

Evaluation Program PCA

B 95.5099
Operating Instructions

09.02/00371594

1	Introduction	3
1.1	Preface	3
1.2	Typographical conventions	3
1.2.1	Warning signs	3
1.2.2	Note signs	3
1.2.3	Presentation	4
1.3	Hardware and software requirements	4
2	Guide	5
2.1	Introduction	5
2.2	Store measurement data	6
2.3	Visualize measurement data	8
2.3.1	Prepare evaluation	10
2.3.2	Open Evaluation	12
2.4	Store measurement data on any path	14
2.5	Archive and evaluation directories	16
3	Evaluation	17
3.1	Introduction	17
3.2	Prepare evaluation	18
4	Open evaluation	21
4.1	Introduction	21
4.2	Selected time period	22
4.3	Evaluation	23
4.4	Graphics area	24

Contents

4.5	Table area	29
4.5.1	Channels	30
4.5.2	Report	33
4.5.3	Batches	35
4.5.4	Events	37
4.5.5	Analog: Groups... ..	39
4.5.6	Digital: Groups... ..	41
4.5.7	Logbooks for electrode and measuring cell calibration	42
4.5.8	Print	44
4.5.9	Data export into Excel 97	46
5	Communications server	49
6	Appendix	51
6.1	PC keyboard	51
6.2	Tips and Tricks	52
7	Index	53

1.1 Preface



Keep these Operating Instructions in a place that is accessible to all users at all times.

Please assist us to improve these Operating Instructions, where necessary.

Your suggestions will be appreciated.

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1.2 Typographical conventions

1.2.1 Warning signs

The signs for **Danger** and **Caution** are used in this manual under the following conditions:

Danger

This symbol is used where there may be **danger to personnel** if the instructions are disregarded or not followed accurately!

Caution

This symbol is used where there may be **damage to equipment or data** if the instructions are disregarded or not followed accurately!

Caution

This symbol is used where special precautions must be taken when handling **electrostatically sensitive components**.

1.2.2 Note signs

Note

This sign is used to draw your **special attention** to a remark.

Reference

This sign refers to **additional information** in other manuals, chapters or sections.

Footnote

Footnotes are comments that **refer to specific parts** of the text. Footnotes consist of two parts: a marking in the text, and the footnote text.

The marking in the text is arranged as continuous superscript numbers.

abc¹


1 Introduction


Handling instructions

*

This symbol marks the description of a **required action**.

The individual steps are indicated by the asterisk, e.g.

* Press the  key

* Confirm with 

1.2.3 Presentation

Keys

 + 

Keys are **shown in a box**. Both **symbols and texts** are possible. If a key has multiple functions, then the text shown is the one that corresponds to the **function that is active at the moment**.

Screen texts

*Program
Manager*

Texts that are displayed in the program are indicated by **italic script**.

Menu items

*Edit →
Instrument data*

The menu items in the program are shown in italics. Menu name, menu item, and sub-menu item are separated from one another by "→".

1.3 Hardware and software requirements

The following hardware and software conditions must be fulfilled for the installation and operation of the evaluation program:

- IBM-PC or compatible PC, with Pentium and above
- 16 MB main memory
- 3.5" diskette drive
- CD-ROM drive
(for installation, and to create a set of diskettes)
- Mouse
- VGA graphics
- Windows 95/98/NT4.0

**recommended
minimum
configuration**

- Pentium 200
- 32 MB main memory
- 200 MB free space on the hard disk

2.1 Introduction

On the following pages is a guide which should clarify the principles of the PCA evaluation program.

For a better understanding, the concept is explained by analogy with the present chart recorder and the paper rolls with the process data.

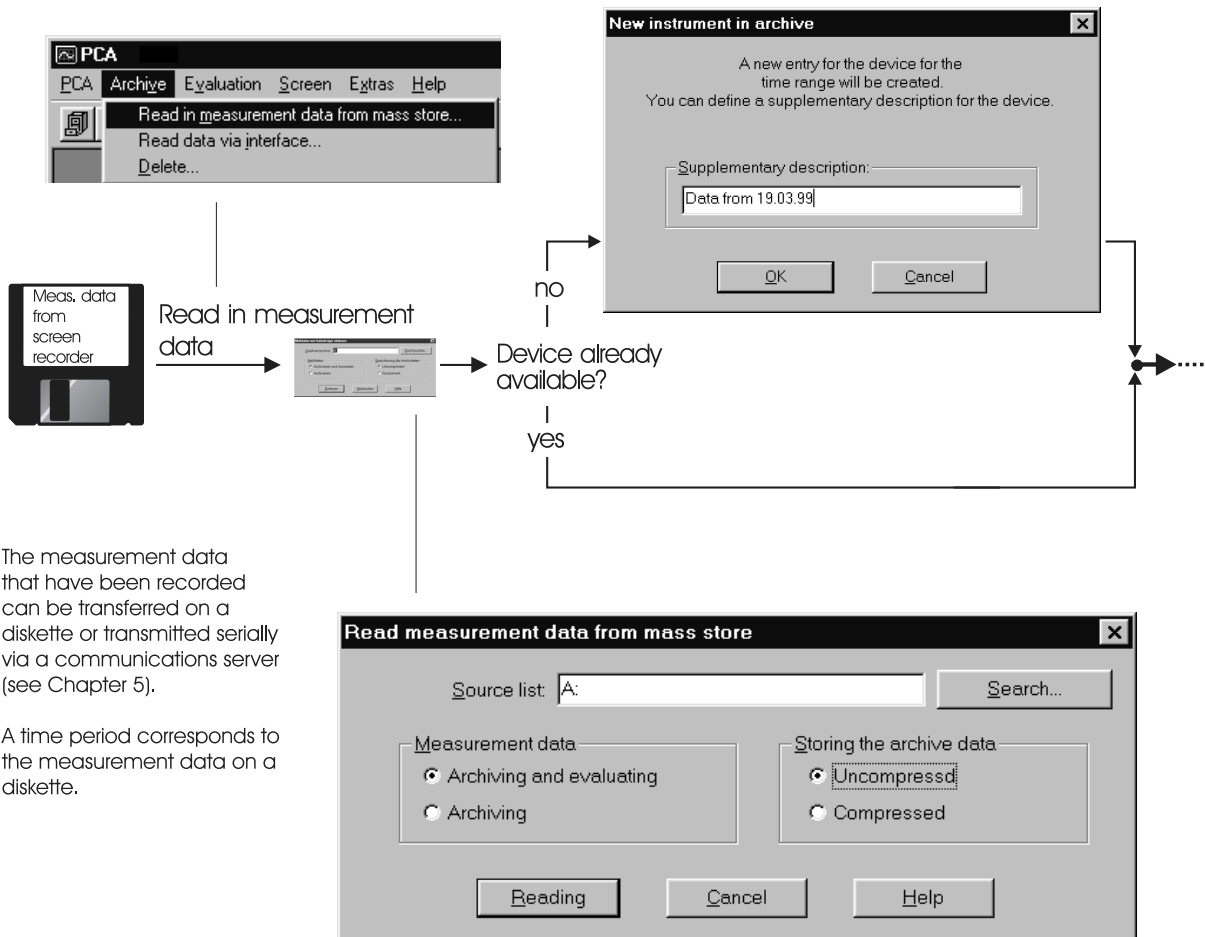
2 Guide

2.2 Store measurement data

This chapter explains how paperless recorder measurement data is read into and stored on your PC. For a quicker access to the subsequent visualization, a concept based on an archive and an evaluation was chosen.

