **ATA Flash** and **CompactFlash** are possible here.

Firstly, proceed as outlined in 3.3.1. Select **Parameter file from a data source (e.g. disk, ATA Flash, CF)** as the transmission mode and click **Continue >**. A screen appears where you can select the parameter file. You can search for the file with the **Select file** button and open it. The file type has to have the format ***.rpd**.

3.3.2 Display/change unit settings for existing unit

The settings are read directly from the database for an existing unit that has already been created and saved in the database.

First open the **Unit dialog box** by means of the main menu item **Unit →
Display/change unit setup/add new unit: select unit** and double-click the unit whose settings you want to view and/or modify.

Note

You have to connect the unit to the PC if you want to make changes to the unit settings. Otherwise, the changes are only saved in the database; these changes can, however, be transmitted to the unit at a later stage.

When you double-click a unit from the unit list to open the unit, a screen appears with the existing unit settings. These include **Basic settings**, **Analog inputs**, **Digital inputs**, **Miscellaneous/Extras** and **Service**. These unit settings can differ from unit to unit.
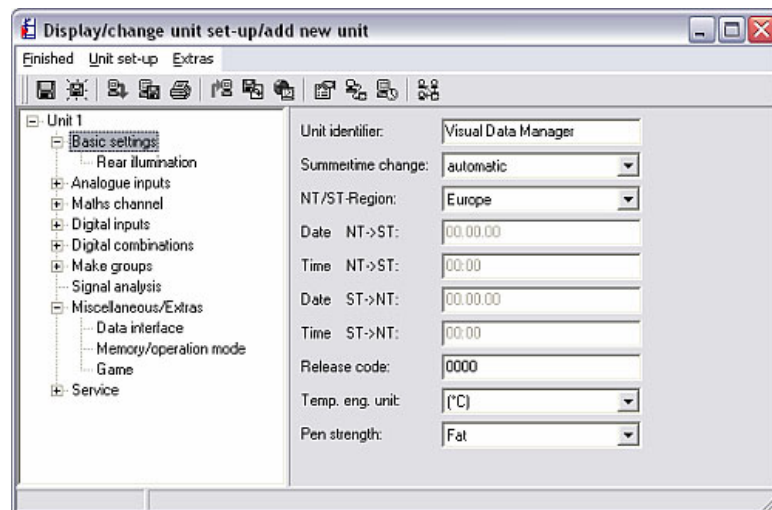
If you want to view or modify the current settings, select the option in question from the list on the left. The settings already made then appear on the right-hand side of the screen. These settings can now be modified. In the text fields, either enter the new values or select a new setting from the drop-down menus.

Saving the unit setup

The unit setup can then be saved in various ways:

- Only save to the database

- Transmit settings to the unit

- Save setup on a setup data source (disk, ATA Flash, CompactFlash)

To do so, you have to select the appropriate menu item in the **Finished** menu (see Section 3.3.2.3).

The screen **Display/change unit setup/add new unit** offers the three menu items **Finished, Unit setup** and **Extras**.

3.3.2.1 Unit setup

If the unit setup was configured directly at the unit, it makes sense to accept these new settings into the unit database. In addition, it is possible to save a parameter file from a data source to the unit database.

For this reason, the PC software gives the user the option of transmitting these settings to the PC with the **Unit setup** menu item. For this purpose, the selected unit has to be connected to the PC via the serial interface, a modem or via Ethernet.
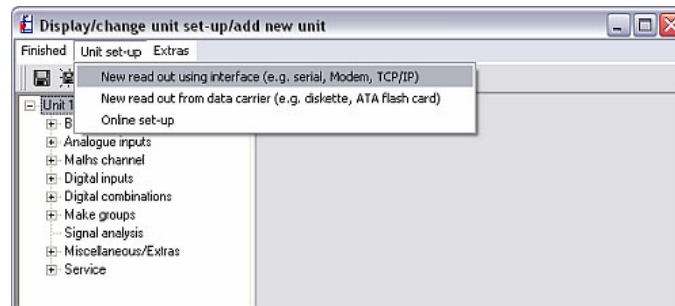
Reading out using interface

1. New read out using interface

The unit setup is transmitted to the PC via RS232/RS485, USB, modem or Ethernet with the command **New read out using interface (e.g. serial, modem, TCP/IP)**.

Read out from data carrier

2. New read out from data carrier

The **New read out from data carrier (e.g. disk, ATA Flash)** allows the unit setup to be transmitted by disk, ATA Flash or CompactFlash.

Online setup

3. Online setup

The **Online setup** command in the **Unit setup** menu can be used to change the **Actual date** and **Actual time** online. For this purpose, the selected unit has to be connected directly via the serial interface, a modem or via Ethernet TCP/IP.

Highlight the function to select it and run the command **Change** to confirm. The settings can now be changed. The changes are accepted into the device online after confirming with **OK**.
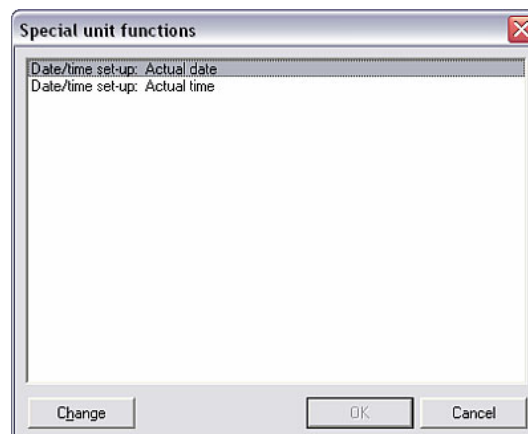
Note

Please note that measured values that have been read out assume the date and time currently set. If you change the settings frequently online, this can cause the measured values to be read out incorrectly.

3.3.2.2   Extras

The **Extras** menu item can be used to add or change additional information on the unit or interface. In addition, the automatic mode can be configured or changed here.

Unit description

1.   Unit description

The current unit setup is displayed in the menu item **Extras → Unit description**. The name for the installation point or additional information can be entered. The unit identifier itself cannot be changed here.

Interface setup

2.   Interface setup

The settings of the interface parameters can be changed using the menu item **Extras → Interface setup**. The transmission mode is changed in the **General** tab. The unit address and the release code can be changed and/or confirmed depending on the selected transmission mode. In addition, corresponding **Interface parameters** have to be entered in the tab of the same name.

Note

Please note that the unit address and the release code on the PC have to match those of the unit.

Setting up automatic

3.   Setting up automatic

The settings for the **Automatic** main menu item are specified by means of the menu item **Extras → Set up automatic**. The functions available depend on the unit type and the unit software used.

The screen that opens contains the tabs **Read out stored data**, **Read out instantaneous values, Export measured values, E-mail, Measured value database maintenance** and **Information.**

Cross-reference

The settings for the **Automatic** function are described in detail in Section 7.1.

Unit read out

4. Unit read out

A unit can be read out by a maximum of four different PCs. The measured data are read out individually by each PC such that the data can be recorded independently by various users. In this way, the measured data can be read out by a PC but these data are still available for other users.

A specific number (1 to 4) must be selected for each PC.
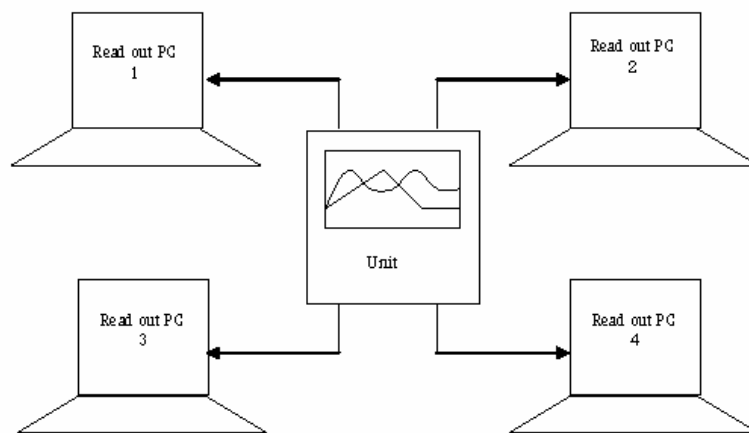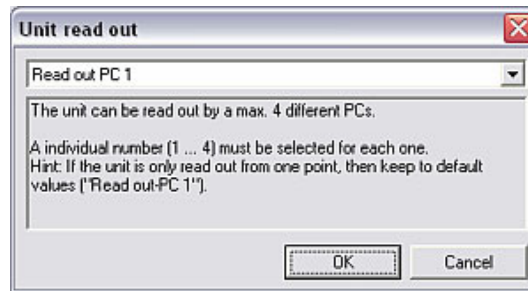
Note

If the unit is only read out by one PC, please keep the default setting ("Read out PC 1").

3.3.2.3 Finished

Once all the changes have been made to the unit setup, the data can be either saved to the database, or transmitted directly to the unit if the unit is connected to the PC. In addition, the new unit setup can also be saved to a data carrier.

Saving settings in the database

- Saving settings in the database **only**

In the **Finished** menu either select the command **Save setup in the unit database** to save the settings directly for this device or select **Save setup in the unit database as** to save these settings under another unit identifier in the unit list.

Transmitting settings to the unit

- Transmitting unit setup to the unit

Select the command **Send setup to unit** in the **Finished** menu. This transmits the unit setup to the connected unit.

Note

Prior to transmitting the modified unit setup, some units require additional authentication by the user. Once the changes have been successfully confirmed using a user name and password, the changes are accepted.

The following **warning message** also appears when changing the setting of some older units. The settings are not transmitted to the unit until the dialog box has been confirmed with **OK**.
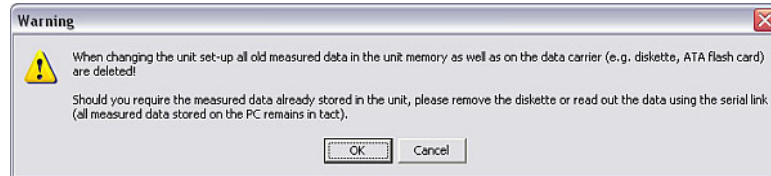
Caution

When you change the unit setup, the old measured data in the memory of the unit and on the data carrier (e.g. disk, ATA Flash) are deleted in the unit!

If the saved measured data are required, the data carrier has to be removed first of all or the measured data have to be read out using the serial link (see Section 6). The measured data saved on the PC are retained.

Creating a setup data carrier
- Creating a setup data carrier (disk, ATA Flash, CompactFlash)

The unit setup of an existing unit can be copied to a data carrier. For this purpose, select the **Create setup data carrier (disk / ATA-Flash, CF)** command in the **Finished** menu and specify the drive where the data carrier is located. A parameter file (***.rpd**) is created after confirming with **OK**.

This file can also be used to configure a new unit. See Section 3.3.1.4 for this purpose.

Printing the unit setup
- Printing the unit setup

The current unit setup of the selected unit can also be printed out using the **Print setup** command in the **Finished** menu.

4 Security and user administration

Access to the PC software can be controlled through a password system. Here, an unlimited number of "users" can be created and various rights can be assigned to these "users", i.e. various software functions are available to the user depending on the access rights.

Note

At least one user has to have administrator rights (all rights) to be able to activate password protection.

4.1 General security settings

Security

To create user administration, select **Program options → Set up** in the **Extras** main menu item. Now select the **Security** tab in the screen that appears.

If you activate **Password protection** in this screen, you can call up all the security settings. Specify the **Minimum password length** beforehand.

4.2 FDA 21 CFR Part 11

Password protection compliant to FDA 21 CFR Part 11 is an advanced security option that activates the additional **Audit trail** function in the software. When the options are called up, the user is always prompted to enter the password for security reasons.

4.2.1   Audit trail store data

Storing audit trail data

When **Password protection compliant to FDA 21 CFR Part 11** is activated (see 4.1), the command **Audit trail/events → Audit trail store data** can be selected via the **Extras** main menu item to store audit trail data to the **Import/export directory** (see 9.1). Once the password has been entered correctly, the following screen appears where you can set the **Mode**, **File size** and **Time range**.

Note

The target directory for the stored or saved data on the PC must be specified beforehand in the **Directory** tab in the menu item **Extras → Program options → Set up** (see 9.1).

Mode

1.   Mode

In the **Mode** field select whether the measured values should only be **saved once** (=copied), **stored** (=moved) or **deleted**.

File size

2.   File size.

With 'Save only', the measured values for the selected time range are either copied/moved to another drive (=**unlimited**) or to individual disks (=**1.4 MB – diskette**).

Time range

3.   Time range

Here you can select the time range in which the measured data should be saved or stored. By means of the drop-down menu, you can decide whether to choose the **Complete time range** or a **Presettable** or **Fixed time range** (15 minutes to 1 year). In doing so, you can specify the exact start and end time.

Once you have made all the settings, click **OK**. The following screen appears where you can enter the name of the file generated.
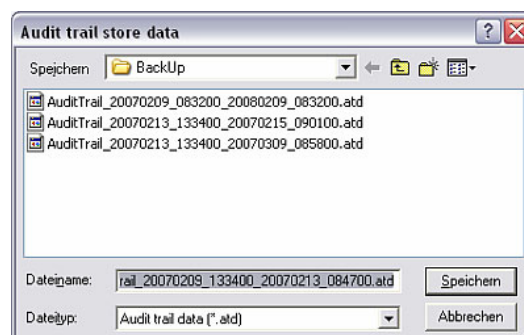
Note

The generated file **AuditTrail_20070209_083200_20070213_100800.atd** here describes:

- **AuditTrail**: audit trail file

- **_20070209_083200**: audit trail recording beginning on 09.02.2007 (February 9, 2007) at 8:32:00.

- **_20070213_100800**: audit trail recording finishing on 13.02.2007 (February 13, 2007) at 10:08:00.

- **.atd**: file type extension for audit trail data

The time range the audit trail refers to is thus clear.

4.2.2   Importing audit trail data

Importing audit trail data

In addition to saving or storing audit trail/event data (4.2.1), audit trail data can also be imported into the PC software. When **Password protection compliant to FDA 21 CFR Part 11** is activated (see 4.1), the command **Audit trail/events → Audit trail import data** can be selected via the **Extras** main menu item to import audit trail data from the **import/export directory** (see 9.1).

To do so, select the desired file and confirm with **Open**. The data are now reimported into the PC software.

4.2.3   Displaying audit trail data

When **Password protection compliant to FDA 21 CFR Part 11** is activated (see 4.1), audit trail data can be displayed for both the software and the unit.

Audit trail for PC software

Using the **Display** main menu item, select **Audit trail/events → PC software** (alternatively, press function key **F11**). In the screen that follows you can select the time range for the audit trail data which you want to display.
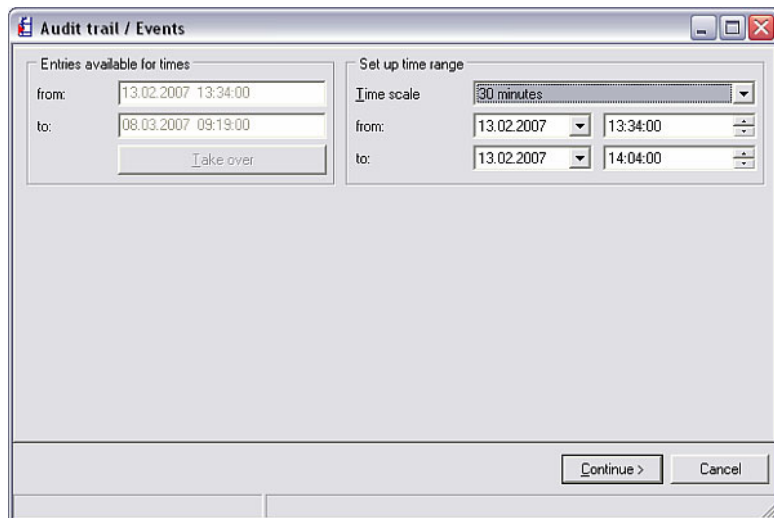
The audit trail for the desired period is displayed after confirming with **Continue >**.
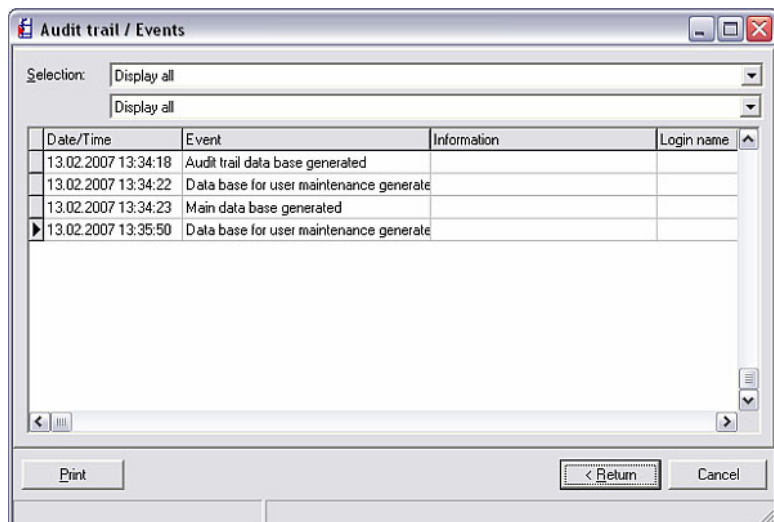
In the two **Selection** drop-down menus, you can filter by certain events or display all the events of the time range. The current audit trail can be printed out with **Print**.

You can reset the time range with **<Return**. Click **Cancel** to abort the operation.

Audit trail for created or
connected units

Using the **Display** main menu item, select **Audit trail/events** → **Unit** (alternatively, press function key **F12**). The **Unit dialog box** appears where you can select the unit whose events you want to display as an audit trail.

Double-clicking the desired unit opens the following screen where you can set the time range for the audit trail.
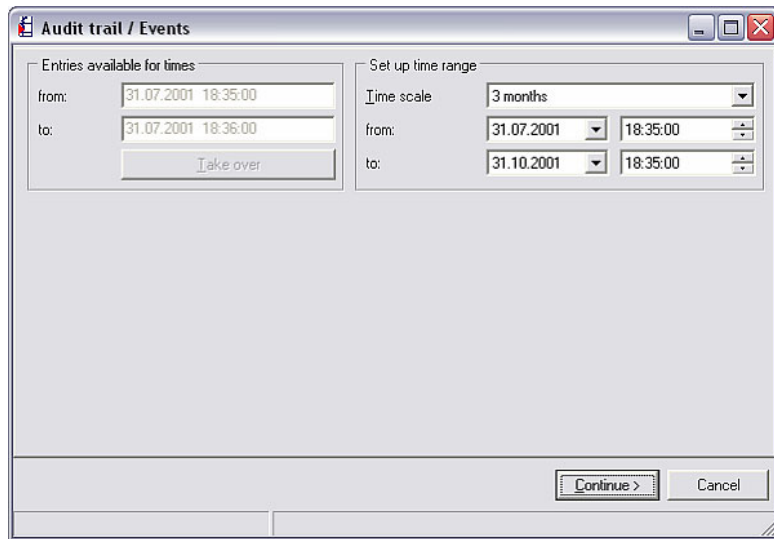
The audit trail for the desired period is displayed after confirming with **Continue >**.
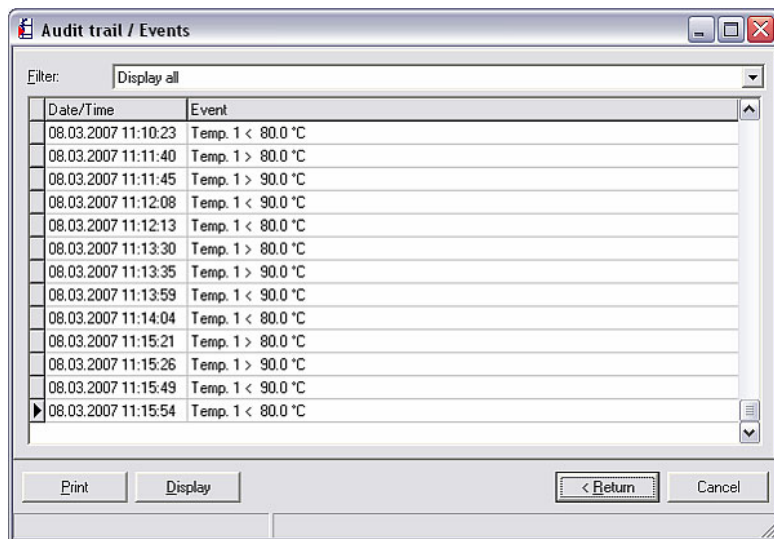
In the **Filter** drop-down menu, you can filter the list based on certain criteria or message texts, or you can display all the events of the time range. The current audit trail can be printed out with **Print**.