The **Archive** represents the conventional storage of the paper rolls and the **Evaluation** represents the unrolled paper roll.

Practical experience has shown that most users only want to store (archive) the measurement data initially, and only take data from an archive later for analysis, e.g. in the event of a fault.



The archive concept is arranged such that the data of several instruments can be stored.

2 Guide

2.3 Visualize measurement data



Measurement data which are to be visualized are opened from the **Evaluation**.

If these measurement data are not yet available in the **Evaluation**, they must first be unpacked from the archive. This process is carried out via the **Prepare** menu item.

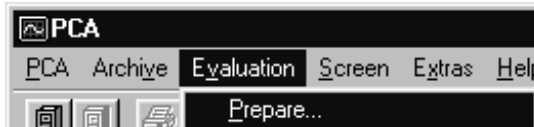
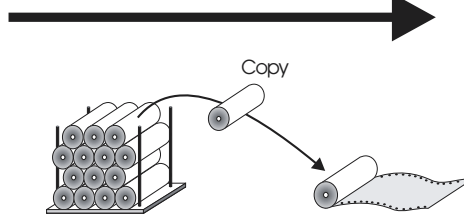
Archive

Recorded time periods

- archived period 1
- archived period 2
- archived period 3
- archived period 4
- archived period 5
- archived period 6
- archived period 7
- archived period 8
- archived period 9
- archived period 10
- ⋮
- archived period n

These time periods have not been unpacked

Prepare Evaluation



Prepare Evaluation

Evaluation ... Prepare selects measurement data from the archive, unpacks them, and stores them in the evaluation. These data can also be from different paperless recorders (different systems).

⇒ Section 2.3.1 "Prepare Evaluation"

Evaluation

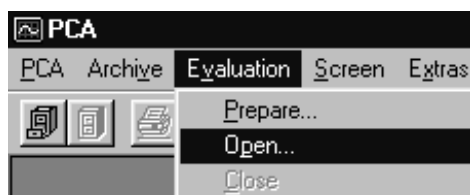
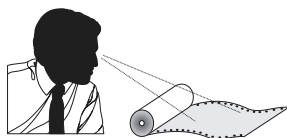
Unpacked data for the archived time period

Period 2
– archived and evaluated

```

11010011 11010011 11010011 11010011
01111010 01111010 01111010 01111010
00101110 00101110 00101110 00101110 011
11101101 11101101 11101101 11101101 010
10110001 10110001 10110001 10110001 010 011
10001110 10001110 10001110 10001110 001 010
11011100 11011100 11011100 11011100 001 010
11010011 11010011 11010011 11010011 010 001
01111010 01111010 01111010 01111010 000 001
00101110 00101110 00101110 00101110 011 010
11101101 11101101 11101101 11101101 010 100
00001110 00001110 00001110 00001110 011
11101101 11101101 11101101 11101101 010
00001110 00001110 00001110 00001110
11101101 11101101 11101101 11101101
```

Open Evaluation

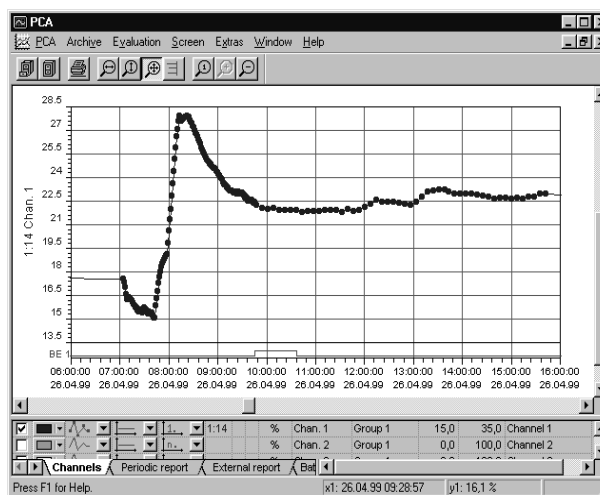


Evaluation ... Open

Evaluation ... Open opens selected measurement data from the evaluation, and visualizes them.

⇒ Section 2.3.2 "Open Evaluation"

Visualization



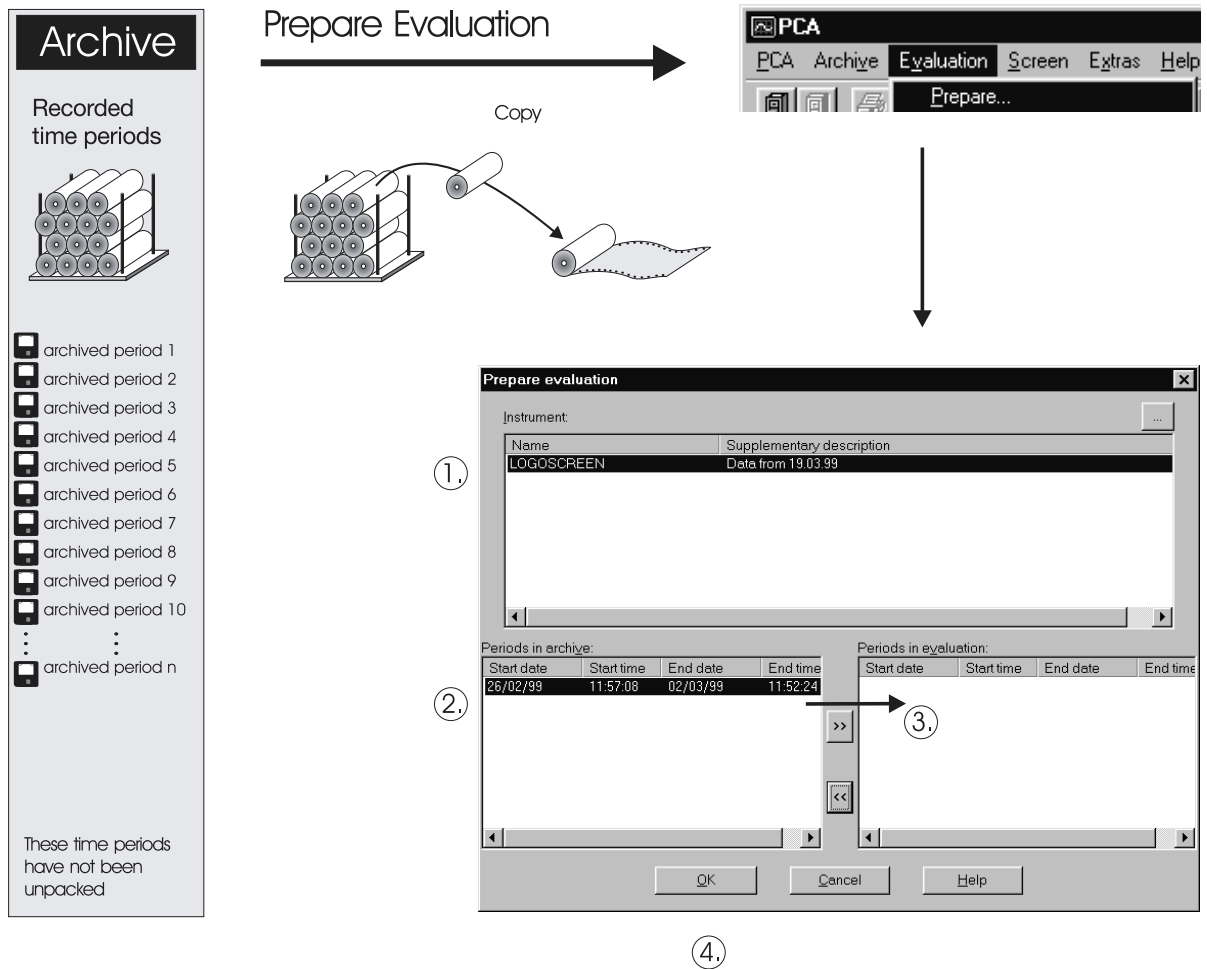
2 Guide

2.3.1 Prepare evaluation



Measurement data which are to be visualized can only be opened from the **Evaluation**.

If these measurement data are not yet available in the **Evaluation**, they can be unpacked from the archive into the evaluation via the **Prepare Evaluation** menu item. This process corresponds to unrolling the conventional paper roll.



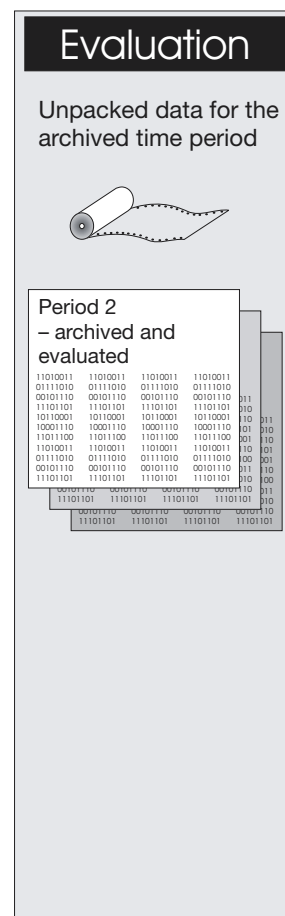


In the form *Evaluation ... Prepare*, the selected set of data can be moved from the time period in the archive to the time period in the evaluation.

- * Select device
- * Select the time period in the archive
- * Use the  button to move it to the evaluation time period
- * Confirm with OK

Info

If several time periods (diskette) and their data are read in from one device, then a separate entry is made in the time window for each time period (diskette). However, a precondition is that the configuration of the paperless recorder is not altered. Every alteration of the configuration results in the creation of a new device.



The time periods are copied into the evaluation by clicking on OK, i.e. no time periods are erased from the archive through "Prepare evaluation".

2 Guide

2.3.2 Open Evaluation

Evaluation Open

Measurement data are opened and visualized from the evaluation via **Evaluation Open**.

Evaluation
Unpacked data for the archived time period

Period 2
– archived
and evaluated

11010011 11010011 11010011 11010011
01111010 01111010 01111010 01111010
00101110 00101110 00101110 00101110
11101101 11101101 11101101 11101101
10110001 10110001 10110001 10110001
10001110 10001110 10001110 10001110
11011100 11011100 11011100 11011100
11010011 11010011 11010011 11010011
01111010 01111010 01111010 01111010
00101110 00101110 00101110 00101110
11101101 11101101 11101101 11101101
11101101 11101101 11101101 11101101
11101101 11101101 11101101 11101101

Open Evaluation

PCA
PCA Archive Evaluation Screen Extras
Prepare...
Open...
Close

Open evaluation

Instrument

Name	Supplementary description
LOGOSCREEN	Data from 19.03.99

Group:
Group 1
Group 2

Maximum period available
from: 26/02/99 11:57:08
to: 02/03/99 11:52:24

Selected period
from: 26/02/99 11:57:08
to: 02/03/99 11:52:24

OK Cancel



In the *Evaluation ... Open* form, the desired device and the corresponding group for the device are selected and then visualized.

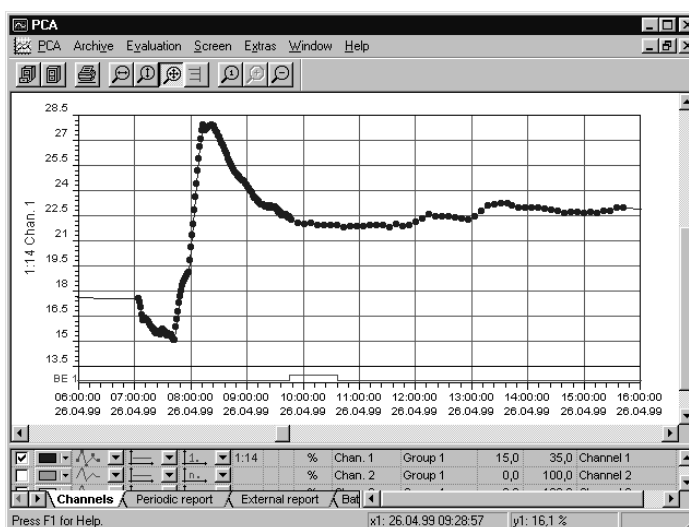
1. Select device
2. Select group
3. Restrict time period (if required)
4. Confirm with OK

Info

Up to 6 groups can be stored in the paperless recorder. These are then visualized individually here.

If the observer wishes to present together channels that are selected from different groups, then this can be done by creating a PCA group (menu item: *Evaluation ... PCA group*).