You can reset the time range with **<Return**. The operation is terminated when you press **Cancel**.

Selecting **Display** opens the **Display measured values from database** function (see also 8.3).

4.2.4   Advanced security function for FDA 21 CFR Part 11

When **Password protection compliant to FDA 21 CFR Part 11** is activated (see 4.1), functions in the PC software are subject to a higher security level. As a result, the **Set up** menu under **Extras** → **Program options** can only be opened once the password has been entered.

4.3 User administration

When password protection is activated in the **Security** tab of the menu **Extras →
Program options → Set up**, additional or new software users can be created
using the command **User administration**.

User administration

The following screen opens when you click **User administration** .
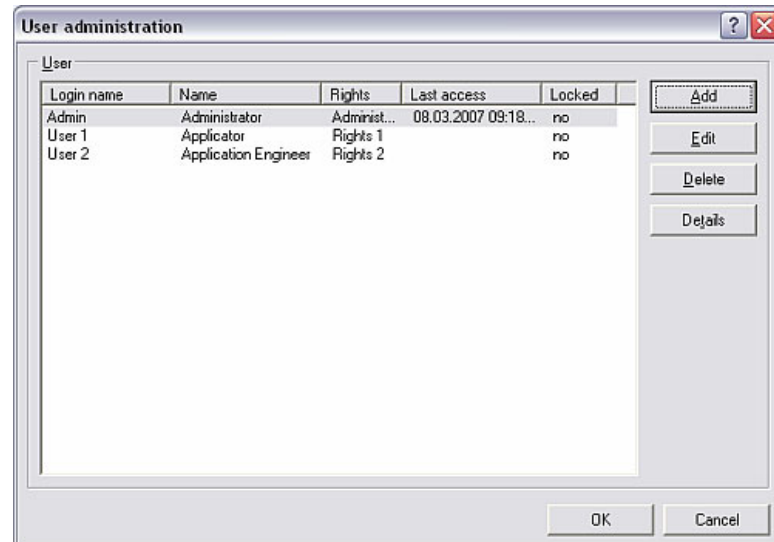
The **User** field lists all the users created with the **Login name**, **Name**, **Rights**,
Last access and the **Locked status**. To edit the rights or the name of a user,
highlight the user and select **Edit**. The **Delete** option deletes this user from the
User administration. The **Details** command shows the settings in the **User**
dialog field.

General user settings

To add a new user or additional users, select the command **Add**. The following
screen appears:
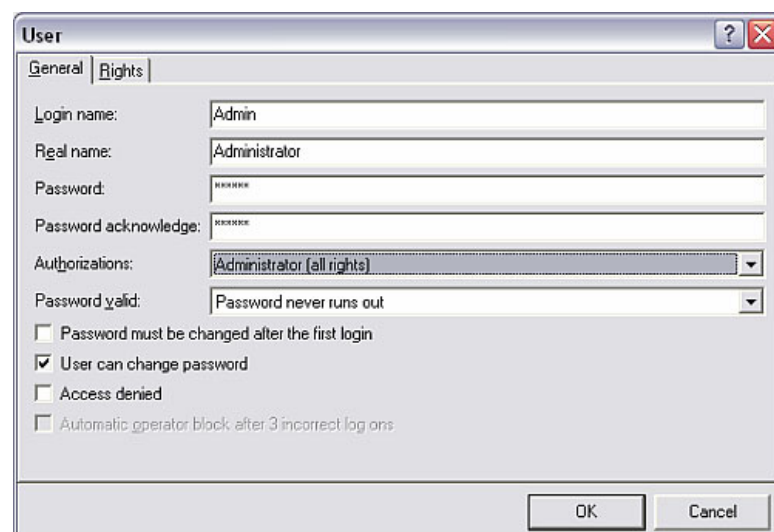
In the **General** tab, enter all the information on the new user in the text fields.

You can choose from the following options in the **Authorizations** field:

• Administrator (all rights)

- User level 1 (all rights apart from user and administration rights)

- User level 2 (only measured data readout and display)

- Presettable

You can choose from the following options in the **Password valid** field:

- Password never runs out

- Password must be changed after 30 days

- Password must be changed after 60 days

- Password must be changed after 90 days

- Password must be changed after 120 days

In addition, you can choose whether the password has to be changed the first time the user logs on, whether the user is allowed change the password, whether access for the user is blocked and whether the user should be blocked automatically after three failed logon attempts.

User rights

Depending on the option you selected in the **Authorizations** field, you can use the **Rights** tab to select what functions the user may and may not use. If the **Presettable** option was selected, you can select the functions the user may use.
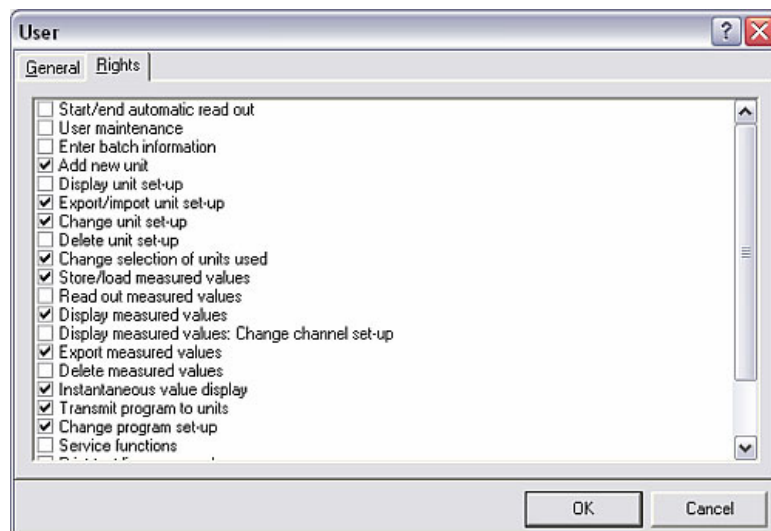
Then confirm all your entries with **OK.**

5 Application-dependent unit setup

You can make application-specific unit settings for various units which you created in the unit database (see Section 3). The most common software options are described in detail below:

- Setting user administration at the unit using the PC software (5.1)

- Mathematics channel setting (5.2)

- Batch software (5.3)

- Linearization (5.4)

Note

Application-specific unit settings can be made via the PC software. Please refer to the Operating Instructions of the unit in question for information on where to configure the individual functions in the PC software. For this reason, the following section only describes the individual functionalities but not how these settings are actually made.

5.1 Setting user administration at the unit using the PC software

Certain units have their own user administration system which can be configured via the PC software.

Note

Since this function can be configured at different points in the PC software depending on the various units, please refer to the information in 5.

User administration at the unit

Using the main menu item **Units → Display/change unit setup/add new unit**, open the **Unit dialog box**. From the list of units, select the unit whose user administration you want to configure and double-click the unit to open the unit settings. In one menu item (→ see Operating Instructions for the unit), you will find the **User administration** command. If you select the command, you can add new users or delete existing ones after logging on successfully. In the drop-down menus, configure the length of the administrator password and user password and define how long a password is valid.

The settings made are accepted after confirming with **OK**.

5.2   Mathematics

Depending on the unit selected, a **formula editor** can be used to configure mathematics channels.

5.2.1   General information

General information

The formula can comprise "analog" and "digital" parts. The operators (5.2.2.3) and functions (5.2.2.4) described in the following section are available for this purpose.

Mathematics channels can be cascaded in different ways, i.e. the result of the first calculation can be used for the next calculation. However, it is not possible to use the calculated values of a "previous" channel (e.g. mathematics channel 3 can access the results of mathematics channels 1 and 2 but not mathematics channels 4 to n).

The formula entered can have a maximum of 200 characters.

5.2.2   Settings for the mathematics channels

Settings for the mathematics channels

Using the **Unit** main menu, open the **Unit dialog box** with the command **Display/change unit setup/add new unit: select unit**. From the list of units, now select the unit whose mathematics channels are to be configured. Double-clicking the selected unit opens a screen where you can make the settings for the unit.
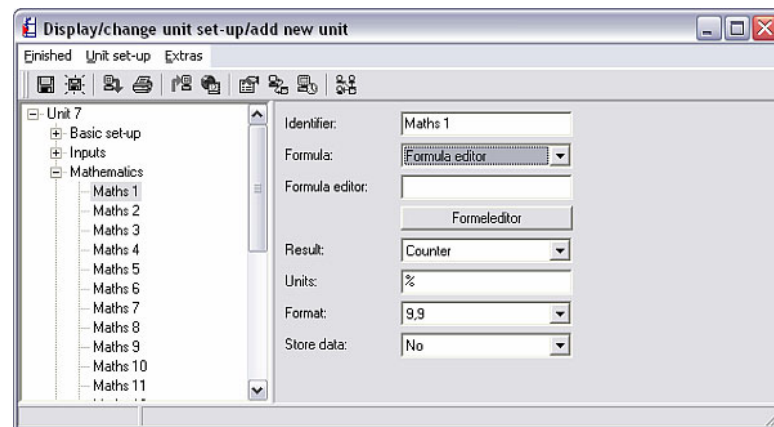
In addition to the basic setup, the field on the left also lists all the channels available and additional options. Now select **Mathematics** and the channel in question (Maths 1 to Maths n).

Formula editor

The existing options are now displayed on the right. In the **Formula** drop-down menu, select the **Formula editor** option. A text field with the formula currently used appears. If the field is empty, a formula has not yet been defined for the mathematics channel in question. A button to open the **Formula editor** is located under this text field. If this button is pressed, the following screen appears.
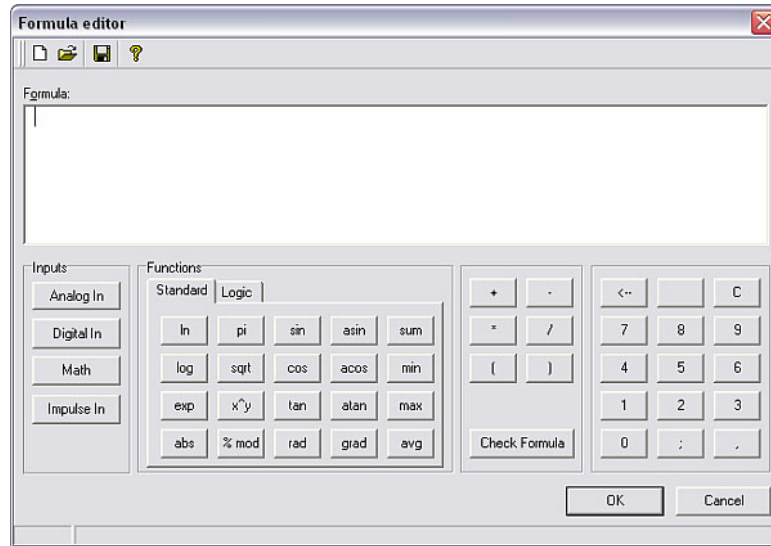
A formula with up to 200 characters can be created with this editor. Once the formula is finished, the **Check formula** function can be used to check whether the formula entered is correct. If the test is positive, the editor can be closed with **OK** and the formula entered is accepted.

The most common entry and calculation operators and inputs are described in detail in the following section.

5.2.2.1   Inputs

Inputs are described within the formula using the following syntax:

Type of input (type of signal; channel number)

Types of input:

Type	Description
AI	Analog inputs
DI	Digital inputs (*)
MI	Mathematic inputs
II	Pulse inputs (*)

(*): A distinction is made between digital inputs and pulse inputs in the "Application Manager". These inputs are grouped together in other units.

Note

If the scaling of an input has been changed and this input is then used in the formula editor, an error message might be generated. Should this occur, please proceed as follows:

- First configure the inputs.

- Then exit the setup (➔ inputs are configured as per the setting).

- Then start the setup again and enter the formula.

Note

The types available are unit-dependent (i.e. not available for all units) or depend on the unit options.

Signal type:

Type	Description
1	Instantaneous value (measured value)
2	Status
3	Counter time/operating time
5	Validity:
	The status of an analog or math channel is returned.
	The value returned by the function is 0 if:
	• The "cable open circuit" flag is set
	• The "invalid measured value" flag is set
	However, the value returned is not 0 if:
	• The "fault value" flag is set
	• The "underrange" or "overrange" flag is set
	• The "fault value" flag is set
	• The "no value available" flag is set
	• Limit value flags are set

Note

The signal types available are unit–dependent (i.e. not available for all units).

Channel number: analog channel 1 = 1, analog channel 2 = 2, digital channel 1 = 1 etc.

Examples:

DI(2;4) → the status from digital channel 4

AI(1;1) → the instantaneous value from analog channel 1

Limit value status:

LMT (Type, limit value number)

1: "Current value": current adjusted limit value

2: "Status": The function returns the status of a limit value.

The result is 1 if the limit value is violated.

The result is 0 if:

- The limit value is not violated
- The limit value is not switched on
- Limit value monitoring is switched off (e.g. via control input)

Note

Limit value polling is device–dependent, i.e. it is not available for all devices.

5.2.2.2   Priority of operators/functions

The formula is processed based on generally applicable mathematical rules on the order of operations:

- Parenthesis first
- Exponents before multiplication and division
- Multiplication and division before addition and subtraction
- Calculate from left to right

5.2.2.3   Operators

Operators for calculation:

Operator	Function
+	Addition
–	Subtraction/negative sign
*	Multiplication
/	Division
%	Modulo (remainder of division x/y), see function "mod" (5.2.2.4)
^	x to the power of y

Operators for comparison:

Operator	Function
>	Greater than
>=	Greater than or equal to
<	Smaller than
<=	Smaller than or equal to
=	Equal to
<>	Not equal to

Logical operators:

Function	Syntax	Description	Example
||	Value1 || Value2	Logical "OR" (see also "or" function (5.2.2.4))	DI(2;1) || DI(2;2)
&&	Value1 && Value2	Logical "AND" (see also "and" function (5.2.2.4))	DI(2;1) && DI(2;2)

5.2.2.4 Functions

Standard functions:

Function	Syntax	Description	Example
ln	ln(number)	Returns the natural logarithm of a number. Natural logarithms have a constant e (2.71828182845904) as their base. The result is undefined for values $\leq$ 0. The unit continues to work with 0.	ln(86) = 4.454347
log	log(number)	Calculates the logarithm of the argument to the base 10. The result is undefined for values <= 0. The unit continues to work with 0.	log (10) = 1
exp	exp(number)	Raises the base e to the power of the number given as the argument. The constant e is the base of the natural logarithm and has the value 2.71828182845904.	exp (2.00) = 7.389056
abs	abs(number)	Returns the absolute value of a number. The absolute value of a number is the number without a sign before the number.	abs (-1.23) = 1.23
pi	pi()	Returns the value of the number PI (3.14159265358979323846264)	
sqrt	sqrt(number)	sqrt calculates the positive square root of the "number" argument. The result is undefined for negative values. The unit continues to work with 0.	sqrt (4) = 2
mod	mod(number;divisor)	Returns the remainder of a division. The result has the same sign as the divisor. The result is undefined if the divisor exhibits the value 0. The unit continues to work with 0.	mod (5; 2) = 1
pow	pow(number;power)	Returns a number raised to a power.	pow (2, 3) = 2^3 = 8
quad	quad(number)	Returns the square of a number.	quad (2) = 2^2 =4
rnd (*)	rnd(number; number_places)	Rounds a number off to a certain number of decimal places. "Number" is the number you want to round off. "Number_places" indicates to how many decimal places you want to round off the number. Note: If number_places is greater than 0 (zero), the number is rounded off to the number of decimal places indicated. If number_places equals 0, the number is rounded off to the next whole number. If number_places is less than 0, the part of the "number" to the left of the	rnd (2,15; 1) = 2,2 rnd (2,149; 1) = 2,1 rnd (-1,475; 2) = -1,48 rnd (-1,473; 2) = -1,47 rnd (21,5; -1) = 20 rnd (5,5; -2) = 10 rnd (5,5; -3) = 0

		decimal point is rounded off.	

(*) Caution: These functions are not supported by every device or firmware version!

Angle functions:

Function	Syntax	Description	Example
rad	rad(number)	Converts from degrees to radian	rad (270) = 4.712389
degrees	degrees (number)	Converts from radian to degrees	degrees (pi()) = 180

The following functions expect a radian angle as the argument. If the angle is given as degrees, it has to be converted to the radian by multiplying by pi()/180. Alternatively, the "rad" function can be used.

Function	Syntax	Description	Example
sin	sin(number)	Returns the sine of a number.	sin(pi()) → sine of pi radiant sin(30*pi()/180) → sinus of 30 degrees (0.5)
cos	cos(number)	Returns the cosine of the argument.	cos(1.047) = 0.500171
tan	tan(number)	Returns the tangent of the argument.	tan(0.785) = 0.99920

In the following functions, the angle returned as a radiant is output with a value between −pi/2 and +pi/2. If the result is to be expressed in degrees, the result has to be multiplied by 180/pi() or the "grad" function has to be used.

Function	Syntax	Description	Example
asin	asin(number)	Returns the arc sine or the inverse sine of a number (inverse function). The arc sine expects a real argument in the range from −1 to +1. The unit continues to work with 0 for values outside this range.	arcsin(-0.5) = -0.5236 arcsin(-0.5)*180/pi() = -30°
acos	acos(number)	Returns the arc cosine or the inverse cosine of a number (inverse function). The arc cosine expects a real argument in the range from −1 to +1. The unit continues to work with 0 for values outside this range.	arccos(-0.5) = 2.094395
atan	atan(number)	Returns the arc tangent or the inverse tangent of a number (inverse function).	atan (1) = 0.785398

Logical functions:

Function	Syntax	Description	Example
if	if(check;then_value ;otherwise_value)	Any number or expression is the check. The result can be TRUE or FALSE. This argument can assume any comparative calculation operator. Then_value is the value returned	if(x>10;1;0) If the value x is greater than 10, the function returns 1. Otherwise it returns 0.

		if the check is TRUE. Otherwise_value is the value returned if the check is FALSE.	
or	or(true1;true2)	Returns TRUE if an argument is TRUE. Returns FALSE if all arguments are FALSE. Note: see also operator "||"	or(2>1;3>2) = true or(2<1;3>2) = true or(2<1;3<2) = false
and	and(true1;true2)	Returns TRUE if both arguments are TRUE. If one of the arguments is FALSE, this function returns the value FALSE. Note: see also operator "&&"	and(2>1;3>2) = true and(2<1;3<2) =false

Range functions:

The XX in the following functions stands for one of the inputs described under 5.2.2.1. Range functions can only be executed via one type of input.