Visualization



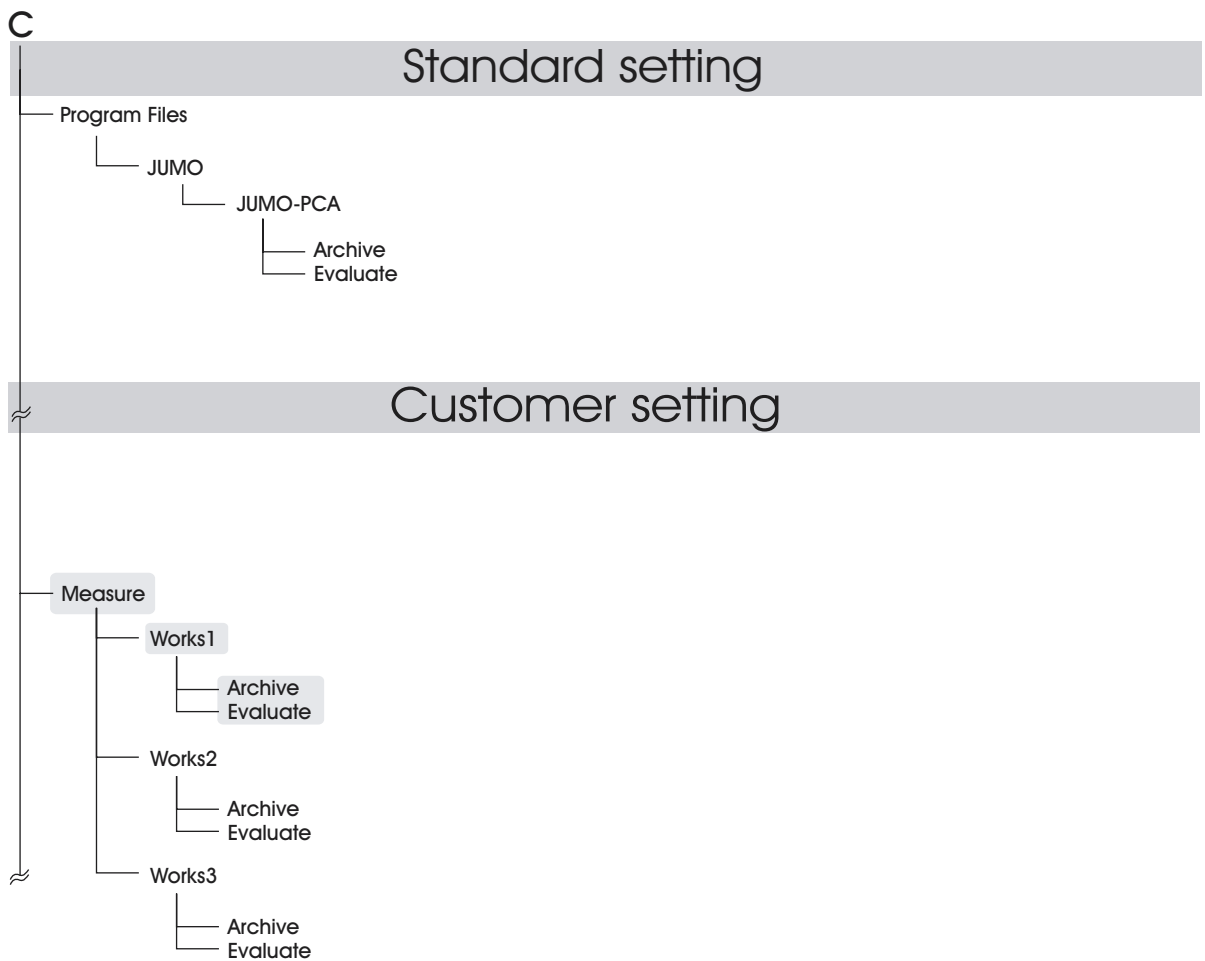
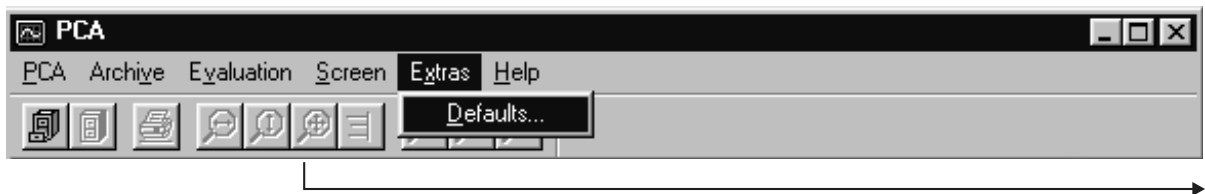
If an archive contains data over a very long period (e.g. 1 year), it is recommended that the least data possible is copied into the time period of the evaluation, so that a fast screen display is ensured. The more data there are in the time period of the evaluation, the longer is required for the screen display.



2 Guide

2.4 Store measurement data on any path

You have the possibility of storing your measurement data in various directories. That offers the advantage that your data can be filed e.g. sorted by year or by places of measurement (see example), or are accessible by other people on a network (Windows NT or Novell).

Change the standard setting



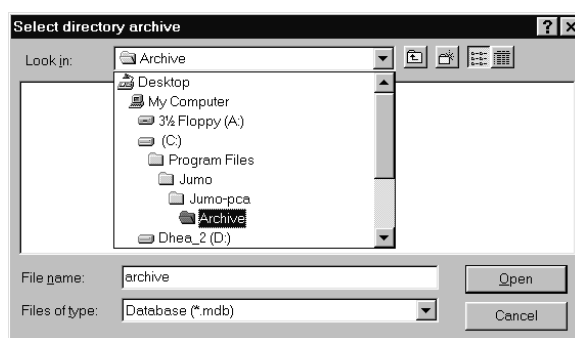
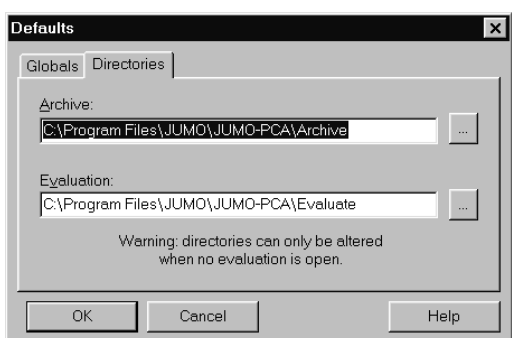
- * Call up the Defaults item in the Extras menu bar.
- * In the Defaults form, change to Directories.
- * You can search for the desired path by activating the  button. A new target directory can be set up by using the right mouse button or in the Windows Explorer.
- * Click on  to accept the setting.