Function	Syntax	Description	Example
sumXX	sumXX(type;from;to)	Totals the values for the input signal range indicated. Type: signal type (see 5.2.2.1)) From: number of the channel from which the system should count (1 = channel 1) To: number of the channel to which the system should count (1 = channel 1)	sumXX (1;2;5) = sum of all the current values from channel 2 to 5
avgXX	avgXX(type;from;to)	Calculates the average for the input signal range indicated.	avgXX(1;1;6)
minXX	minXX(type;from;to)	Returns the smallest value for the input signal range indicated.	minXX(1;1;6)

Date/time functions:

Function	Syntax	Description	Example
dow	dow()	Returns the current day of the week as a number between 1 and 7.	Sunday = 1 Monday = 2 Tuesday = 3 Wednesday = 4 Thursday = 5 Friday = 6 Saturday = 7
time	time()	Returns the current time in seconds.	00:00 = 0s 12:00 = 43200s 23:59:59 = 86399s

5.2.2.5 Decimal character

A comma or a point can be used as the decimal character in the formula editor. Thousand delimiters are not supported.

5.2.2.6 Check formula validity/fault condition

Before the formula entered can be used, a validity check is performed. A formula is not valid if:

- The channels used are not switched on or are set to the wrong operating mode (is not checked when the formula is entered since the user may switch on the channel afterwards)

- It contains invalid characters/formulae/functions/operators

- Syntax errors (e.g. incorrect number of parameters) appear in the formulae

- Invalid parenthesis used (number of open brackets <> number of closed brackets)

- Division is by zero

- A channel refers to itself (infinite recursion)

Invalid formulae are deactivated when the setup is accepted or when the unit is started.

Unidentifiable errors:

Where possible, errors in the formula are reported directly when the formula is being entered. Due to the possible complexity of the formula entered (e.g. deeply nested formulae that refer to various input variables with an "if" condition), it is not possible to detect every mistake, however.

5.2.2.7   Examples

Formula	Description
AI(1;1)+AI(1;2)	Analog channel 1 + analog channel 2
avgAI(1;1;4)	Averages of all analog channels 1 to 4
if(DI(2;1);AI(1;1)+AI(1;2);AI(1;1)+AI(1;3))	If digital input 1 is "on", the system calculates analog channel 1 + analog channel 2. Otherwise, the system calculates analog channel 1 + analog channel 3

5.3 Batch software

Units suitable for batch applications can display extra information in addition to the measured values curves (display on screen/print out). You can replace certain predefined field names (i.e. "headers" for the information received from the unit) with your own specific text or hide these names if they are not needed.

5.3.1 Configuring batch texts/print

Batch settings

Under **Program options** → **Set up** in the **Extras** main menu, you can make settings for the batch option in the **Batch texts/print** tab.
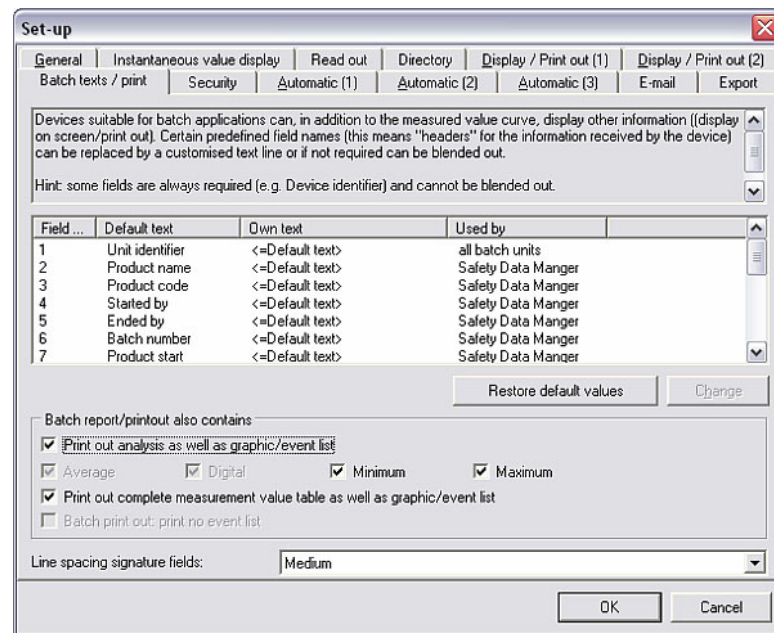
Changing settings

Here you can change or hide the display of individual fields. To do so, select the desired field and click **Change**. A screen appears where you can now choose whether the field should be displayed or printed and whether standard text or the user's own text should describe the field. If you select **Own text** you can enter your description in the text field. The changes are accepted when you click **OK**.

The **Restore default options** command restores all the field settings to their original status.

In addition, options can be selected here so that in addition to printing out the **graphic/event list, the analysis as well as the complete measured value table can be printed**.

Furthermore, for **Line spacing signature fields**, you can choose between the options **Small**, **Medium** and **Large**.

5.3.2 Displaying batch/product print

Once you have made the settings for batch texts/print (see 5.3.1), the batch reports for certain units can be displayed and printed out in the **Display** main menu using the command **Batch/product printout**.

Setting the time range   In the **unit dialog box**, select the required unit. A screen appears where you can set the time range for the values to be displayed.

Batch/product printout   Clicking **Continue >** opens the screen where the batches are displayed.

< Return takes you back to where you can set the time range. You can print out the current report with the **Print** command.

The operation is closed when you press **Cancel**.

5.4 Linearization

The linearization of certain units can also be configured with the PC software. The options **Linearization table** and **Tank linearization** are available here.

Using the **Unit** main menu item, open the **Unit dialog box** with the command **Display/change unit setup/add new unit.** From the list of units, select the unit whose linearization function you want to configure with the program. Double-clicking the desired unit opens a screen with the unit options.

5.4.1 Linearization table

Linearization table

Follow the instructions in the Operating Instructions for the unit to configure the linearization table with the PC software. The following screen opens when you select the **Linearization table** command.
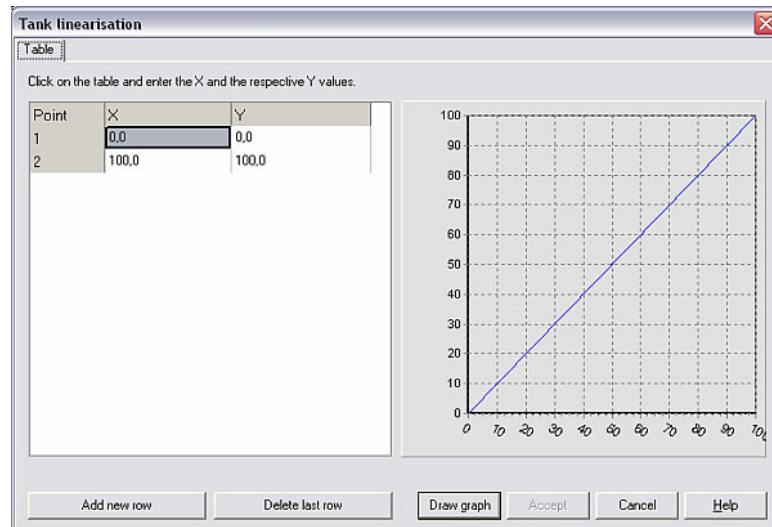
Here, you can **Add a new row** or **Delete the last row**. Double-click the numerical values in the table to change the values. You can display the numerical values with the **Draw graph** command. The **Help** option provides you with detailed help on the linearization table.

Cancel closes the screen.

5.4.2 Tank linearization

Tank linearization calculates the theoretical ratio between the height and volume.

Note

The accuracy cannot be guaranteed due to various mechanical tolerances in the tank production.

Tank linearization

Follow the instructions in the Operating Instructions for the unit to configure the tank linearization with the PC software. The following screen opens when you select the **Tank linearization** command.
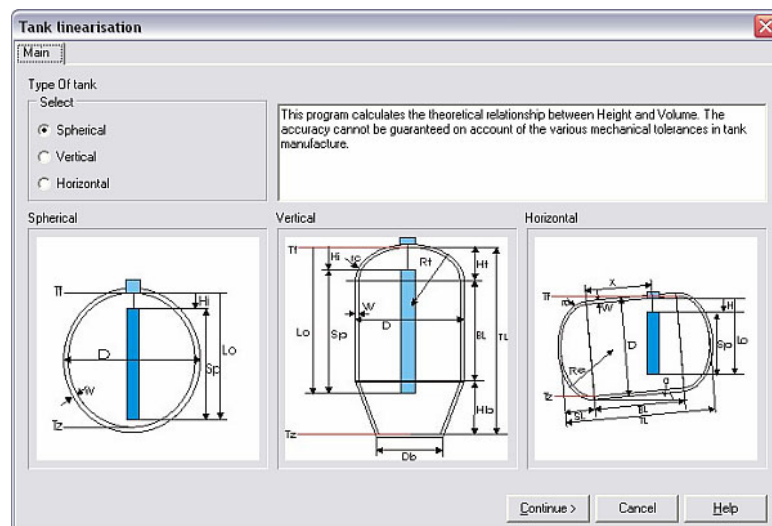
Under **Type of tank,** you can choose from the options **Spherical**, **Vertical** and **Horizontal**. Depending on the option selected, you can click **Continue >** to

make more precise settings such as **Unit**, **Sensor range**, **Tank volume** etc. with the PC software.

Note

Tank linearization is described in detail in the **Help** option or in the Operating Instructions for the unit.

6 Reading out saved measured values

Apart from the unit setup and unit database (see Section 3), **reading out measured values** is another main function of the program.

Reading out measured values

Here, you can choose from the following options in the **Read out** main menu item:

- **Read out measured values using interface/modem**

- **Read out measured values using PC card drive**

- **Read out measured values using diskette**

- Read out memory card by interface/modem
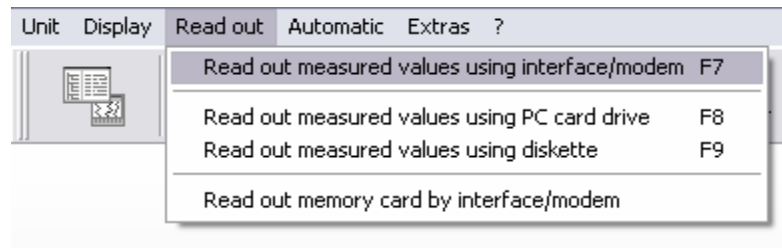
Note

If an antivirus application which also checks the PC software is running on your computer, this can reduce the performance dramatically such that considerable delays can be expected when reading out the measured values. For this reason, we recommend you disconnect the PC software from the virus scanner by expelling *.db, *.val, *.idx files or the data directory from the virus check. Please refer to the Operating Instructions of the virus scanner for this purpose.

6.1 Program settings for reading out measured values

A number of settings must first be made before you can read out measured values from units to the PC. For this purpose, go to the **Extras** main menu item, select **Program options → Set up** and then select the **Read out** tab.
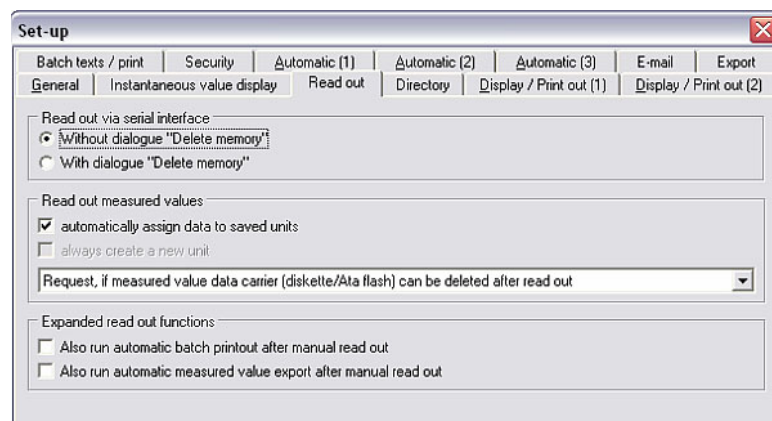
"Delete memory" dialog
- Read out via serial interface

Here you can choose whether the user should be asked whether the memory should be deleted or not when reading out measured values via the serial interface (see 6.3).

"Read out measured values" setting

- Read out measured values

Here you can choose whether the measured values read out should be automatically assigned to the saved units or whether a new unit should always be created when reading out measured values.

In addition, you can choose from the options:

- o Request if measured value data carrier (diskette/Ata flash) can be deleted after readout.

- o Delete measured value data carrier (diskette/Ata flash) automatically after readout.

- o Measured value data carrier (diskette/Ata flash) may NOT be deleted after readout.

Expanded readout functions

- Expanded readout functions

Here you can choose whether an automatic batch printout and/or automatic measured value export should be run after the manual readout (see 5.3.2).

6.2 Configuring the target directory

Target directory

Before you can start reading out measured values, you have to specify the target directory for the data read out on the PC. In the **Extras** main menu item, select **Program options → Set up** for this purpose. Now select the **Directory** tab.
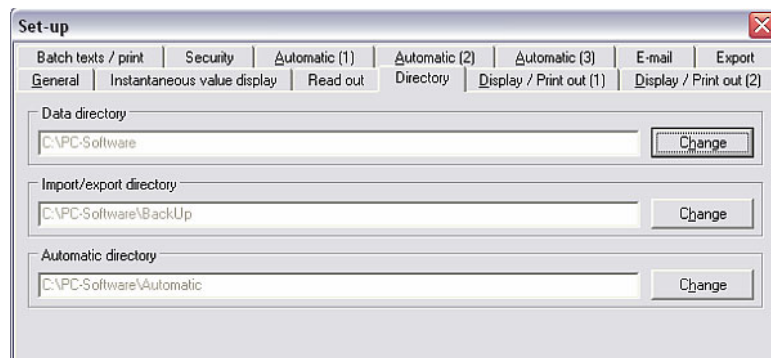
The measured values read out are stored in the **Data directory**. Using the **Change** option, you can now specify the directory or folder where the data should be saved.

⟹ **Cross-reference**

See general information on the **directories** in 1.10.

6.3 Reading out measured values using interface/modem

You can transmit measured values from the unit to your PC by interface or by modem. For this purpose, in the **Read out** main menu item, select the option **Read out measured values using interface/modem** (alternatively, press function key **F7**) .

This calls up the unit dialog box where the units and unit groups set up are listed. From the list, now select the required unit whose measured values you would like to read out using the serial interface (RS232/RS485), USB, modem or Ethernet. Double-click the unit to start the transmission process immediately.

Reading out data

The following screen indicates that data are being transmitted between the unit and the connected PC.
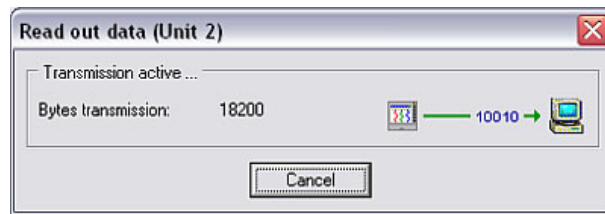
Saving data

The following screen indicates that the measured data are being saved from the unit to the target directory on the PC.
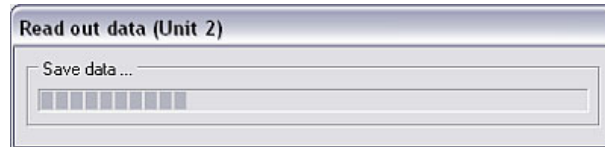
Note

The target directory for the data read out must be specified beforehand. See 6.2.

Note

The unit must have been entered in the unit database beforehand (see 3.2.4). The connection to the unit is established using the interface parameters specified there.

Note

Transmission cannot take place if the unit and the PC are not connected. Error message 20005 is displayed.
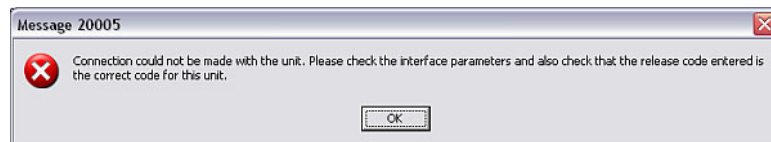
6.4 Reading out measured values using PC card drive or diskette

In addition to reading out the measured data directly using the serial interface or modem (see 6.3), the data can also be saved from the unit to an internal or external PC card drive (e.g. CompactFlash) or a diskette and then transmitted to the PC.

For this purpose, in the **Read out** main menu item, select the option **Read out measured values using PC card drive** (alternatively, press function key **F8**) or **Read out measured values using diskette** (alternatively, press function key **F9**). This opens the following screen where you can select the drive where the medium with the measured data is located.
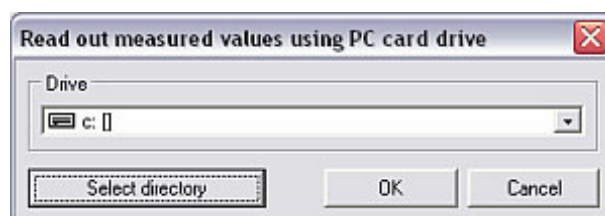
Note

The drive has to have been installed correctly beforehand. Please refer to the Operating Instructions of your PC or PC card drive for further information.

Saving data

Once you have selected the correct drive and confirmed your choice with **OK**, the screen that follows indicates that the measured data are being saved from the PC card or diskette to the target directory on the PC.
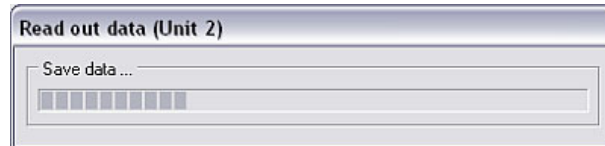
Note

The target directory has to be specified before the measured data are read out for the first time. The procedure for setting up the target directory is described in detail in 6.2.

Once the data have been transferred, the program waits for you to confirm that the measured values should be deleted from the data source (PC card or disk).

Note

We recommend you delete the data from the storage medium once they have been transmitted successfully to the PC to keep the transmission time to a minimum during the next readout procedure.

6.5 Reading out memory card by interface/modem

If a unit has an internal memory card, measured data stored on the card can also be read out with the PC software via the serial interface (RS232/RS485), USB or Ethernet, or using a modem.

Reading out memory card   Go to **Read out → Read out memory card by interface/modem** to open the **Unit dialog box**. Now select the required unit from the list of units and double-click the unit to open it. In the screen that follows you can select the data you want to read out.
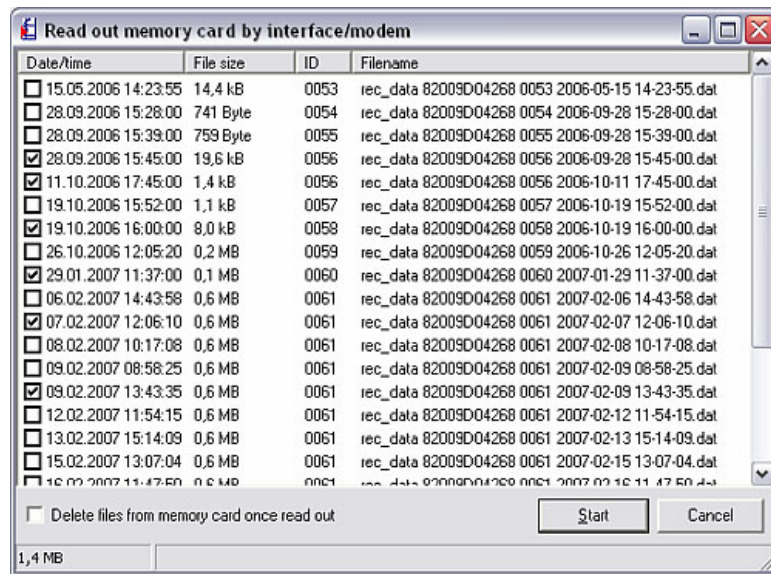
You can read out just one file or all the files from the memory card. You can also choose whether the files should be deleted from the memory card once read out.

7 Reading out measured values automatically (Automatic)

7.1 Setting up automatic function

Before you can run the **Automatic** function via the **Automatic** main menu item (alternatively, press function key **F10**), the functions must be configured **for each unit**.

For this purpose, open the **Unit dialog box** via the main menu item **Unit →
Display/change unit setup/add new unit: select unit**. Select the required unit from the list of units and double-click the unit to open the **Display/change unit setup/add new unit** screen. In the **Extras** menu item, you can now configure the automatic function of the selected unit using the **Set up automatic** command.

Note

The functions available in the **Automatic** menu depend on the unit type and the unit software used.

The screen that opens contains six tabs:

1. Read out stored data
2. Read out instantaneous values
3. Export measured values
4. E-mail
5. Measured value database maintenance
6. Information

7.1.1 Reading out stored data

To be able to read out stored data automatically, you must make the following settings. Firstly, proceed as outlined in 7.1. Stored data can now be read out automatically as follows:

Reading out stored data

Reading out stored data automatically is deactivated in the basic setup. You can choose from the following options in the drop-down menu:

Interval:	Stored measured values are read out within a set interval (2 minutes – 12 hours).
Daily:	Stored measured values are read out daily at a set start time.
Weekly:	Stored measured values are read out weekly on a weekday of the user's choice at a specific start time.
Monthly:	Stored measured values are read out monthly at the same day in the month at a specific start time.

7.1.2 Reading out instantaneous values

To read out instantaneous values automatically, first proceed as described in 7.1. Now the automatic function for instantaneous value readout can be configured:

Reading out instantaneous values

Reading out instantaneous values automatically is deactivated in the basic setup. You can choose from the following options in the drop–down menu:

Interval: Instantaneous values are read out within a set interval (2 minutes – 12 hours).

Daily: Instantaneous values are read out daily at a set start time.

Weekly: Instantaneous values are read out weekly on a weekday of the user's choice at a specific start time.

Monthly: Instantaneous values are read out monthly at the same day in the month at a specific start time.

Several times daily: Instantaneous values can be read out up to four times a day at a specific start time.

7.1.3 Exporting measured values

Stored measured values can be exported automatically. Here you can choose whether you want to save instantaneous values, stored measured values or both in a file. Firstly, proceed as outlined in 7.1. Now you can make the settings for exporting measured values as follows.

Base time axis

The base time axis can be selected as follows:

- Same as unit graphic
- Meas. period values
- Daily values
- Monthly values
- Yearly values

Here, several options or all the options can be configured here.

File name

The file name of the measured values automatically generated are configured in the **Information** tab (see 7.1.7).

Data

The data of the instantaneous measurement or the saved measured values can either be appended to the file or the new data can replace the existing data. In addition, the data can also be saved in a new file.

Channel selection

Furthermore, the measured values of all the channels or just the measured values of individual channels can be exported.

Note

To be able to export measured values automatically, the required channels have to be selected. This is done as follows:

1.) The measured values have to be read out

2.) Manual measured value export has to be performed ("Extras" —> "Export measured values") and the option "Use current channel selection for automatic measured value export" must be selected.
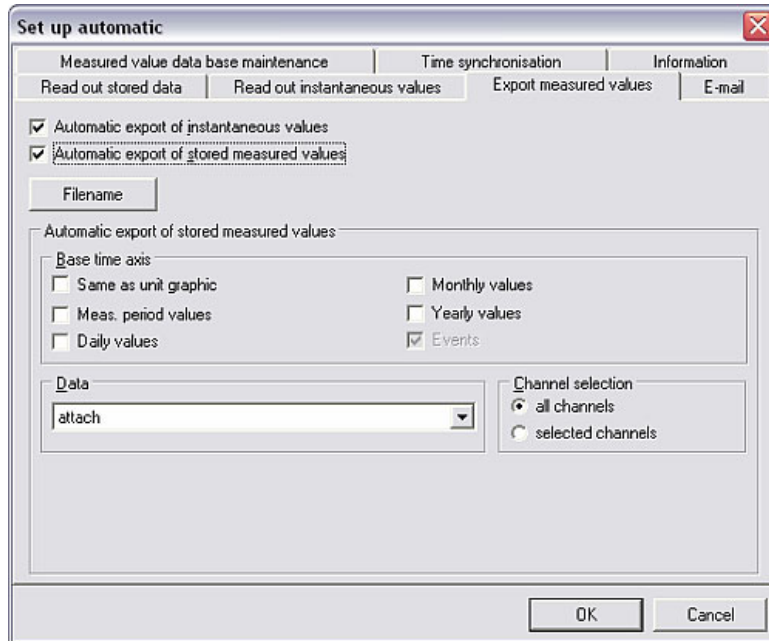
7.1.4   Automatic e-mail notification

With the **Automatic** function, the PC software makes it possible to forward instantaneous values by e-mail (in the event of an alarm). Firstly, proceed as outlined in 7.1.

Now you have to select the **Forward instantaneous value by e-mail** or **Forward instantaneous values by e-mail in the event of an alarm (e.g. limit value violation, cable open circuit, etc.)** option in the **E-mail** tab and enter the e-mail address of the recipient in the text field.

Note

The server settings first have to be made before you can send e-mails (see Section 10.2).

If e-mails are to be sent to several recipients, the e-mail addresses have to be separated by a semicolon (e.g. address1@test.com;address2@test.com).

Caution

We cannot guarantee that the e-mails will be sent. This is the responsibility of your e-mail server/provider.

7.1.5   Measured value database maintenance

The maintenance of the measured value database is automated with this function. In this way, measured data that are saved over an extended period in the database can be stored on a data storage medium and/or deleted from the database. Firstly, proceed as outlined in 7.1 for this purpose. The following settings can now be made in the **Measured value maintenance database** tab.

The software provides two task options here so that you can configure different tasks.

Both task options have an identical structure:

- Under **Function**, select whether the data are only saved on a data carrier or whether the data are also deleted from the database after being saved to the data storage medium.

- The **Interval** can be configured between **7 days** and **12 months**. In addition, the user can choose between **All the data since the last automatic backup** and **Measured values that are older than 24 months**.

- The **Starting time** of the operation can be set exactly.

- The time axis can also be configured under **Options**.

7.1.6 Time synchronization

In the **Automatic** function, the program gives users the option of synchronizing the time of the unit with the time on the PC. Firstly, proceed as outlined in 7.1 for this purpose.

In the **Time synchronization** tab in the **Set up automatic** menu, you can choose whether the time of the unit should be synchronized with the time on the PC **after reading out the saved measured values** and/or **after reading out the instantaneous values**. You can choose between **30 seconds** and **12 hours** as the time tolerance.

Note

- You must ensure that the PC clock is working properly (e.g. via radio-controlled clock).

- The time is not synchronized between 02:00 (2 a.m.) and 03:00 (3 a.m.).

- The unit should only ever be read out from the same PC.

- If the time difference between the unit and PC is greater than the set tolerance, the time is not synchronized.

7.1.7 Information

The **Information** tab of the **Set up automatic** function displays the file names that are generated when instantaneous values and/or stored measured values are read out automatically.

Note

You can change the **Automatic** directory in the menu **Extras → Program options → Set up → Directory**. (See also 7.2.1)

7.2 Program settings for automatic function

7.2.1 Automatic directory

Automatic directory

By going to **Extras —> Program options —> Set up**, you can use the **Directory** tab to change the target drive or target directory where the data are to be stored when the measured values are read out automatically.

Cross-reference

See general information on the **directories** in 1.10.

7.2.2 Printing out messages/fault messages received or e–mail transmission of messages/fault messages

Printing out fault messages/e–mail transmission of messages

With the **Automatic** function, the PC software allows incoming messages or fault messages to be printed out automatically or to be forwarded to a set address. The settings required for this can be found under the **Automatic (1)** tab in the **Extras —> Program options —> Set up** menu.
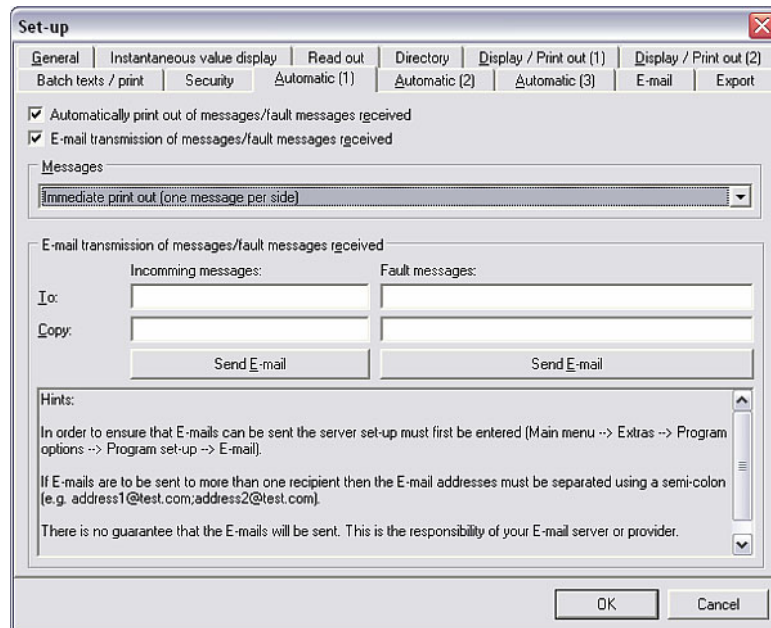
In the screen, select whether incoming (fault) messages should be printed out automatically or forwarded by e-mail. For this purpose, you have to use the text field to enter the target e-mail address where the error reports should be sent.

In addition, you can also choose whether messages should be printed out immediately (one message per page) or should be initially accumulated and then printed out after 5 to 40 messages.

Note

To be able to send e-mails, the server settings first have to be specified (**Extras —> Program options —> Set up —> E-mail**).

If e-mails are to be sent to several recipients, the e-mail addresses have to be separated by a semicolon (e.g. address1@test.com;address2@test.com).

Caution

We cannot guarantee that the e-mails will be sent. This is the responsibility of your e-mail server/provider.

7.2.3 Modem, automatic and printer settings

You can make settings for the modem, automatic function and printer in the **Automatic (2)** tab by means of the main menu item **Extras —> Program options —> Set up** .
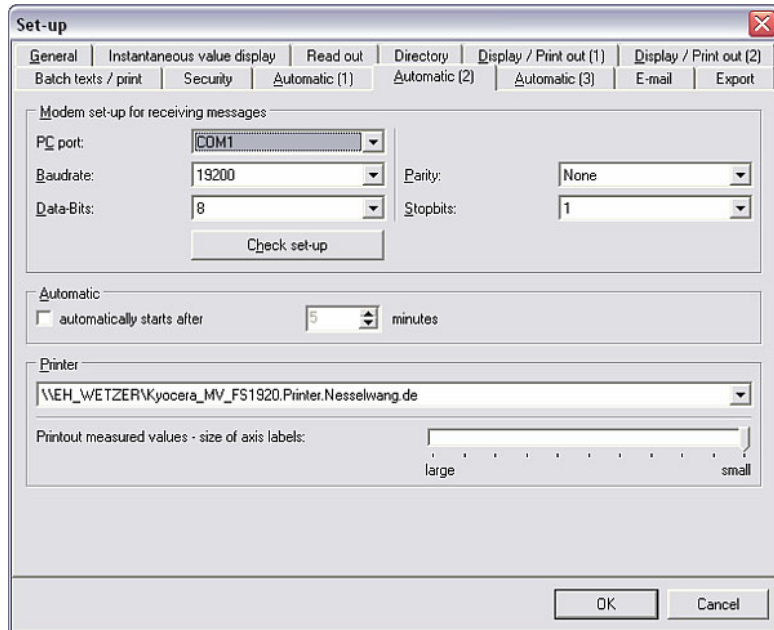
Modem settings for receiving messages	1. Modem settings for receiving messages

Enter the correct values for the **PC port, baudrate, databits, parity** and **stop bits** and check the settings with the **Check setup** command.

Note

If the modem is not connected (correctly), error message 20010 appears on the display.
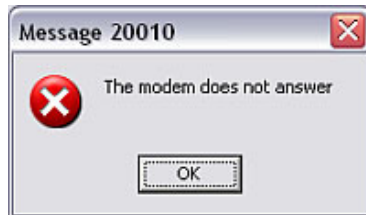
Starting the automatic function	2. Automatic

Here, you can choose whether the automatic function should start after a specific number of minutes.

Printer settings	3. Printer

From the drop-down menu, select the printer the messages should be printed out on. Here, you can also decide how big the axis labeling of the measured value printout should be.

7.2.4 Additional settings for the automatic function

By means of the main menu item **Extras —> Program options —> Set up** , you can use the **Automatic (3)** tab to select whether the automatic function should be interrupted for maintenance purposes and how the maintenance of the measured value data base "Interval 7 days" should be performed.
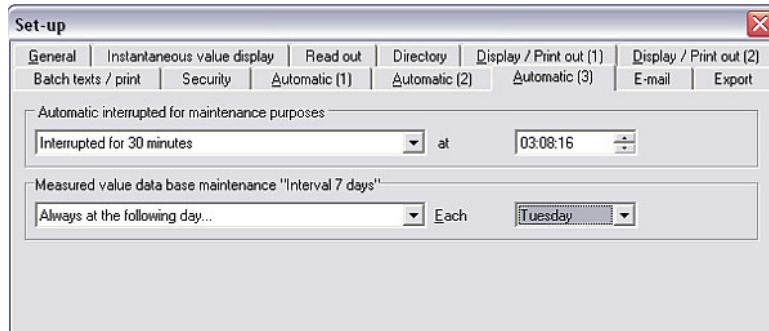
Interrupting the automatic function	1. Interrupting the automatic function for maintenance purposes.

Here, you can decide whether the automatic function should be interrupted for maintenance purposes. In doing so, you can select a duration of between 15 minutes and 6 hours and enter the exact start point.

Measured value database maintenance	2. Measured value database maintenance "interval 7 days"

Here, you can choose when the measured value database is to be maintained for "interval 7 days". In doing so, you can decide whether the maintenance work is to be performed on every 7th day of the month or on each specific weekday (e.g. every Tuesday) in the month.

7.3 Starting the automatic function

Once you have made all the settings for the **Automatic** function, (see 7.1 and 7.2), you can start the **Automatic function** by means of the main menu item **Automatic → Start** (alternatively, press function key **F10**).

The set functions are not available until the automatic function has been started.

⟹ **Cross-reference**

The procedure for setting the functions in the automatic system is described in detail in 7.1.

When the automatic function is started, a dialog box is opened displaying a list of the **Jobs** and **Messages** received. If the automatic function has also been configured for reading out instantaneous values, the **Instantaneous values** tab also appears.
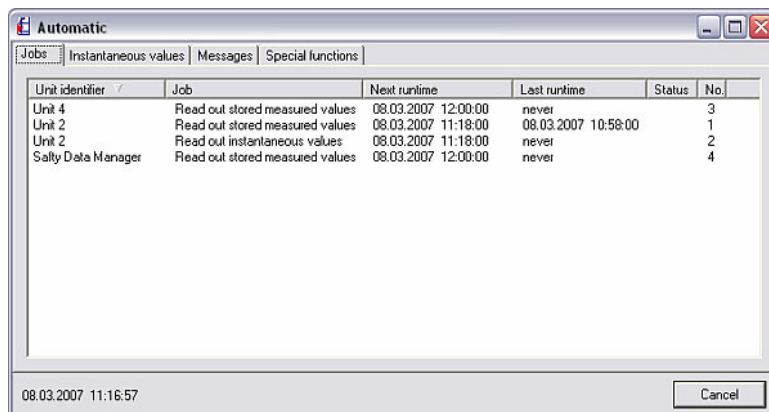
Special functions

Some units also display an additional **Special functions** tab which can be used to read out additional information.
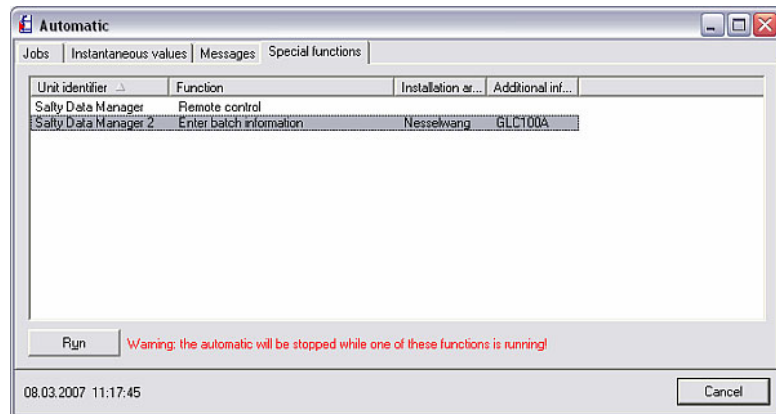
Note

The automatic function is interrupted when one of these special functions is called up.

Remote control

Select the desired unit and click **Run**. This opens the **Remote control** screen which is split into the **Send text to unit** and **Log on/log off** tabs.

Here you can accept default texts for the unit and send user-defined texts to the unit as well as log the user administration of the unit on and off.

The automatic function is terminated when you click **Cancel**.

8 Displaying and visualizing measured data

Apart from **Managing the unit database** (see Section 3) and **Reading out measured values** (see Section 6), the PC software offers a third function, namely **Displaying and visualizing measured data**.

The software offers the following functions here:

- Displaying instantaneous measured values as digital values, curves or bar graphs (see 8.1)

- Display instantaneous values in the network (see 8.2)

- Displaying measured values from database (see 8.3)
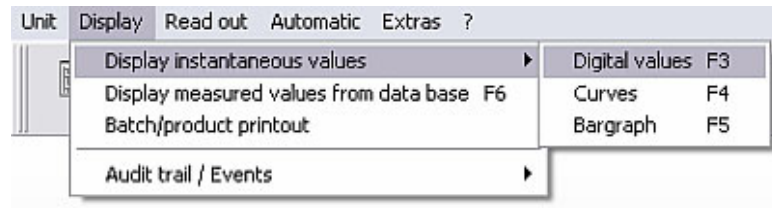
8.1 Displaying instantaneous measured values

The instantaneous values of the connected units can be displayed with the program. Here, you can choose whether the measured values should be visualized as a curve, digital value or as bar graphs.

Note

At least one unit must be connected to the PC via interface, modem or Ethernet and the unit must have been added to the database beforehand.

Several units can be displayed at one time.

8.1.1 Displaying instantaneous values as digital values

If you would like to display the current measured data as digital values, select the command **Display measured values: digital values** in the **Display** main menu item (alternatively, press function key **F3**). The **Unit dialog box** appears where you can select the unit(s) whose instantaneous values you want to display. When you double-click the unit or select **Open unit(s)**, the PC software establishes the connection to the selected unit(s).

Note

If the unit is not connected to the PC, instantaneous values cannot be displayed. Error message 2005 is displayed.

Up to 20 units or 100 channels can be displayed as digital values.

Selecting channels

The screen that opens is split into three fields. The top field lists the units that have already been selected. If you now select a unit, the field on the left (beneath the top field) lists all the active channels of the selected unit that are not yet being displayed. Now you can move all the channels that you want to display to the **Display channels** field on the right. To do so, simply select the channels and click the arrow button '**>**'. The channels now appear in the field on the right.