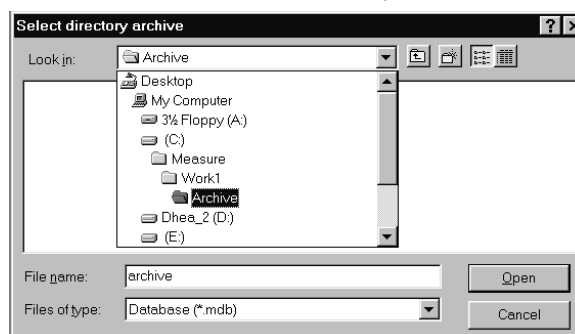
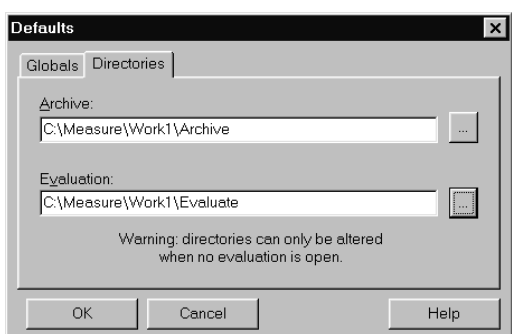
Only one path can be selected for archive/evaluation!



Standard setting



Customer setting



2 Guide

2.5 Archive and evaluation directories

Archive directory

The archive directory can be located on a network. Joint use of one archive from several PCs is permissible.

If several users share one archive directory and if this directory is accessed by a number of PCs simultaneously, all the PCs should have been set to the same time. If there are significant differences between time settings (more than 6 minutes), problems may arise with the management of user interlocks.

Evaluation directory

We do not recommend that the evaluation directory is located on a network. However, if this is the case, take care that the data are only accessed by one user at a time.

Important notes



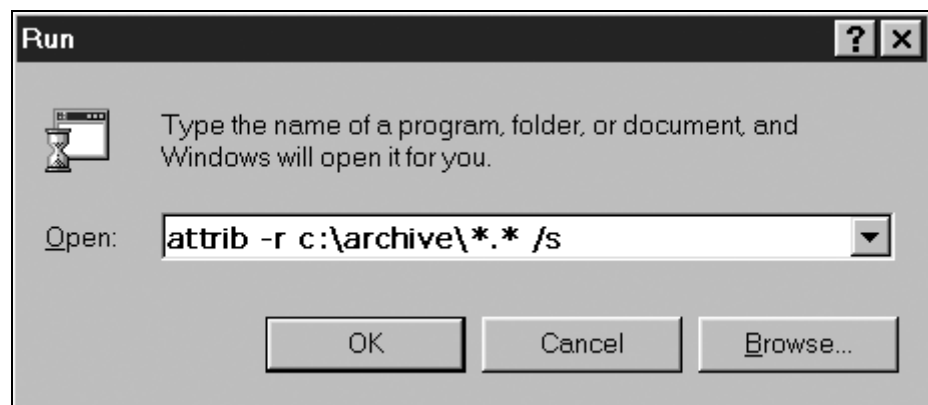
If these notes are disregarded, loss of data may result.

- Manipulations (e.g. deleting files and subdirectories) must under no circumstances be carried out in the archive or evaluation directory, but only via the PCA program.
- Data backups of archive directories must always contain the complete archive directory. Never make partial backups from the directory.
- When data are recorded on a CD, each file automatically receives the attribute "write protected" (read only).

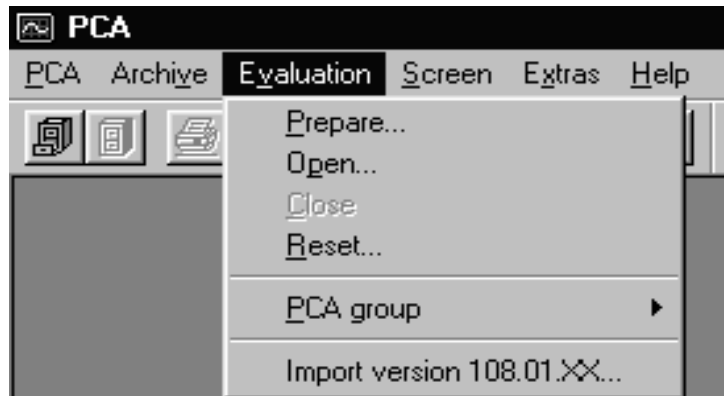
When the data are copied from the CD to the hard disc, the file attribute "write protected" must be manually reset. This can be done under Windows using the explorer, for example, or the command *Attrib*.

Start *Attrib* in Windows with Start → Run:

```
attrib -r "Directory of archive" *.* /s
```



3.1 Introduction



The *Evaluation* menu allows the graphical display of measurement values which are read out from the paperless recorder, either via a diskette or via the communications server. The menu consists of the following functions:

- *Prepare...*
with the aid of the *Prepare...* function, data which are to be graphically displayed are selected from an archive.
⇒ Section 3.2 "Prepare evaluation"
- *Open*
with the aid of the *Open* function, the selected data are graphically displayed.
⇒ Section 4 "Open evaluation"
- *Close*
close the open evaluation - finish graphic.
- *Reset*
clear data from the evaluation. The data archive remains unaffected by this action.
- *PCA group*
generate local groups (with up to 36 channels).
- *Import version 108.01.XX...*
import data of an older PCA program.

3 Evaluation

3.2 Prepare evaluation

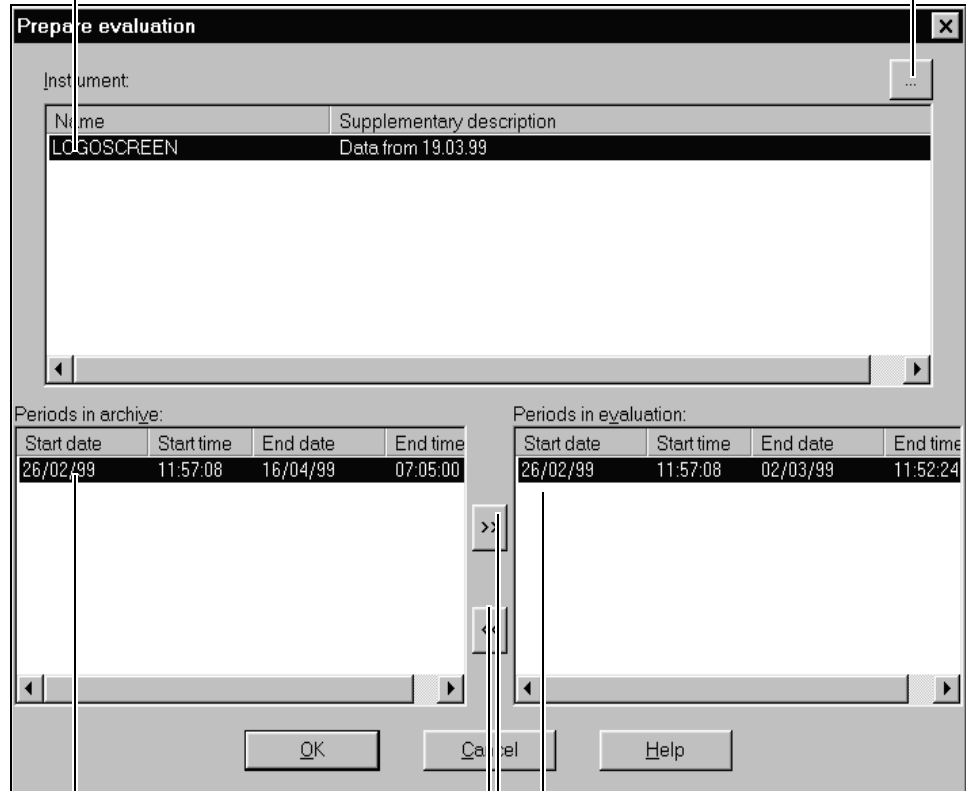
After the *Evaluation* → *Prepare* function is called up, the dialog window described below appears.

Instrument

All available instrument configurations are displayed here. A configuration is selected using the mouse or the keyboard.

Supplementary description

with the aid of this button, the "Supplementary description" of the selected configuration can be edited



Select periods

with the aid of these two buttons, time periods are copied between archive and evaluation

Periods in evaluation



all time periods indicated here can be graphically displayed


Periods in archive

all available time periods (measurement data) of an instrument configuration are indicated here. A time period is selected using the mouse or the keyboard.

Procedure


To prepare data of an instrument configuration for evaluation (graphical display), the following steps should be carried out:

- * using the mouse (or keyboard) select an instrument configuration from the list (all available time periods of the archive are shown automatically).
- * using the mouse (or keyboard) choose a time period in the archive.
- * copy the time period into the evaluation using the  button.
- * finish the preparation with .

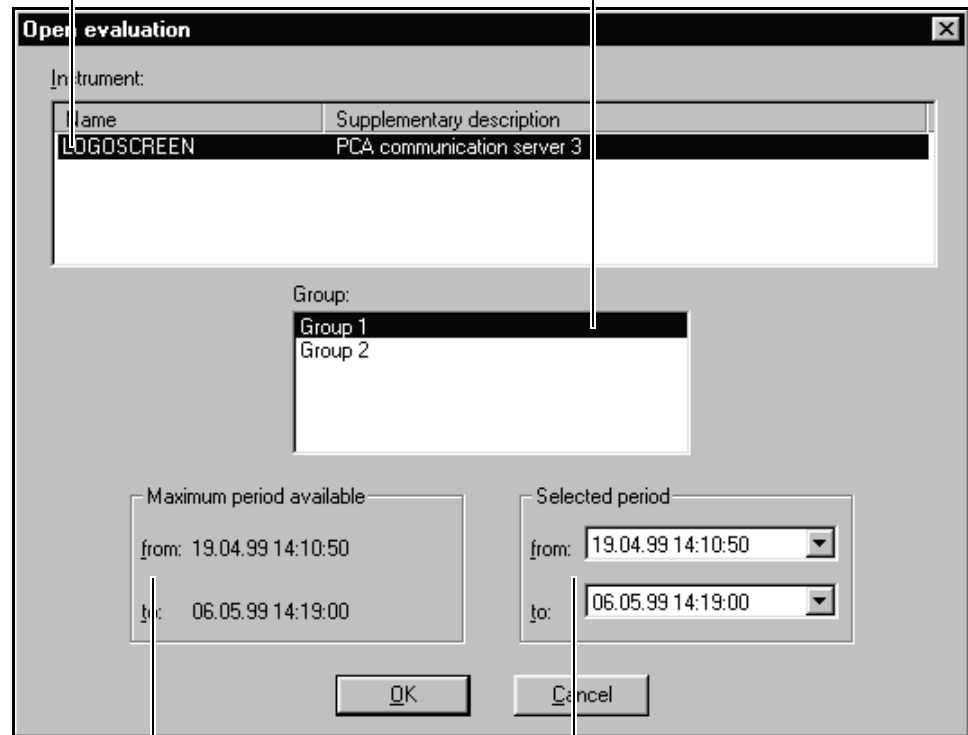
All necessary archive data are now prepared and can be graphically displayed afterwards, using the menu functions *Evaluation* → *Open* or using the  button.

3 Evaluation

4.1 Introduction

After calling up the *Evaluation* → *Open* function or pressing the  button, another dialog window appears before the graphical display, by which the selected time period can be further restricted. The fewer measurement data are used within a graphic, the clearer and faster it will be.

<p>Instrument All available instruments are displayed here. The selection is made via the mouse or the keyboard.</p>	<p>Group The groups contained in the selected instrument are displayed here.</p>
---	---



<p>Time period (maximum) The maximum time period of the selected evaluation is displayed here.</p>	<p>Time period (current) The time period which is to be displayed is set here.</p>
---	---

Group

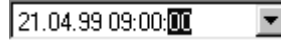
The Group window only contains selection options for data of paperless recorders with an instrument software version starting with 100 (e.g. 100.02.01). In the case of recorders which do not have a group distinction, the field remains empty.

4 Open evaluation

4.2 Selected time period

There are two ways to limit the time period:

- by direct input using the cursor keys and numeric keypad



- via a dialog, which is opened by clicking the left mouse button on the dropdown arrow

Month

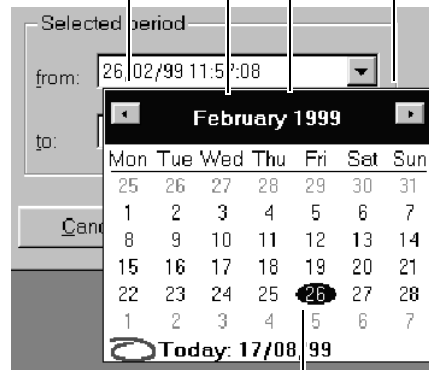
The desired month is selected here by a mouse-click