If you also want to display the channels of the other units listed in the **Unit** field, simply repeat the steps outlined above.
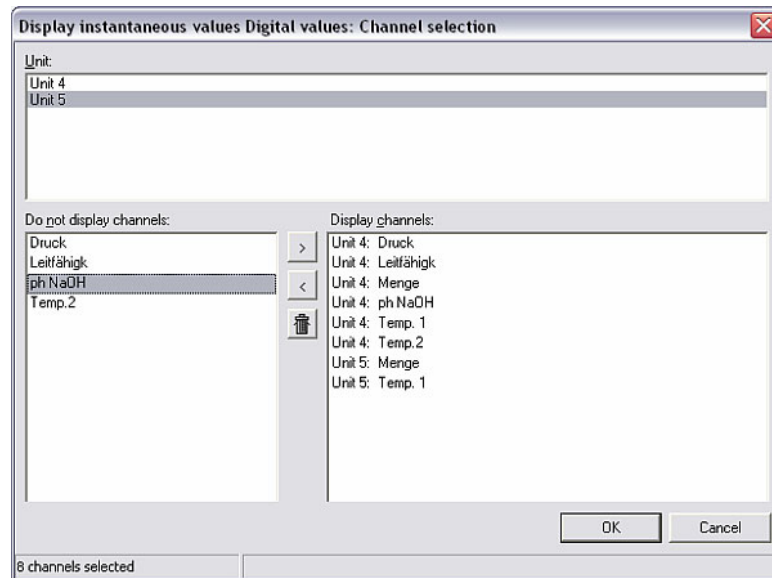
Digital value display

The instantaneous measured values are displayed after confirming with **OK**. The channel name and the unit configured are also displayed with the instantaneous value.
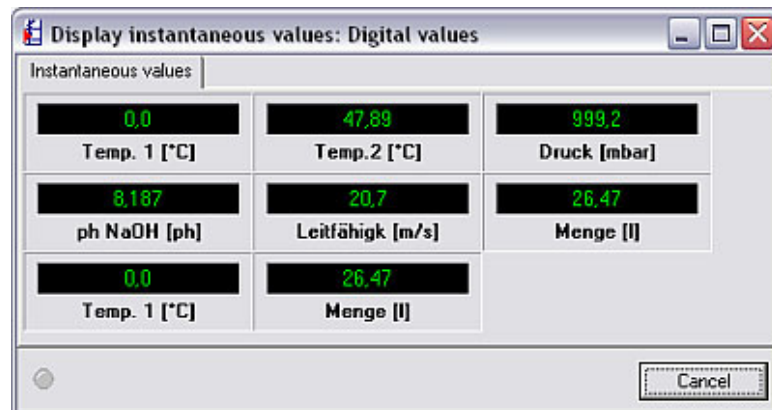
Limit value violation

Instantaneous measured values are shown in green. The channel name is marked in red if the limit value is violated which means a fault can be detected quickly.
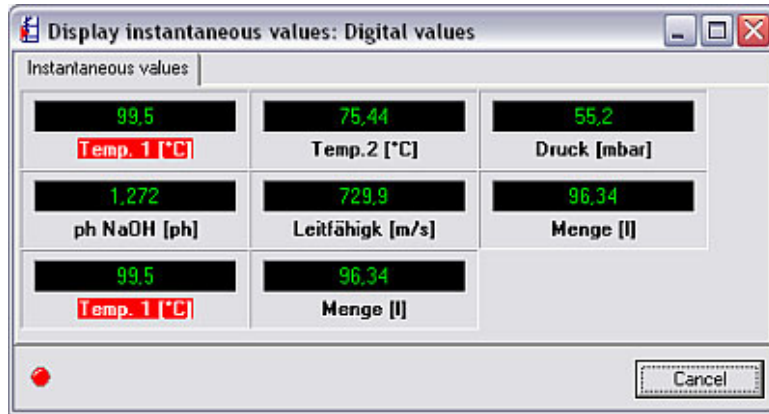
Click **Cancel** to terminate the operation.

8.1.2 Displaying instantaneous values as curves

In addition to displaying instantaneous values as digital values (see 8.1.1), they can also be displayed graphically as curves. For this purpose, in the **Display** main menu item, select the command **Display instantaneous values: curves** (alternatively, press function key **F4**) . The **Unit dialog box** appears where you can select the unit(s) whose instantaneous values you want to display. When you double-click the unit or select **Open unit(s)**, the PC software establishes the connection to the selected unit(s).

Note

If the unit is not connected to the PC, instantaneous values cannot be displayed. Error message 2005 is displayed.

Up to 20 units or 20 channels can be displayed as curves.

Selecting channels

The screen that opens is split into three fields. The top field lists the units that have already been selected. If you now select a unit, the field on the left (beneath the top field) lists all the active channels of the selected unit that are not yet being displayed. Now you can move all the channels that you want to display to the **Display channels** field on the right. To do so, simply select the channels and click the arrow button '**>**'. The channels now appear in the field on the right.

If you also want to display the channels of the other units listed in the **Unit** field, simply repeat the steps outlined above.

Expanded channel setup

You can configure the display range of the channels selected by selecting the **Expanded channel setup** option. This zooms in or zooms out of the display.

The **Reset zoom** option resets all the fields to their original values.

Curve display

The instantaneous values are displayed as a curve after confirming with **OK**.
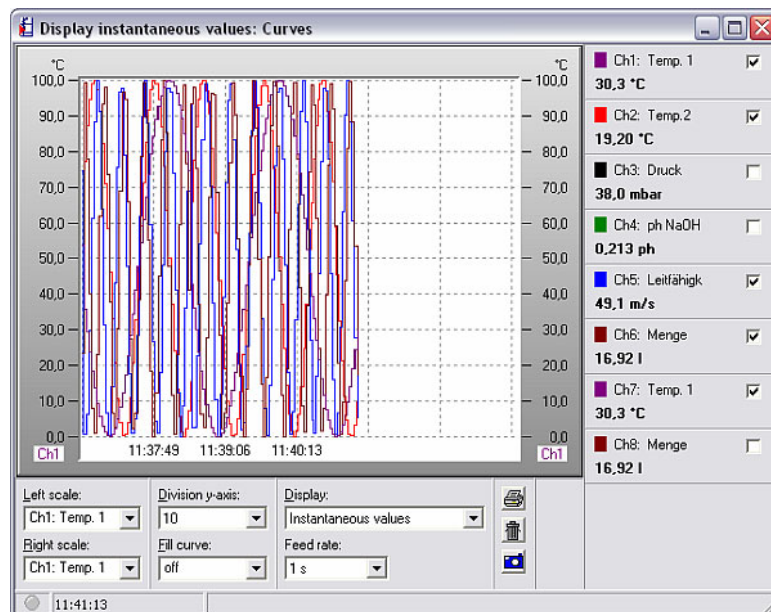
| Configuration options for curves | Several configuration options are available for the display: |

1. Left scale/right scale

In these drop-down menus you can choose what scale name should be displayed on the left-hand and right-hand side of the display.

2. Division y-axis

In this drop-down menu, you can select the division of the y-axis between 1 and 10.

3. Fill curve

Here, a selected channel can be highlighted in color by filling in an area.

4. Display

Here, you can choose whether the instantaneous values or the values of the period you selected with the measured value cursor should be displayed.

5. Feed rate

The feed rate can be set between 1 second and 30 minutes.

In this screen, you can also hide channels that should not be displayed by simply deactivating the check box. In addition, the color of a channel can be changed by simply clicking the color field of the channel.

| Printing the curve | The instantaneous curve can be printed out on a connected printer. Pressing the printer icon opens the print preview where you can configure the **Zoom**, **Orientation**, **Paper format** and whether the printout is **Colored** or **Not colored**. Once the settings have been made, press **Print** to select your printer. |

| Snapshot | Clicking the camera icon generates a snapshot which is copied to the clipboard and can then be inserted into any program of the user's choice. |

| Deleting the displayed graphic | The graphic can be deleted by clicking the trash can icon. The recording/display process then begins again from scratch. |
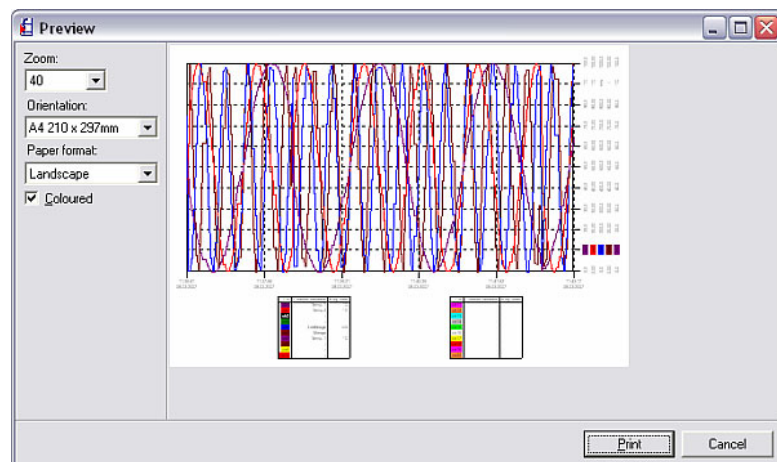
Limit value violation

The channel name is marked in red if the limit value is violated which means a fault can be detected quickly.
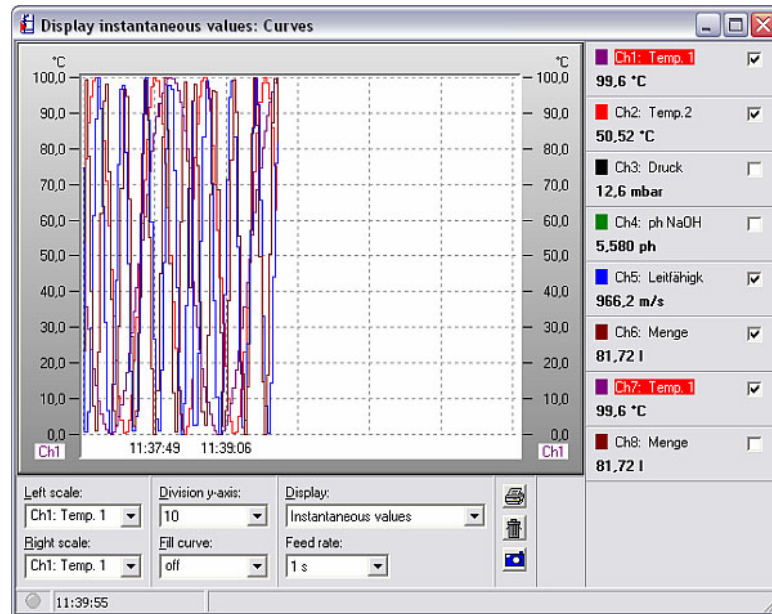
8.1.3 Displaying instantaneous values: bar graphs

In addition to displaying the measured values as a **Digital value** (8.1.1) and as a **Curve** (8.1.2), the PC software also allows users to display the instantaneous values as **Bar graphs**. Selecting **Display → Display instantaneous values: bar graphs** (alternatively, press function key **F5**) opens the **unit dialog box**. From the list of units, you can then select the unit(s) whose measured values you want to display as bar graphs.

When you double-click the unit or select **Open unit(s)**, the PC software establishes the connection to the selected unit(s).

Note

If the unit is not connected to the PC, instantaneous values cannot be displayed. Error message 2005 is displayed.

Up to 20 units or 100 channels can be displayed as bar graphs.

Selecting channels

The screen that opens is split into three fields. The top field lists the units that have already been selected. If you now select a unit, the field on the left (beneath the top field) lists all the active channels of the selected unit that are not yet being displayed. Now you can move all the channels that you want to display to the **Display channels** field on the right. To do so, simply select the channels and click the arrow button '>'. The channels now appear in the field on the right.

If you also want to display the channels of the other units listed in the **Unit** field, simply repeat the steps outlined above.

Expanded channel setup

You can configure the display range of the channels selected by selecting the **Expanded channel setup** option. This zooms in or zooms out of the display.

The **Reset zoom** option resets all the fields to their original values.

Bar graph display

The instantaneous values are displayed as bar graphs after confirming with **OK**.
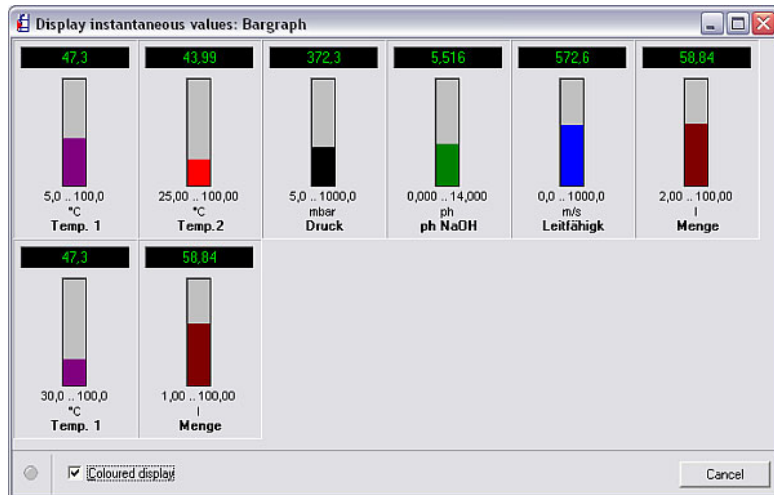
Channel color

There are two different display options:

- Colored display: If the **Colored display** option is selected, the bar graphs are displayed in color. The color of the bar graphs can be changed by simply clicking a bar graph.

- Green display: If the **Colored display** option is not selected, the bar graphs are displayed in green.

Limit value violation

The channel name is marked in red if the limit value is violated which means a fault can be detected quickly.
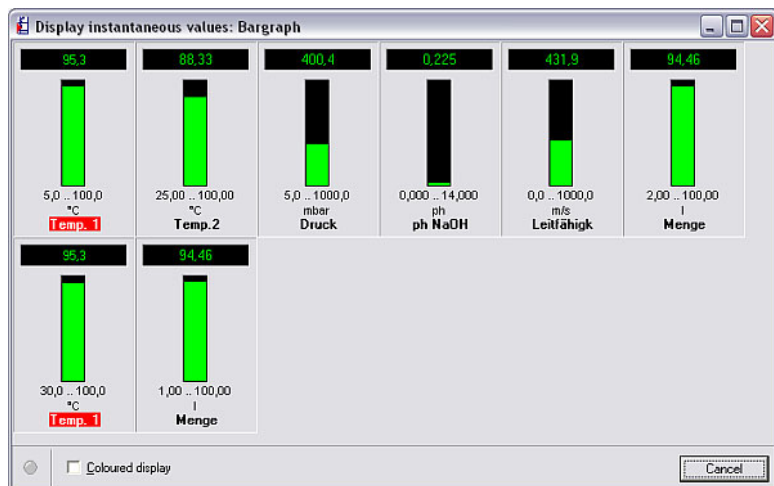
Click **'Cancel'** to exit the display.

8.2 Displaying instantaneous values in the network

Displaying instantaneous values on several computers in a network

If you want to display instantaneous values in a network on several computers, first open the **Program options** → **Set up** command via the **Extras** main menu item. You first have to make a few settings in the **Instantaneous value display** tab.
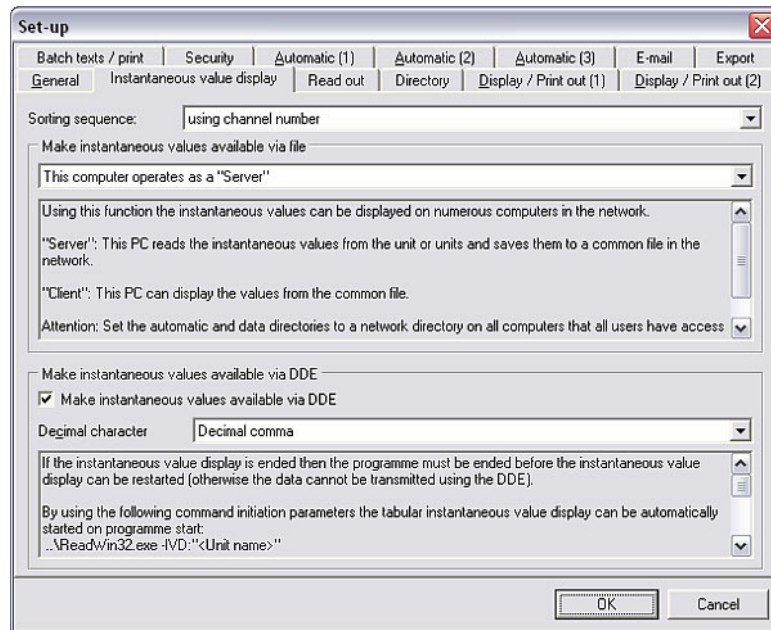
In the **Sorting sequence** field, specify whether the system should sort **Using the channel name** or **Using the channel number**.

In the **Make instantaneous values available via file** field, you have to decide whether this computer should act as a **Server** or a **Client** or whether this function should be deactivated.

Servers and clients

"**Server**": This PC reads out the instantaneous values from the unit(s) and saves these to a common file in the network. Other computers (clients) can also access this file. However, they cannot access the unit directly.

"**Client**": This PC can show instantaneous values from the common file.
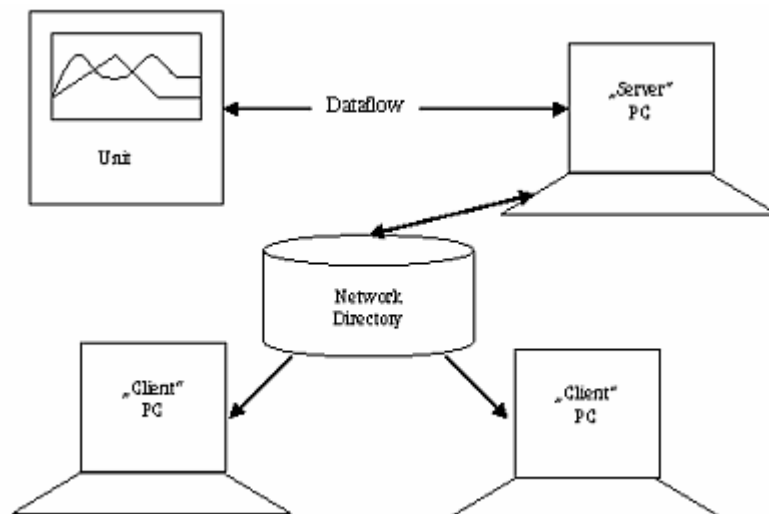
Caution

On all computers, set up the automatic and data directory on a network directory that all users can access (see information in 1.10).

DDE

If performing data communication by **DDE**, you can also set this up in this menu tab. DDE (dynamic data exchange) is a protocol for exchanging data between various application programs. Data and commands can be exchanged by DDE if the two application programs are running simultaneously.

Making instantaneous values available by DDE

In the **Make instantaneous values available via DDE** field, mark this command with a tick sign to activate it. In addition, set whether you want to use a comma or a period as the decimal character.

If instantaneous value display is terminated, you must exit the program before instantaneous value display can be started again (otherwise the data cannot be transmitted by DDE).

Tabular instantaneous value display with DDE

Tabular instantaneous value display can be started automatically with the following command when the program is started:

..\ReadWin32.exe –IVD:"<unit name>"

Caution

Always place the unit name in inverted commas! The program is closed automatically when the instantaneous value display is terminated.

Files called up by DDE

The following files can be called up by DDE:

- Name ("ChName"+<channel number>)

- Dimension ("ChDim"+<channel number>)

- Measured value ("Channel"+<channel number>)

- Server name: "DDEServ"

Example MS Excel: =ReadWin32|DDEServ!Channel2

8.3 Displaying measured values from database

In addition to **Instantaneous measured values** (see 8.1), **measured values from the database** can also be displayed with this software. These history values can be displayed graphically or in a table. The data from one or more units can be displayed simultaneously and a certain time range or display mode can be selected. A maximum of 40 channels can be displayed. Furthermore, the data can also be printed out as a graphic or table on a connected printer.