Year

The desired year is selected here by a mouse-click

Month
Select previous month

Month
Select next month

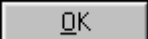


Day


Select the desired day using the mouse or the cursor keys



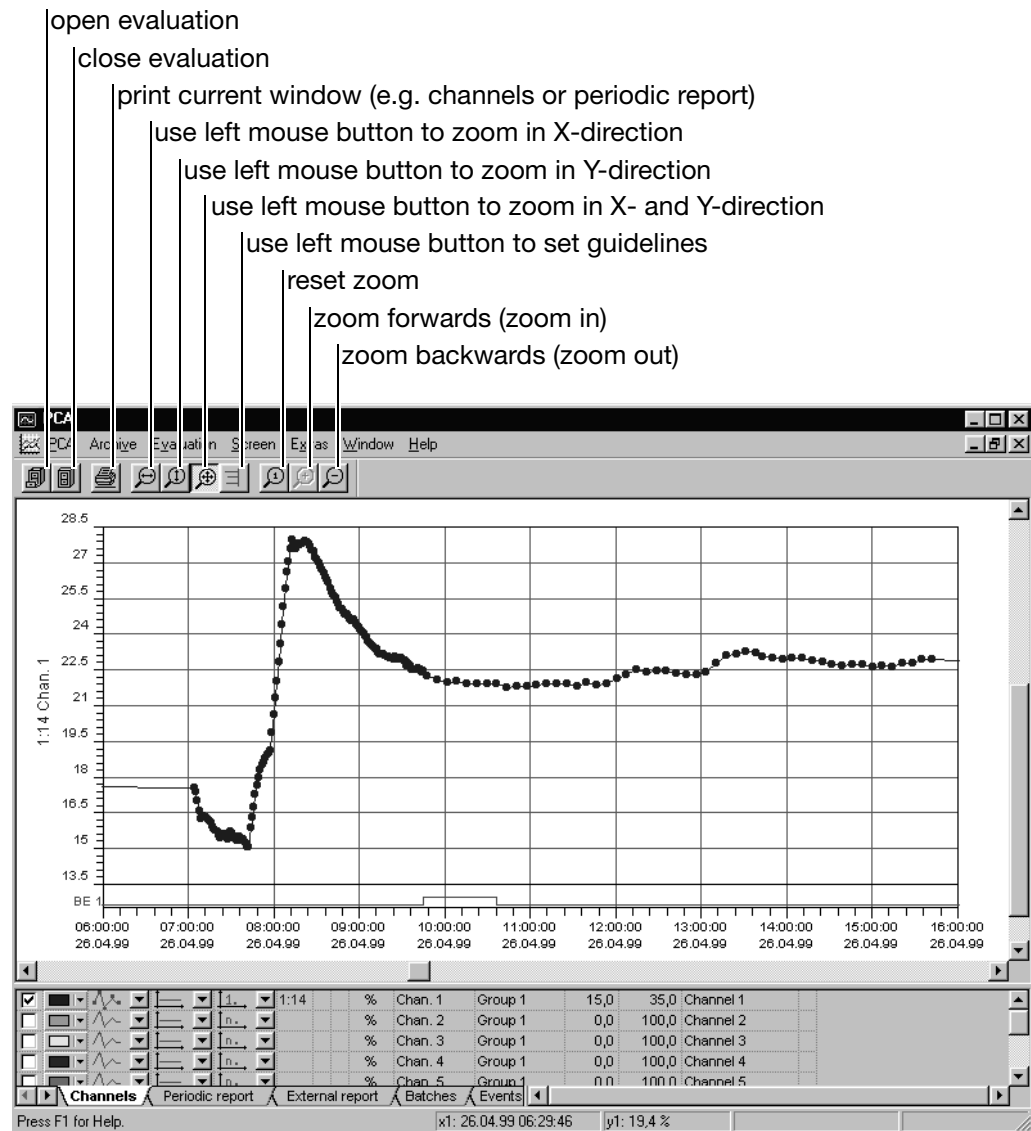
Only dates within the selected time period can be selected.

When the desired time period has been selected, the measurement data can be graphically displayed by calling up the  button.

4.3 Evaluation

This display is accessed via *Evaluation* → *Open* or the  button. Before the graphical display, a dialog window appears, which can be used for further limiting of the selected time period. The fewer measurement data used within a graphic, the clearer and faster it will be.

More detailed information on time period selection is provided in Section 4.1 “Introduction” and Section 4.2 “Selected time period”.



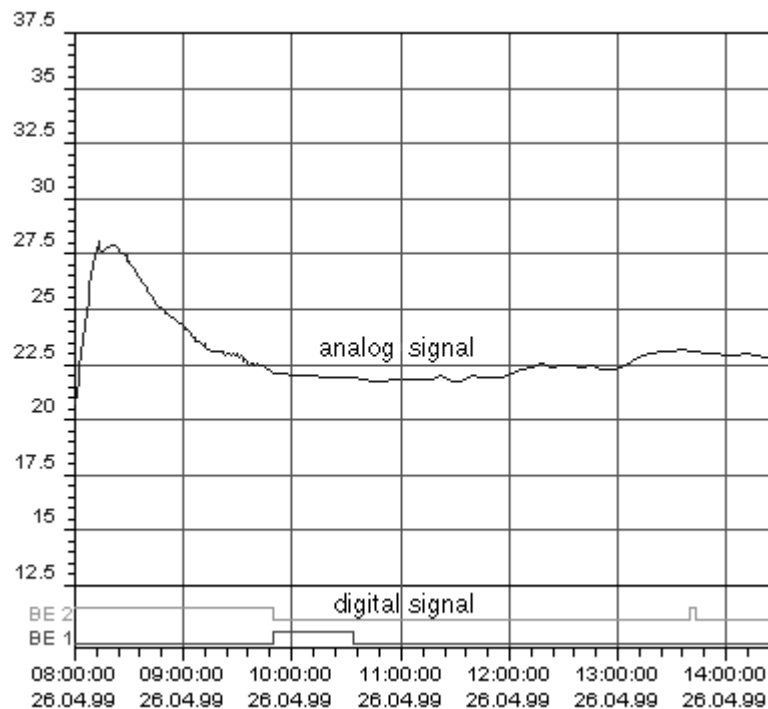
The display is divided as follows:

- a graphics area, in which the measurements are displayed, and
- a table area, which serves to control the graphic and other functions.

4 Open evaluation

4.4 Graphics area

The graphics area is shared by the analog and digital signals. The analog signals always lie above the digital signals.



The most important control element within the graphic is the mouse, with the aid of which various functions can be performed.

Left mouse button

The left mouse button is reserved as standard for the zoom function in the direction of the X-axis.

- * position the mouse pointer within the graphic
- * press and hold the left mouse button
- * move the mouse to mark the range which is to be magnified
- * release the mouse button

The graphic is automatically magnified to the next possible area. As a result of this, PCA expands the selected ZOOM range further, so that one of the time periods listed in the following table is used as the interval between the divisions in the graphics area.

This action is similar to setting the chart recorder feed rate in sec/DIV or min/DIV.

If the complete time period is displayed, setting of the division units is suppressed, so that the whole of the graphics area can be used to display the graph. In addition, setting of exact division units facilitates simple and fast scrolling by page or by division within a zoomed time period.

When using the Y-zoom, it should be noted that the channels which do not have a Y-axis or an auxiliary Y-axis will be zoomed in a fixed ratio to the main Y-axis. As a result of this action, the scaling range of the auxiliary Y-axis or channels with no Y-axis is expanded under certain circumstances. This ensures a fixed ratio to the main Y-axis.

4 Open evaluation

Thanks to this, diagram graphs appear after the Y-zoom in the same ratio to one another as before the ZOOM.