Displaying measured values from database

If you would like to display the measured values from the database as graphics, in the **Display** main menu, select the command **Display measured values from database** (alternatively, press function key **F6**). The **Unit dialog box** appears where you can select the unit(s) whose archived measured values you want to display.

When you double-click the unit or select **Open unit(s)**, the PC software reads out the data of the selected unit(s) which have been saved to the database.

Selecting the time range

The time range to be displayed must be selected in the screen that appears. The screen is split into four fields.

1. The units whose archived measured data are to be displayed are listed in the upper screen. Depending on the unit settings, you can set the base time axis individually for every unit.

2. The **Values available for time range** field shows the entire time range for all the measured data available.

3. In the **Display values** field, you can now select the timescale you want to display. Here, you can choose between the **Complete time range**, a **Presettable time range** or a **Specific time range** (15 minutes to 1 year). In doing so, you can set the exact date and time for the start and end.

4. In the **Analog values** field, you can select the analog values as an **Average, Instantaneous value, Minimum** or **Maximum**, depending on the unit setup.

Pressing **Continue >** to confirm opens a screen where you can select the channels that should be displayed. A maximum of 40 channels can be displayed.

Selecting channels

The screen that opens is split into three fields. In the upper field **Channel selection**, a drop–down menu lists the units that have been selected. If you now select a unit, the field on the left (beneath the top field) lists all the active channels of the selected unit that are not yet being displayed. Now you can move all the channels that you want to display to the **Display channels** field on the right. To do so, simply select the channels and click the arrow button '>'. The channels now appear in the field on the right. Similarly, you can use the double–arrow button **'>>'** to move all the available channels to the right into the **Display channels** field. Individual, highlighted channels can be moved back to the field on the left with the left arrow button **'<'**. Furthermore, all the channels selected in the field on the right can be deleted with the trash can icon.

If you also want to display the channels of the other units listed in the **Unit** drop–down menu, simply repeat the steps outlined above.
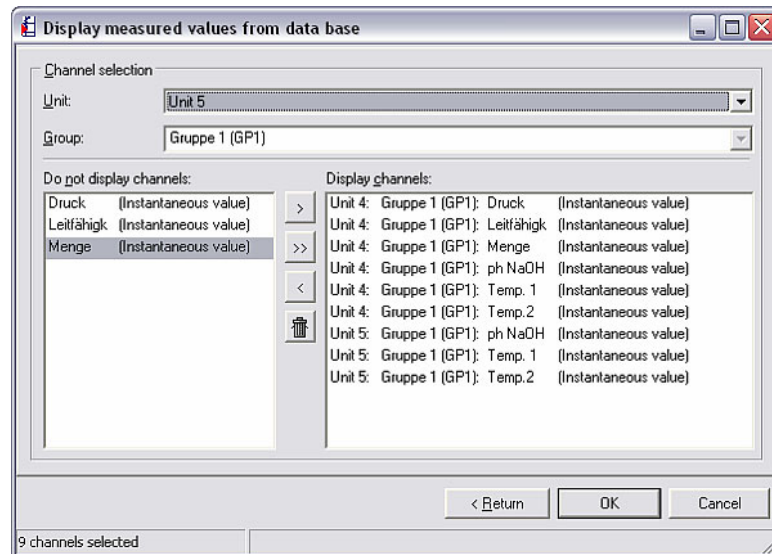
Displaying the measured values

After confirming with **OK**, the data archived in the database are displayed. The screen that opens is split into an upper and a lower section.
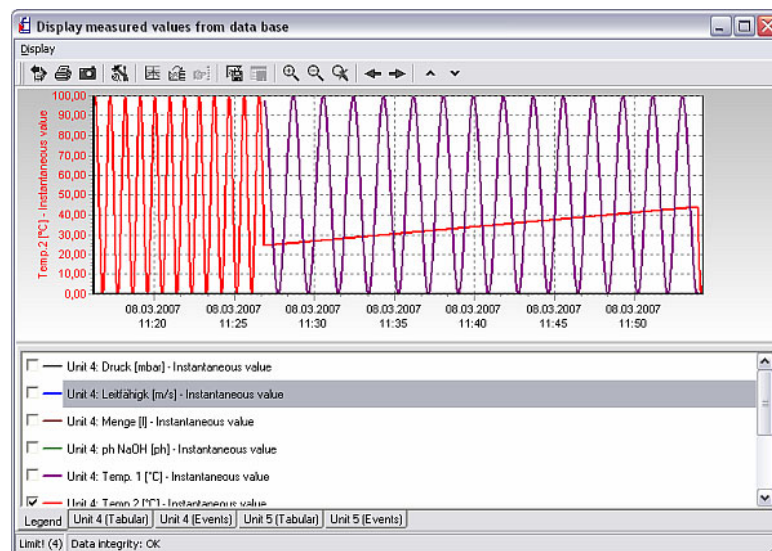
8.3.1 Graphic display of archived measured values

The actual graphic is displayed in the top section of the screen **Display measured values from database** (see 8.3).

The bottom section displays various tabs which differ depending on the unit type.

8.3.1.1   Formatting and scaling the graphic display

A **Legend** tab appears in the bottom section. You can use this to change the channel settings. When you double–click a channel, a screen appears where you can change the **Formatting** and the **Scale/y-axis**.

Formatting

The **Formatting** tab is split into two sections:

1.   The **Pen width** of the lines, as well as the style and color, can be selected in the **Line** area.

2.   If the **Visible** option is selected in the **Display stored/measured value marks** section, the size and style (circle, cross, square etc.) of the stored marks or measured values can be set.
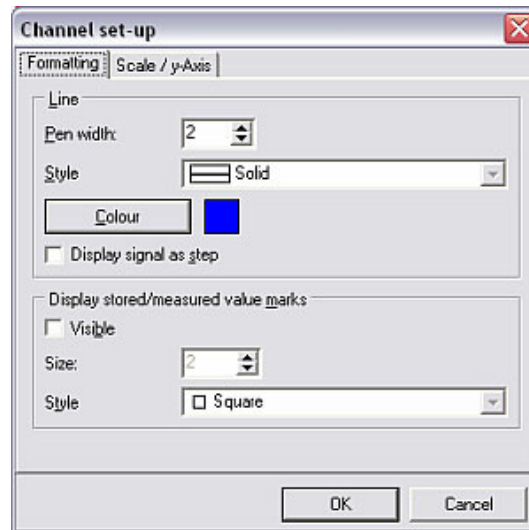
Scale / y-axis

The scaling of the y-axis can be changed or optimized in the **Scale/y-axis** tab. In addition, it is possible to display or hide the scale or display the scale as an auxiliary scale or main scale in the graphic. Furthermore, up to two help lines can be added for a user-selectable value.
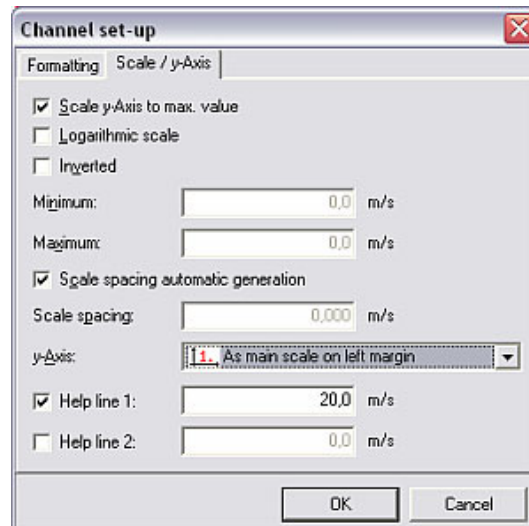
8.3.1.2   General settings for the graphic display

General settings for the graphic display can be made using the menu **Display → Setup**. These settings only apply to the set time range.

The screen that opens is split into three tabs:

"General" tab

- General

In the **General** tab, you can select to display or hide the "power off/power on" message in the graphic and the curve legend beside the graphic. Under **Margins (%),** you can set the distance of the margins as a percentage. In addition, in **Zoom** you can zoom in on the horizontal x-axis only, or on the horizontal x-axis and the vertical y-axis. The color, pen width and style (dash, dot, solid etc.) of the help lines in the graphic can be set in the **Help lines** field.
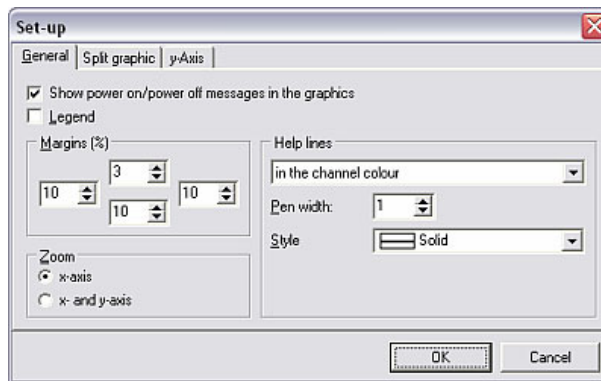
"Split graphic" tab

- Split graphic

The **Split graphic** tab is split into two fields. In the top field **Split graphic to several pages**, you can split the graphic across several pages which means that the graphic can be depicted more quickly in the event of large data volumes. Here, you can choose into how many measured values a page a graphic should be split and decide whether the last page should be scaled or not.

Analog and binary signals can be shown as a percentage in the bottom field **Display area distribution**.
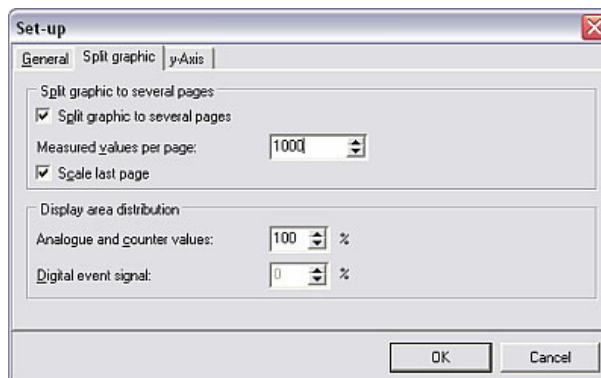
"Y-axis" tab

- Y-axis

  The settings for the horizontal y-axis can be adjusted in the **Y-axis** tab to optimize the graphic display. The changes only become visible if the y-axes are shown (see 8.3.1.1).
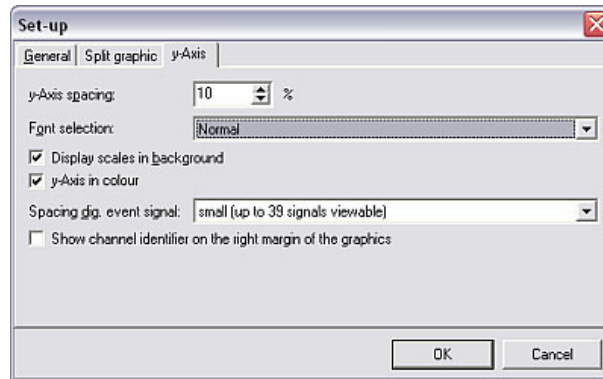
8.3.1.3 Snapshot

Snapshot

To be able to insert the graphic display into other applications, the PC software gives users the option of generating a copy of the screen to be placed on the clipboard. For this purpose, select the **Snapshot (copy graphic to clipboard)** command in the **Display** menu item. The graphic is now saved to the clipboard.

8.3.1.4 Measured value cursor

Measured value cursor

In the tool bar, the **Measured value cursor** command can be activated to display exact measured values from a selected time range. In the lower field, a **Values from measured value cursor** tab appears showing the areas selected with the cursor in tabular format.

Simply select the icon in the tool bar again to deactivate the **Measured value cursor**.

8.3.1.5 Zooming in on measured values

Zoom

If you want to zoom in on a certain area of the graphic, simply select the area in question with the mouse. This section is then shown on the entire display.

The **Reset zoom** icon in the tool bar resets the display to its original format.

8.3.1.6 Scrolling through a graphic

Scrolling through a graphic

You can move the graphic to the left or right with left-arrow and right-arrow in the tool bar.

8.3.2 Tabular display of archived measured values

Additional tabs, which display the measured values of the units illustrated in tabular form, appear in the bottom section beside the **Legend** tab (8.3.1.1).

Date/Time	Status	Druck	Leitfähigk	Menge	ph NaOH	Temp. 1	Tem
		Instantaneous value	Instantaneous value	Instantaneous value	Instantaneous value	Instantaneous value	Insta
		mbar	m/s	l	ph	°C	°C
08.03.2007 11:16:14	OK	0,4	223,7	53,56	13,234	25,6	
08.03.2007 11:16:15	OK	3,0	335,0	38,72	12,481	23,5	
08.03.2007 11:16:16	OK	15,5	449,1	25,64	11,573	21,5	
08.03.2007 11:16:17	OK	37,7	566,0	14,48	10,505	19,6	
08.03.2007 11:16:18	OK	68,9	679,3	6,11	9,314	17,8	
08.03.2007 11:16:19	OK	106,0	776,7	1,38	8,123	16,2	
08.03.2007 11:16:20	OK	153,0	865,9	0,05	6,815	14,5	

Legend | Unit 4 (Tabular) | Unit 4 (Events) | Unit 5 (Tabular) | Unit 5 (Events)

Limit! (4) | Data integrity: OK

8.3.2.1   Displaying tables

In addition to the **Legend** (8.3.1.1) and optionally the values from the measured value cursor (8.3.1.4), the various tabs display the table with all the measured values and the related events for every unit.

Events saved by the unit, including the date and time, are displayed in tabular form in the **>Unit name< (events)** tab.

Note

It is possible to make manual entries to the events list. The entry can no longer be deleted. See also **Store comment into event list** (8.3.2.2).

8.3.2.2   Storing comment into event list

In the **Display → Store comment into event list** menu, it is possible to make a subsequent entry to the event list. Here, up to 43 characters can be entered for the comment and a user name can also be entered.

Caution

For reasons of data security, you cannot reverse an entry made manually to the event list.

8.3.2.3   Saving table of measured values from database

Saving a table

You can save the table with the measured data from the database as an MS Excel file. To do so, select a tab with the measured values or events of the unit in the lower section of the screen. You can now save this table to the **Import/export directory** (see 9.1) by means of the **Display → Save table** menu (alternatively, go to the table with the cursor and right-click **Save table**). The file name is then automatically the same as the tab.
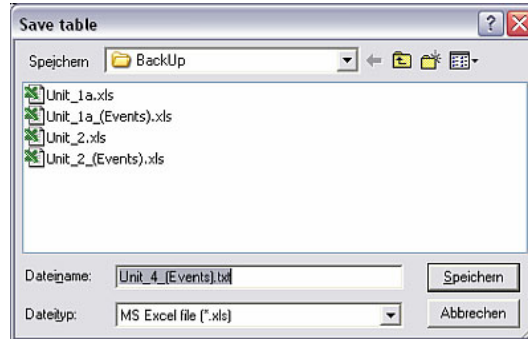
✏️   **Note**

To save the table as an ***.xls** file, MS Excel has to be installed first on your PC.

✏️   **Note**

This menu item is only active if a table with history data is illustrated.

8.3.3   Other settings

8.3.3.1   Printing measured values from database

Printing measured values from database

Measured values from the database can be output via a connected printer. Here, it is possible to print the data as a table and/or graphic.
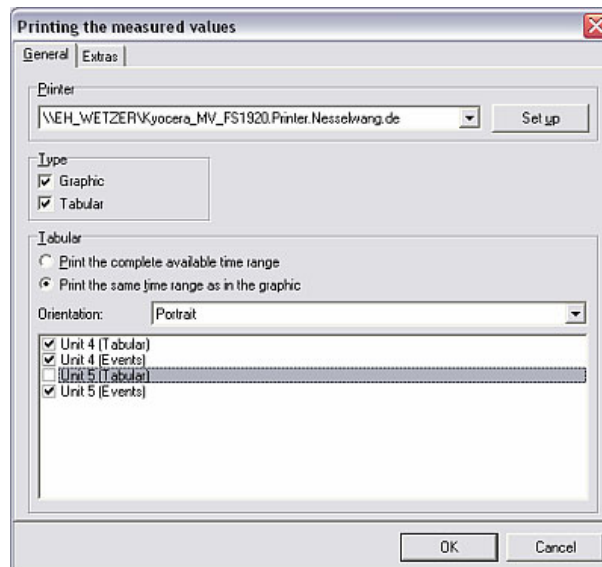
In the **General** tab you can select the printer and type (i.e. graphic and/or table) and you can select the time range, orientation and tables in the **Tabular** field.

In the **Extras** tab, you can enter a comment and configure the margins, the size of the axis labeling and the color.

8.3.3.2 Synchronizing visible time range of table with the graphic

If there is a difference in the time range between the table and graphic, this range can be synchronized in the **Display → Synchronize visible time range of table(s) with the graphic** menu.

8.3.3.3 Back to channel selection

It is always possible to return to the channel selection to display or hide channels. To do so, go to the **Back to channel selection** command in the **Display** menu. Now you can add or remove channels as described in 8.3.

8.3.3.4 Ending display of archived measured values

Using the menu item **Display → Exit** you can stop displaying data from the database and the program returns to the main menu.

8.3.3.5 Batch printout for special units

Special units give the user the option of outputting a batch printout of archived measured values with the PC software. For this purpose, in the **Display** main menu item, select the command **Display measured values from database** (alternatively, press function key **F6**) . In the unit dialog box that opens, select the unit that supports this function from the list of units.

Now proceed as outlined in 8.3. After selecting the channels, a batch overview is displayed in tabular form. Clicking **OK** opens the graphic display of the measured values from the database.
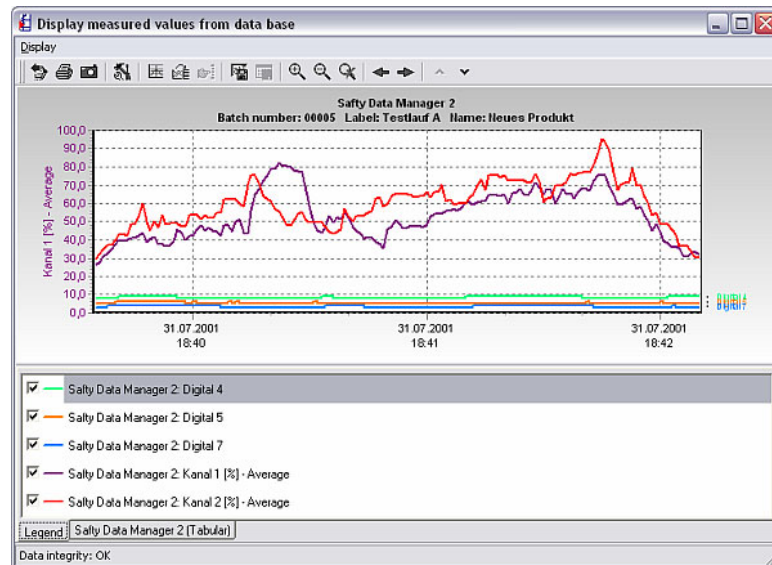
Batch printout

To generate a batch printout, go to the **Display** menu and select **Print**. Now change the drop-down menu in the **Printout** field to **Batch printout** or **Batch printout + measured value table**. The batch printout is output on your PC when you click **OK**.

9 Managing measured values

9.1 Basic settings for managing measured values

Import/export directory

Before you can store, save or import measured values, you first have to specify the target directory for importing/exporting the data.

In the **Extras** main menu item, select **Program options → Set up**. In the **Import/export directory** in the **Directory** tab, specify the drive or folder into which the measured data should be imported/from which the measured data should be exported (see also 1.10).

9.2 Storing/saving measured values

Storing/saving measured values

Measured values that are stored on the hard disk can be saved (=copied) or stored (=moved) to other drives (e.g. network drive or disk).

Using the **Extras** main menu item, open the **Unit dialog box** with the **Store/save measured values** command. From the list of units, now select the unit whose measured values you want to save/store.
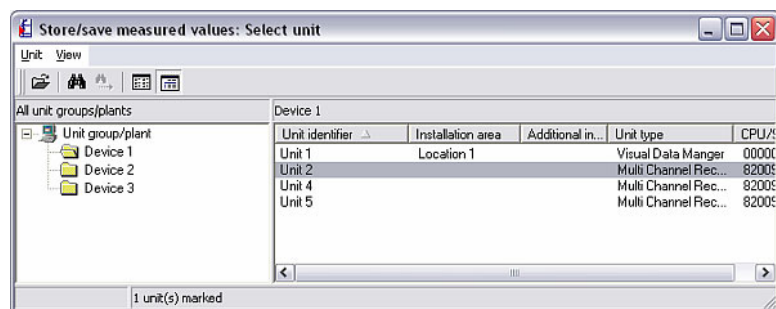
The transmission is started by double-clicking the selected unit and the following screen opens.

Note

The target directory for the stored or saved data on the PC must be specified beforehand in the **Directory** tab in the menu item **Extras → Program options**

→ **Set up** (see 9.1).

Mode	1. Mode. In the **Mode** field select whether the measured values should only be **saved only** (=copied), **stored** (=moved) or **deleted**.

File size	2. File size. With 'Save only', the measured values for the selected time range are either copied/moved to another drive (=**unlimited**) or to individual disks (=**1.4 MB – diskette**).

Base time axis	3. Base time axis Here you select how the time axis should be split.

Time scale	4. Time scale Here you can select the time range in which the measured data should be saved or stored. By means of the drop-down menu, you can decide whether to choose the **Complete time range** or a **Presettable** or **Fixed time range** (15 minutes to 1 year). In doing so, you can specify the exact start and end time.

Adding unit setup	5. Adding unit setup When storing or saving the measured values you can decide whether the unit setup should be appended or not.

Once you have made all the settings, click **OK**. The following screen appears where you can enter the name of the file generated.
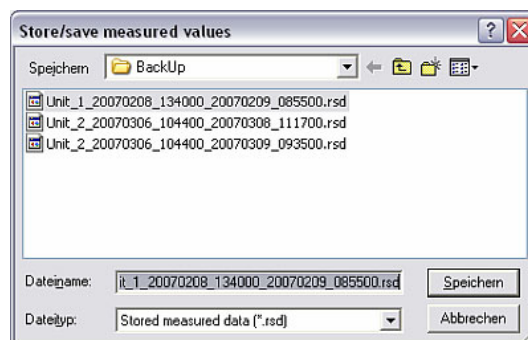
Note

The generated file **Unit_1_20070208_134000_20070209_085500.rsd** describes:

- **Unit_1**: Name of the unit whose measured values have been stored or generated

- **_20070208_134000**: Recording started on 08.02.2007 (February 8, 2007) at 13:40:00

- **_20070209_085500**: Recording stopped on 09.02.2007 (February 9, 2007) at 08:55:00

- **.rsd**: File type extension for stored measured data

This can be used to clearly determine what unit data the file contains, pertaining to what specific time frame.

9.3 Importing measured values

You can also use the PC software to import and use measured values that were moved (stored) from the database (see 9.2).

Importing measured values

For this purpose, select the **Import measured values** option in the **Extras** main menu item. From the **Import/export directory** (see also 9.1) select the file whose data you want to import back into the unit database and confirm your choice by clicking **Open**.

Note

The file must have the new file type ***.rsd** or the old file type ***.rdf** so the data can be imported into the database. For this reason, never change the file type of the stored measured values.

You can now import the data into the unit already created. To do so, select the unit in the **Select unit** window that opens and confirm with **OK.**

In addition, you can use the data to create a new unit. To do so, select the **New unit** option. The screen below appears.

As when creating a new unit (see Section 3.2.4), you can use the imported data for a new unit. To do so, select the **Group/plant** where the unit should be saved. You also have to give the unit a new name in the **Unit identifier** text field.

Note

The text entered in the **Unit identifier** field must be different for every unit managed with this PC software. If this is not the case, the following error message appears which tells you to choose another identifier for the unit.
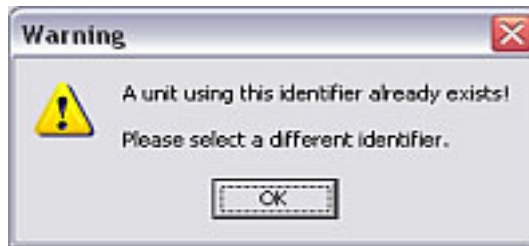
The exported measured data are now reimported into the database.

9.4 Exporting measured values

Exporting measured values

The software also allows you to export measured values saved in the database as a text file (*.txt) and use them in other applications, e.g. for further analysis in spreadsheet programs.

Caution

Exported measured data can no longer be imported into the database.

Select the command **Export measured values** in the **Extras** main menu item. The **Unit dialog box** appears where you can select the unit whose measured values should be exported.

Selecting the time scale

Depending on the setting you made when reading out the measured values (see Section 6), in the screen that now opens you can set the time scale and the analog values which you want to export from the database.
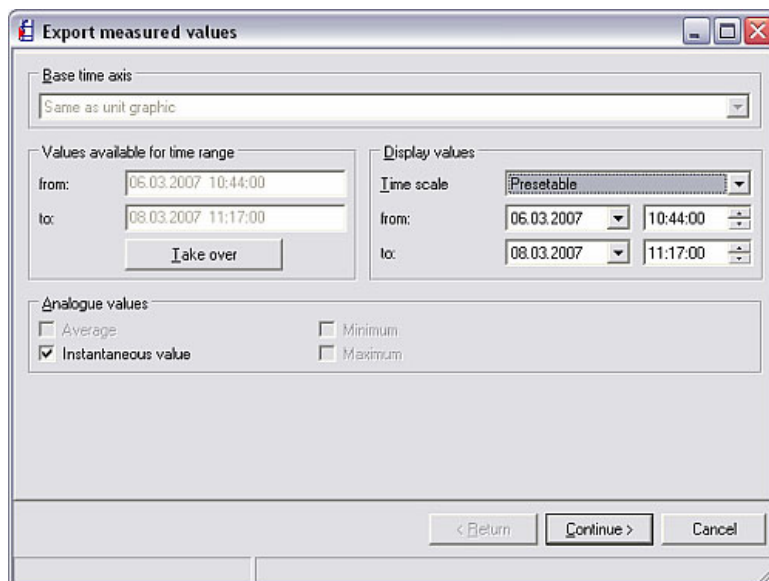
Channel selection

Pressing **Continue >** opens a screen where you can select the channels whose data should be exported. The field on the left lists the channels which should not be displayed. If you want to display additional channels, highlight the channel and move it to the field on the right with '>'. Alternatively, you can move all the selected channels with '>>'. In addition, you can use the back-arrow symbol '<' to move selected channels in the right-hand field back to the **Do not display channels** field. The trash can icon removes all the channels from the **Display channels** screen.
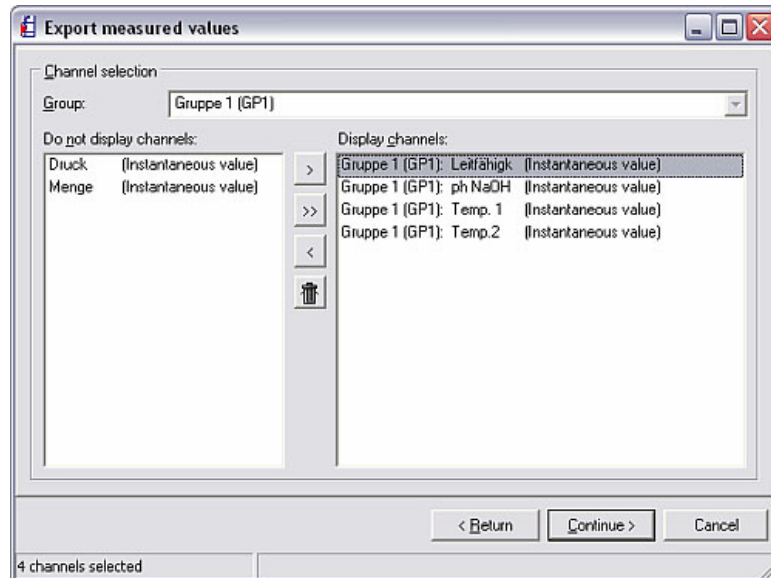
Formatting

Clicking **Continue >** opens a screen where you can format the data.

1. File type

Here you can choose whether the file generated should have the format *.txt, *.xls or *.csv.

2. Data

Here you can choose whether the data are appended to the file or whether the new data should replace the existing file.

3. Table

Here you can select options for generating the table.

4. Column limits

Here you can select the character used for delimiting the columns in the text file.

5. Decimal character

Here you can choose whether a decimal comma or a decimal point acts as the decimal character.

6. Format operating time

Here you select how the operating times should be formatted.
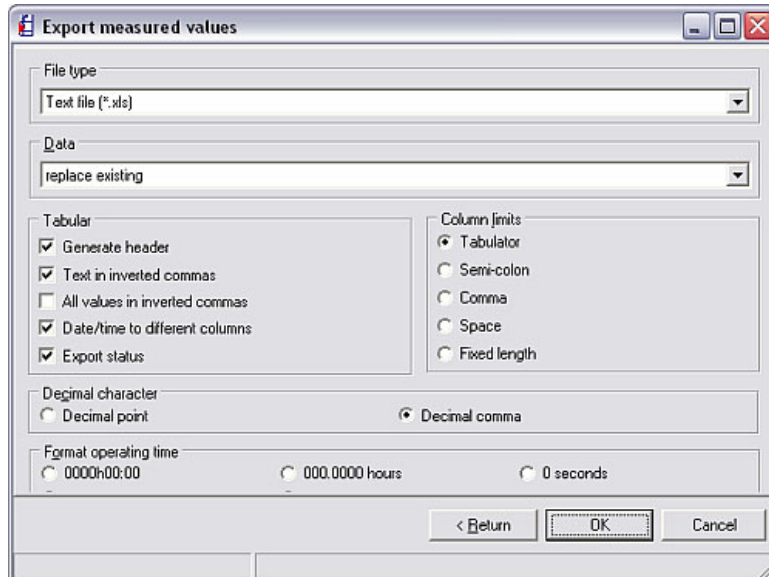
Note

With regard to formatting, select the specifications needed by the program in which the exported data are to be displayed. For this purpose, please refer to the user guide for the program in question. (When "MS Excel" is selected, the settings for this program are automatically made. The file can be loaded directly from here.)

Saving

Click **OK** to confirm the formatting settings made. You can now store the data in the **Import/export directory** (see 9.1).

You can now open and view the data in your preferred program (e.g. MS Excel).

10 Additional functions

10.1 HART communication

Using the **Program options → Set up** command in the **Extras** main menu, you can go to the **General** tab where you can select how many retries should be performed for **HART communication**.

Here, you can enter any number of retries in the text field.

What is HART?

HART (Highway Addressable Remote Transducer) is a version of digital field communication introduced as the industry standard. It contains many functions of fieldbus technology which uses the analog measuring signal to transport digital information. HART makes use of the frequency shift keying (FSK) standard to superimpose an additional signal onto the measuring signal in such a way that additional information can be transmitted without having to affect the analog measuring signal.

Note

The following setting must be made on the user PC to avoid problems between the PC software and a HART unit during RS232 communication:

1. Using **Start → Settings → Control Panel → System**, select the **Device manager** option in the **Hardware** tab and open the device manager.

2. In **Ports (COM and LPT),** select **→ Communication port (COMx)**. Double-click to open it.

3. In the **Connection settings** menu, select the **Extended...** command and deactivate the **Use FIFO buffer (requires 16550-compatible UART)** option in the screen that opens.

4. Click **OK** to close the screen.

10.2 E-mail

If you want to transmit the measured data by e-mail, first go to the **Extras** main menu and select **Program options → Set up**. Now make the server and local settings in the **E-mail** tab.

E-mail settings

The screen that opens is split into three fields: **Server setup**, **Local setup** and **Test setup**.

- Enter the server name in the **SMTP host** field.

- Specify the number of the server port in the **Port** field.

- The **User-ID** describes the user identifier.

- Enter your name in the **User name** field.

- Enter your e-mail address in the **User address** field.

- Under **Test setup**, you can choose from the options **Make connection**, **Send e-mail** and **End connection**.

Note

Your administrator will be able to provide you with the server name and the port address.

Caution

We cannot guarantee that the e-mails will be sent. This is the responsibility of your e-mail server/provider.

10.3 Special unit functions

The PC software allows you to call up or configure certain unit functions using your computer. The **Special unit functions** option in the **Extras** main menu item lists all the units that have a special unit function.

Special unit functions   These special unit functions **include**:

- Transmit program

- Print text line

- Clear memory

- Remote control

- Set up batch information

- Acknowledge message

- Convert setup Ex <-> Non-Ex

Note

Some units offer additional configuration options. Please refer to the Operating Instructions of the unit for this purpose.

10.3.1 Transmit program

You can transmit a program saved on a drive or a CD-ROM to the unit. To do so, from the list of units select the unit whose program you want to transmit. Activate the **Transmit program** command.

Transmit program   Configure the interface parameters and click **OK** to confirm.

Select the **File name** of the unit program and click **Open** to confirm the program transmission. The file must have the extension ***.prg**.

Note

For successful program transmission, some units require authentication by the user and the user's password.

10.3.2 Creating batch information

You can create batch information with the PC software. For this purpose, select the required unit from the picklist and enter the **Batch number**, **Identifier** and **Name**. These are then sent to the unit.

Note

This option is only available for units that are equipped with the batch software.

Cross-reference

For further information on the batch settings, see 5.3.

10.3.3 Remote control

The **Remote control** is a special function of individual units which can be used to send default text or specific text to the unit and to configure user log-on/log-off and the automatic function.

Cross-reference

The remote control function is described in more detail in Section 7.3.

10.4 Unit details and unit logs

10.4.1 Displaying unit details

You can display unit details via the interface or from the database. For this purpose, select **Service → Display unit details** in the **Extras** main menu item. Now choose from the options **By interface** or **From the database**.

Unit details

Unit details can be:

- Device type
- Program name
- Software version
- CPU number
- Last unit error (for 'Process display' and 'DIN rail transmitters')

Displaying unit details by interface

If you want to **Display the unit details by interface**, the interface setup screen appears. Under **Make connection**, select the type of data connection and click **Continue >** to confirm.

Interface set-up

General information

Make connection

Serial (e.g. RS232 / RS485) / USB

Unit address: 01

Release code: xxxx

< Return   Continue >   Cancel

Then enter the appropriate **Interface parameters** and press **OK** to confirm. The connection is made to the unit and the **Service: Unit details** screen appears.

To close the screen, click **OK**.

Displaying unit details from the database

If you select **Display unit details from the database**, the **Unit dialog box** screen opens where you can choose the unit whose details you want to view from the list of units. Double-clicking the desired unit opens the **Service: Unit details** screen with all the information available.

To close the screen, click **OK**.

10.4.2 Displaying unit logs

By means of the **Extras** main menu item, you can display unit logs using the **Service** command.

Note

This function is reserved for E+H Service. For this reason, it can only be accessed with a corresponding service code.

10.5 Managing the unit database

10.5.1 Maintaining the unit database

The program offers functions to maintain the unit database. Here, the unit database can be reorganized automatically and checked for errors.

10.5.1.1 Checking the unit database for errors

You can check the database automatically for errors by means of **Extras →Service → Database maintenance → Check database for errors**. Now you can check your database for errors and repair the database if necessary.

Note

When the database is being repaired, the system tries to restore the data as completely as possible. However, it cannot be guaranteed that all the data can be restored!

Before you repair the database, you should make a backup copy of the database directory.

The database must be opened exclusively. For this reason, make sure that NO other applications can access the database during the update!

The update process can take several hours in the event of large data volumes or if you have several units.

Note

No progress bar appears when the individual database files are being updated. With large databases, it can seem like the application has crashed.

Do not end the application as this could damage the database!

After running the command, a screen appears where the warnings mentioned above are displayed once more. In addition, two drop-down menus give you the option of either just checking the database for errors or checking and automatically repairing the database. Furthermore, you can choose whether the complete database, the main database or the unit database (selection) should be checked.

10.5.1.2 Reorganizing the database

You can automatically reorganize the unit database by means of **Extras → Service → Database maintenance → Reorganize database**. This checks the database and updates the software if necessary.

Note

This function is only needed if the PC software is updated from a version earlier than 1.5.0.0.

Note

- All the data already saved are retained.

- The database must be opened exclusively. For this reason, make sure that NO other applications can access the database during the update!

- If you are operating this application in a network, update the software on all the workstations to the same software release (an additional reorganization on the individual workstations is not necessary).

- The update process can take several hours in the event of large data volumes or if you have several units.

- A backup copy of the entire data directory is made before the update. In the unlikely event that problems arise, this backup can then be restored using a common ZIP program.

Note

No progress bar appears when the individual database files are being updated. With large databases, it can seem like the application has crashed.

Do not end the application as this could damage the database!

After running the command, a screen appears where the warnings mentioned above are displayed once more. Database reorganization is started when you click **Continue >**.

10.5.2 Database conversion (16 to 32 bit)

You can either convert your unit setup and measured values from 16 bits to 32 bits manually or automatically

Note

The old database is not modified, i.e. all the data are retained.

Please ensure that the old database is not used during the conversion process.

The conversion process can take several hours in the event of large data volumes or if you have several units.

Converting the database manually	Proceed as follows to **manually convert** your 16-bit unit setup and measured values to the new database format (32 bit):

1. Start the 16-bit version of the PC software

2. Export the unit setup (see 3.2.6)

3. Make a backup of the measured values (see 9.2)

4. Start the new 32-bit version.

5. Import the unit setup (see 3.2.7)

6. Import the measured values (see 9.3)

If you have more than one unit, repeat steps 2 to 6.

Automatic database conversion	Proceed as follows to **automatically convert** your 16-bit unit setup and measured values to the **32-bit version**:

1. Start the 32-bit version.

2. In the **Extras** menu, select the command **Service → Database conversion (16 to 32-bit)**.

3. In the information screen, click **Continue >** and select the directory containing the old database.

Follow the instructions of the conversion wizard.

10.6 Displaying printouts

You can use the PC software to configure how printouts are displayed. In the **Extras** main menu item, select **Program options → Set up** for this purpose.
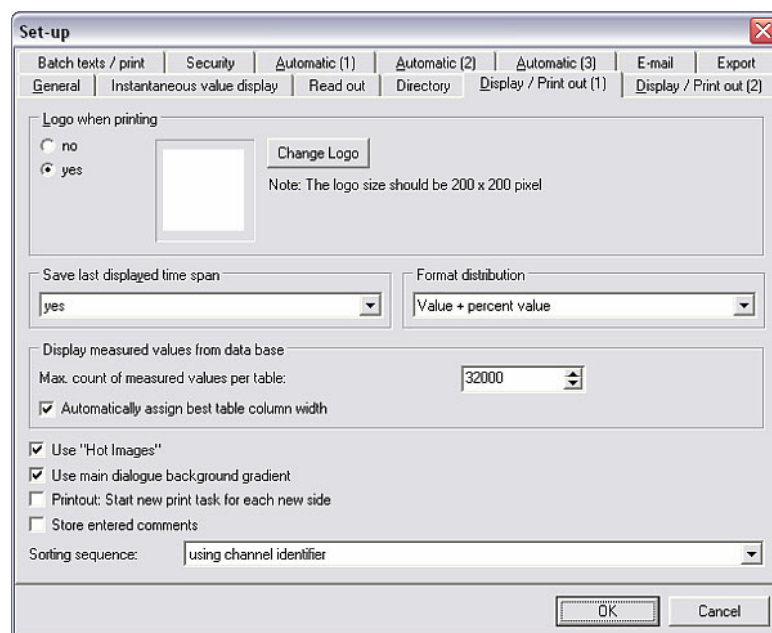
The following settings can now be made in the **Display/Printout (1)** tab:

Logo when printing

- **Logo when printing**

In the **Logo when printing** field, you can select a logo to be shown on the printouts.

Save last displayed time span

- **Save last displayed time span**

Here, you can choose whether the last displayed time span should be saved or not.

Format distribution

- **Format distribution**

In the **Format distribution** field, you can choose from the options **Value + percent value**, **Value only** or **Percent value only**.

Display measured values from database
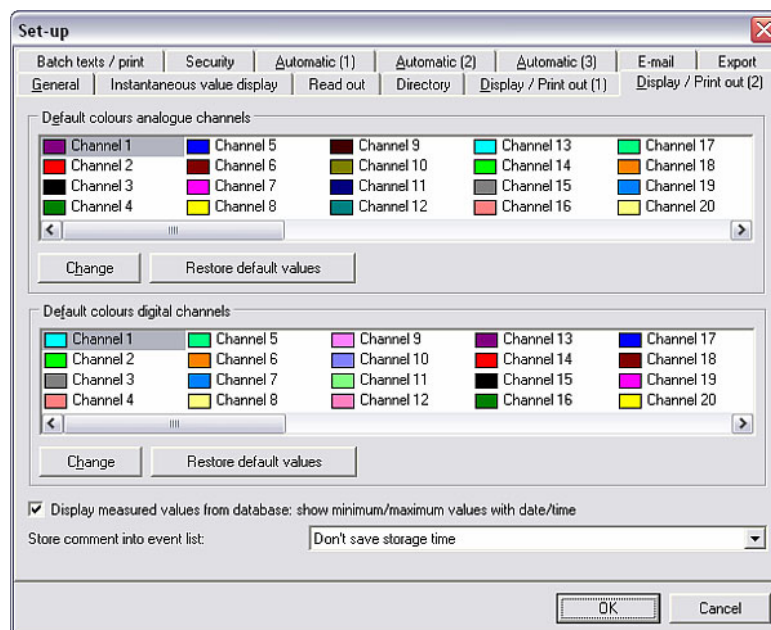
- **Display measured values from database**

Here, you can choose the maximum number of measured values to be displayed in the table per channel and whether the optimum column width for tables should be determined automatically.

You can also configure additional options as well as the **Sorting sequence**.

Channel colors

In the **Display/Print out (2)** tab, you can change the default values for the analog and digital channels. To do so, simply select a channel and select the **Change** option (alternatively, double-click the channel) to open a screen where you can select or define a color.

The original color settings are restored with the option **Restore default values**.

Here, you can also choose whether the minimum and maximum values, and the related date/time, should be shown when displaying measured values from the database. The storage time can be saved with comments in the event list or not.

11 Help

By means of the question mark '**?**' in the main menu bar, you can call up the online help under **Help**.

Note

Operating Instructions for this software are provided on the installation CD. This file can be read and printed out with the free software program Adobe® Acrobat Reader.

The program version currently used is listed under **Program information**. The versions of the program details are displayed with **Details**.

12 Support

Please have the following information ready if you contact Technical Support in the event of a problem to ensure we can process the problem as quickly as possible:

- Your serial number

- Your PC software version

- The name and version of your operating system

Note

Please refer to the FAQs in 12.1 and the troubleshooting instructions in 12.2 before contacting Technical Support. Maybe you can find the solution to your problem here.

12.1 Frequently Asked Questions (FAQs)

12.1.1 I can't delete a unit from the database (error message 21000).

Description
I get error message 21000 when I try to delete a unit. I'm sure no-one else is using the PC software in the network.

Answer
1) Close the PC software.

2) Make sure no-one else is using the PC software.

3) Open the database folder in Explorer (C:\...\Data). Search through all the subfolders for files with the extension *.lck and delete these files. Restart the PC software and try to delete the unit again. If you still cannot delete the unit, close the software again and proceed with Step 4). Please note: Step 3) is only necessary if the data directory is a network drive.

4) Open the "main.ini" file in the PC software directory with a text editor. Search for the entry "DeleteWithoutExclusiveAccess=0". Change the 0 to 1 and save the file. Start the software and delete the unit. Ignore the error message. The unit is now deleted. Close the PC software and in the "main.ini" file, change the 1 back to a 0 for "DeleteWithoutExclusiveAccess=1". Save the file. Please note: if you cannot find "DeleteWithoutExclusiveAccess" in the *ini file, close the "main.ini" file and start the PC software. In the **Extras** menu item, go to **Program options** → **Set up** and confirm the screen with **OK**. Close the PC software, open the "main.ini" file again and search for "DeleteWithoutExclusiveAccess". If you still cannot find the command, please update your PC software version. The PC software version 1.12.0.0 or higher is required.

12.1.2 During the installation, I get the message "BDE is currently running" and the installation is aborted.

Description	During the installation, I get the message "BDE is currently running" and the installation is aborted. Why?
	Systems usually call up this error if an application that uses the Borland Database Engine (BDE) is running in the background. One of these applications is TimeKeeper together with TimeSlips. There is a workaround for this which requires working with the system registry. This should be performed by the system administrator.
Answer	1) In the **Start** menu, select **Run…**
	2) Run the command 'REGEDIT'
	3) Open the directory **HKEY_LOCAL_MACHINE → SOFTWARE → Borland**
	4) Rename 'Database Engine' to 'Database Engine Old'
	5) Close the application and restart your computer
	6) Reinstall Account Ability
	7) Close the application and restart the computer

12.1.3 Displaying instantaneous values

Description	Displaying instantaneous values: How many channels can be displayed?
Answer	Digital: max. 100 channels from 20 different units
	Bar graph: max. 100 channels from 20 different units
	Graphic: max. 20 channels from 20 different units

12.1.4 Displaying instantaneous values with modem connection

Description	Displaying instantaneous values: How many channels can be displayed if I use a modem?
Answer	Only the measured values from **one** unit are displayed.

12.1.5 Printing out old measured data

Description	Printing out old measured data: Why is only the first page printed out and why are all the other pages blank?
Answer	Install PC software version 1.8.3.0 or higher

12.1.6 Communication between analog and ISDN modem

Description	Is communication possible between an analog and an ISDN modem?

Answer   It is possible to establish a connection between a Fritz card and an analog modem. Transmission is limited to 14.4 kbaud however.

For this purpose, you have to go to **Extras → Program options → Set up → General** and set 'ATS31=8;S51=0;S35=14400' in the **Modem initialization** text field and at least '15 seconds' for **Connection timeout**.

12.1.7 Communication between GSM and ISDN modem

Description   Is communication possible between a GSM and an ISDN modem?

Answer   Yes, the ISDN modem (or card) in the computer must be configured for the transmission protocol V110. For this purpose, you have to select **Program options → Set up → General** in the **Extras** menu item. In the **Modem initialization** text field, enter 'ATS31=2;S51=0'.

12.1.8 Connecting two units with a modem

Description   Is it possible to connect two units with a modem?

Answer   Modem → T–Box (e.g. from W&T) → 2 units

Suggestion:

Both units have to have different unit addresses (e.g. 01 and 02).

Connections 9 to 25 may possibly be needed. The sender and receiver paths on the cables connected to the unit have to be reversed.

12.1.9 It takes a very long time to read out and save data

Description   It takes a very long time to read out measured data and save the data in the network. On the other hand, saving measured data to a local disk drive is very fast (e.g. local → 1 minute, network → 30-40 minutes). What is the reason for this?

Answer   Some antivirus programs can greatly reduce the performance. For this reason, exclude *.db, *.val and *.idx files from the virus check.

or:

The network is very slow (e.g. only 10MBit network).

12.1.10   Error message 20000 when several users access the database

Description   Why does error message 20000 occur when several users try to access the database?

Answer   Check whether the database directory is not absolutely exact due to different network settings (different paths). The letter for the drive and the path have to be absolutely identical.

The following example displays an invalid path setting:

Computer 1: Z:\Mapping1\Mapping2

Computer 2: Y:\Mapping2 with Y = Z:\Mapping1

12.1.11 "no Win32 application" appears during the installation

Description | The error message "no Win32 application" appears during the installation.

Answer | The PC software was probably downloaded from the Internet. The files were not downloaded completely. Repeat the download.

12.1.12 Why does the PC software not run in a Novell network?

Description | Why does the program not run in a Novell network?

Answer | Novell Client has an error → Install version 4.81, 4.83 Beta_1109 or 4.83 SP1.

12.1.13 The software does not start

Description | Why won't the PC software start and why doesn't the user interface appear even though the program is displayed in the task list?

Answer | A PC with an XEON processor working in the dual mode (hyper threating) causes this error. Update the PC software to version 1.15.1.0 or higher.

In addition, this problem can also be caused by a special character in the directory name (e.g. "+"). Remove the "+" and replace it with "_" for example.

12.1.14 A unit that has just been added is not displayed in the unit list

Description | A new unit was added to the database. This unit does not appear when I go to select it in the unit list. If I then try to add a unit with the same name, the program tells me that the unit already exists. How can this problem be solved?

Answer | The unit class probably is not selected. Under **Extras → Program options**, select the required unit under **Select units used**. Even if a unit class is switched off, it can be started with the PC software (e.g. if the interface setup is determined automatically.

12.1.15 Error message 20000 when opening a unit setup

Description | I get error message 20000 (without a module name) when I try to open a unit setup. The data are saved on a network drive.

Answer | Please check or execute the following:

1) Do I have complete access authorization to the data directory, including all the subdirectories?

2) Check the data directory. To many subdirectories or directory names can cause a problem.

3) Try to install the PC software in the program file directory

12.1.16 Error 20329 "No access to directory"

Description | What is causing error message 20329 "No access to directory"? How can I avoid this?

Answer

Reason: The directory does not exist or the user does not have all the rights (reading, writing and deleting). This problem can also occur if the PC software was installed incorrectly or has crashed.

Remedial action: Go to the 'Readwin32' program directory under C:\Programs\Endress+Hauser. Open the "main.ini" file in a text editor and delete the lines

Data=

Automatic=

Exchange=

Private=

Save the file and restart the PC software.

12.1.17   Error 30000 when reading out data from a CD

Description

Why does error message 30000 occur when reading out measured data from a CD?

Answer

This error occurs if measured data are copied from a disk or Flash-Card to a CD and then the data are read out with the PC software. The reason is that the program needs to be able to read and write all the measured data. This is not possible on a CD.

To avoid this error, please save the measured data you want to read out on a Flash-Card or a hard disk (not in a subdirectory). To save measured data on a CD as a backup, we recommend you export the data to MS Excel or a text format. This option is possible with the PC software.

12.1.18   PC software under LINUX

Description

Does the program also run on a LINUX operating system?

Answer

No and there are currently no plans to support the PC software with LINUX.

12.1.19   Software installation does not work for version 1.17.1.1 or higher

Description

I cannot install the PC software (version 1.17.1.1 or higher).

Answer

This problem can be caused by the USB driver that is installed automatically during the setup.

During the setup, select the "Custom" option and remove the USB driver TXU01.

12.1.20   Software installation for Windows 2000

Description

The PC software cannot be installed on a PC with Windows 2000. What can I do?

Answer   If Windows 2000 is running with limited user rights, it can happen that the program cannot be installed.

Remedial action:

1) The software should be installed by someone with administration rights.

2) Do not install the PC software in the directory "\Programs\Endress+Hauser\Readwin32". Use another directory. Caution: A special character in the name (e.g. "+") causes problems on some PCs. Change the '+' to '_' for example.

12.1.21   Access to chm files in a network

Description   Complied HTML help files (*.chm) can only be opened locally and not in a network since a certain Windows XP patch. The help themes are shown, but not the content of the theme. An Explorer error message is generated.

Answer   An entry in the local registry solves the problem.

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\HTMLHelp\1.x\ItssRestrictions → MaxAllowedZone = 1

12.2 Troubleshooting

12.2.1 Error 1327: Invalid Drive

Description   The following error message can occur when installing with InstallShield:

The invalid disk drive can vary depending on the computer.

Answer   There can be several reasons for this error. One reason is that the installation was created with a fixed programmed path on a drive that is not on the computer. If this is the case, there is no way of setting up the installation on another drive. The software provider must be contacted. Other reasons could be:

- The letter for the CD-ROM or DVD-ROM drive has changed since the last installation.

- You have changed the letter of the drive where the operating system is installed (e.g. drive C:).

- The error can occur if a registration code has an incorrect value in a **Data** field.

Remedial action:

Since there can be many reasons for this error, you have to check a number of elements on your computer.

1. If the letter of the drive has been changed on your computer, assign the original letter to the CD-ROM/DVD-ROM or operating system drive. To do so, follow the steps for your operating system:

   Windows XP users:

   - Open the **Start Control panel →.**

   - Open **Administrative tools → Computer management** and then select **Disk management**.

   - Select the CD/DVD-ROM or operating system drive and right-click **Change drive letter and paths…**

   - Select **Change...** and replace the current letter with the original letter. Confirm with **OK** and close the screens.

   Windows 2000 users:

   - Open the **Start Control panel →.**

   - Open **Administrative tools → Computer management** and then select **Disk management**.

   - Select the CD/DVD-ROM or operating system drive and right-click **Change drive letter and paths…**

   - Select **Edit** and replace the current letter with the original letter. Confirm with **OK** and close the screens.

2. Make sure that the registry entries do not contain invalid letters for the drives:

   Important: The following steps require you to change the Windows registry. If such changes are not made correctly, this can cause considerable problems on a Windows system.

   - In the **Start** menu, select **Run…**

   - In the text field beside **Open**, write **REGEDIT** and then click **OK**. This opens the registry editor.

   - The following directory is located on the left in the editor: **HKEY_CURRENT_USER → Software → Microsoft → Windows → CurrentVersion → Explorer → Shell Folders**

   - In the field on the right, now examine the paths of all the entries in the **Value** column. If an entry contains a drive which is not correct for your computer, right-click the command **Change** for this specific entry.

   - Enter the correct letter for the drive in the value field and confirm with **OK**. If, for example, a value has the path "X:\Documents and settings\...", change the letter to a valid drive on your computer, such as "C:\Documents and settings\...".

   - Repeat the last two steps for all entries for which the **Value** column does not display a correct drive.

   - Repeat the last three steps for the following registry directories:

     o **HKEY_CURRENT_USERSoftware → Microsoft → Windows → CurrentVersion → Explorer → User Shell Folders**

     o **HKEY_LOCAL_MACHINE → SOFTWARE → Microsoft → Windows → CurrentVersion**

     o **HKEY_LOCAL_MACHINE→ SOFTWARE → Microsoft → Windows → CurrentVersion → Explorer →Shell Folders**

     o **HKEY_LOCAL_MACHINE → SOFTWARE → Microsoft → Windows → CurrentVersion → Explorer → User Shell Folders**

- Close the registry editor and run the installation again.

If neither solution works, this error might also occur because the installation author programmed a path to a drive letter that does not exist on the computer. In such instances, you should contact the software provider. Your software provider can follow the suggestions of the InstallShield Knowledge Base article below to determine what is causing the error during the installation.

Q107033 ERRDOC: Windows Installer Error 1327

12.2.2 Error 1606

Description

Error message 1606 "Could not access network location" can occur if one of the locations specified for the system refers to a remote computer or a point in the network that is not connected. This can occur if an incorrect setting is made in a registry entry.

Answer

Make sure that the registry entries do not contain network paths that could cause an error:

Important: The following steps require you to change the Windows registry. If such changes are not made correctly, this can cause considerable problems on a Windows system.

- In the **Start** menu, select **Run…**

- In the text field beside **Open**, write **REGEDIT** and then click **OK**. This opens the registry editor.

- The following directory is located on the left in the editor: **HKEY_CURRENT_USER → Software → Microsoft → Windows → CurrentVersion → Explorer → Shell Folders**

- In the field on the right, now examine the paths of all the entries in the **Value** column. If an entry contains a drive which is not correct for your computer, right-click the command **Change** for this specific entry.

- Enter the correct letter for the drive in the value field and confirm with **OK**. If, for example, a value has the path "X:\Documents and settings\...", change the letter to a valid drive on your computer, such as "C:\Documents and settings\...".

- Repeat the last two steps for all entries for which the **Value** column does not display a correct drive.

- Repeat the last three steps for the following registry directories:

  o **HKEY_CURRENT_USERSoftware → Microsoft → Windows → CurrentVersion → Explorer → User Shell Folders**

  o **HKEY_LOCAL_MACHINE → SOFTWARE → Microsoft → Windows → CurrentVersion**

  o **HKEY_LOCAL_MACHINE→ SOFTWARE → Microsoft → Windows → CurrentVersion → Explorer →Shell Folders**

  o **HKEY_LOCAL_MACHINE → SOFTWARE → Microsoft → Windows → CurrentVersion → Explorer → User Shell Folders**

- Close the registry editor and run the installation again.

If you have upgraded your computer from Windows 98 Second Edition to Windows XP or from Windows ME to Windows XP, check the following registry entries.

Important: The following steps require you to change the Windows registry. If such changes are not made correctly, this can cause considerable problems on a Windows system.

- In the **Start** menu, select **Run…**

- In the text field beside **Open**, write **REGEDIT** and then click **OK**. This opens the registry editor.

- The following directory is located on the left in the editor: **HKEY_CURRENT_USER** → **Software** → **Microsoft** → **Windows** → **CurrentVersion** → **Explorer** → **Shell Folders**

- In the right-hand field of the editor, double-click **Common Administrative Tools** to open it.

- An **Edit string** dialog box appears. In the **Value data** field, type in the following command and then confirm with **Ok**: **%ALLUSERSPROFILE%\Start Menu\Programs\Administrative Tools**

- In the file menu, close the registry editor.

- Restart your computer.

12.2.3 Error 20000: Module "TReadOut.StoreMWClipBoard (8)"

Description   When reading out saved measured values, I get error message 2000 (module "TReadOut.StoreMWClipBoard (8)).

Answer   A database file is corrupt. In the **Extras** menu item, open the command **Database maintenance** → **Check database for errors**. Please select "**Check and repair automatically**".

12.2.4 Error 20005: A connection to the unit could not be established

Description   When attempting to change the unit setup of a specific unit or to establish the connection to a specific unit to display or read out measured values error message 20005 occurs (No connection could be made with the unit. Please check the interface parameters and check whether the release code entered is correct.).

Answer   There are two reasons for this error message:

- The connection between the unit and PC is not correct. Other interface parameters have been configured or the connection was interrupted. Check whether the connection is set up correctly at the two units.

- The release code is not identical. Check whether the release code is identical on the unit and PC under the menu item **Unit** → **Display/change unit setup/add new unit**.

12.2.5 Error 20228: The communication has not yet been specified for the unit

Description   You want to read out or display the measured values of a unit via a specific interface. Error message 20228 occurs (Communication has not yet been specified for the unit '<name>').

Answer   You created the unit in the unit database via another interface or another transmission medium. You either read out the data via the transmission medium which is created in the unit database or you change the transmission mode. See menu item **Unit** → **Display/change unit setup/add new unit**.

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