Possible time periods per division on the x-axis:

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 40, 45 seconds

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 40, 45 minutes

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 20 hours

1, 7, 14, 60, 180, 365, 730, 1825, 3650 days

Possible range per division on the y-axis:

1, 2, 5, 10 in the corresponding resolution of the power of 10

Right mouse button

If the right mouse button is pressed when the mouse pointer is within the graphic, a dialog window appears in which various functions can be selected.



Batch search

After calling up the function, a list of the available batch records appears (only if the batch records were activated when the paperless recorder was configured). Select a batch and press . The associated batch data will be automatically displayed over the entire width of the x-axis.

Additional functions:

- Reduce list of available batches
- Display batch text of selected batch

Batch info

The function shows the batch text of the displayed batch. It is only available if the data of a specific batch has been brought into the display using the *Batch search* function

Zoom forwards



Using *Zoom forwards*, the next zoom display can be produced again. This function is only available if a *Zoom backwards* has been performed. As an alternative to the mouse, *Zoom forwards* can also be performed from the PC keyboard (Page Up).

Zoom backwards



Using *Zoom backwards*, the previous zoom display can be produced again. The function is only available if a zoom has been carried out. As an alternative to the mouse, *Zoom backwards* can also be performed from the PC keyboard (Page Down).

4 Open evaluation

Reset zoom



Reset zoom displays the entire time period of the selected evaluation again. As an alternative to the mouse, *Reset zoom* can also be performed from the PC keyboard (Home).



To be able to zoom using the PC keyboard, the graphics area must be the active window. If the table area is the active window, the mouse must first be clicked in the graphic.

Print

After calling up the *Print* function, a sub-menu with additional functions appears:

- *Print preview*
- *Print*
- *Printer setup*

Print → Print preview

The printout of the graphic can be previewed on screen.

Print → Print

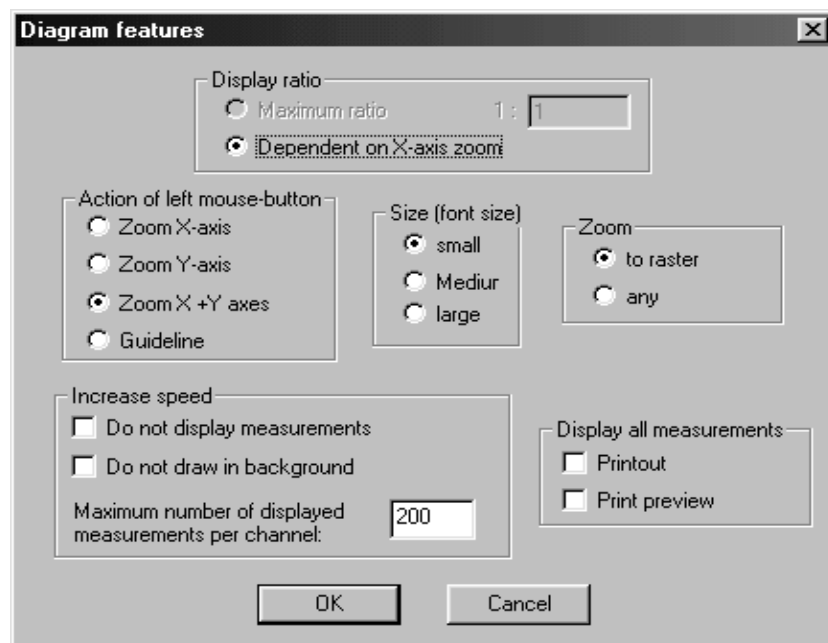
This function starts the printer output.

Print → Printer setup

Using this function, various printer properties (e.g. paper size and paper orientation) can be taken into account.

Characteristics

After calling up the *Characteristics* function, a dialog window appears. Using the adjustable parameters, the graphical display and the function of the left mouse button can be influenced.



4 Open evaluation

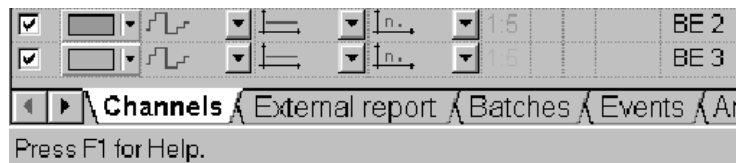
Characteristics → Display ratio

No change to the settings is possible here. The data display is created automatically, with the “depending on the X-axis zoom” setting.

Characteristics → Actions of left mouse button

This feature fixes the function of the left mouse button within the graphic. With the standard setting, the left mouse button effects a zoom in the X-axis direction.

If the “Guideline” setting is chosen, a vertical and a horizontal line appear when the left mouse button is pressed (incl. the current values of amplitude and time). The associated measurements are displayed in the table area (Table *Channels* must be active).

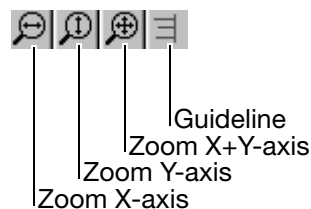


The positioning of the guideline occurs with reference to the “actual measured values”, i.e. it can deviate from the visual course of the graph if there are more measured values than are actually displayed.

The guideline can also be moved from the PC keyboard using the key combinations Shift-Cursor left or Shift-Cursor right.



The functions of the left mouse button can also be operated via the toolbar of the software.



Characteristics → Font size

This setting allows the size of the scaling of the X- and the Y-axis to be changed.

Characteristics → Zoom

This setting can be used to influence the marking of a range to be expanded. Either continuous marking (*any*) or marking at fixed intervals (*divisions*) can be selected.

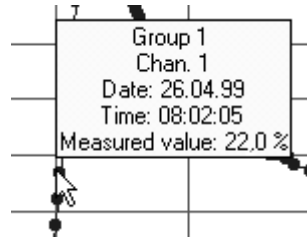
Characteristics → Increase speed

The “Do not display measurements” and “Do not draw in background” functions are not checked with a as standard, i.e., they are active. The number of measurements which can be displayed on the screen is limited to 200 per channel.

4 Open evaluation

Do not display measurements

If the mouse pointer is placed on a measurement within a graphic and not moved any more, a window appears with the current values of amplitude and time.



After a few seconds the window disappears again. By turning off the function, the evaluation program has fewer arithmetic tasks to perform and is therefore slightly faster.

Do not draw in background

With the standard set up, the picture for the user is not visibly prepared and then suddenly introduced (drawn in background). By selecting “*Do not draw in background*” the graphic is displayed on line on the screen. The line of the graph can be followed as it is “drawn”. This form of display is slightly faster than a display in the background.

The difference between the two display forms is only significant with very large quantities of data.

Maximum number of displayed measurements per channel

The figure selected here (10 – 10 000) sets the number of measurements to be displayed per channel. The higher the figure is, the more measurements are displayed in the graphic. The lower the figure is, the fewer measurements are displayed.



Caution: If too small a number of measurements is selected, the graphic may well be faster, but the line of the graph can only be partly made out with reference to the actual measurements.

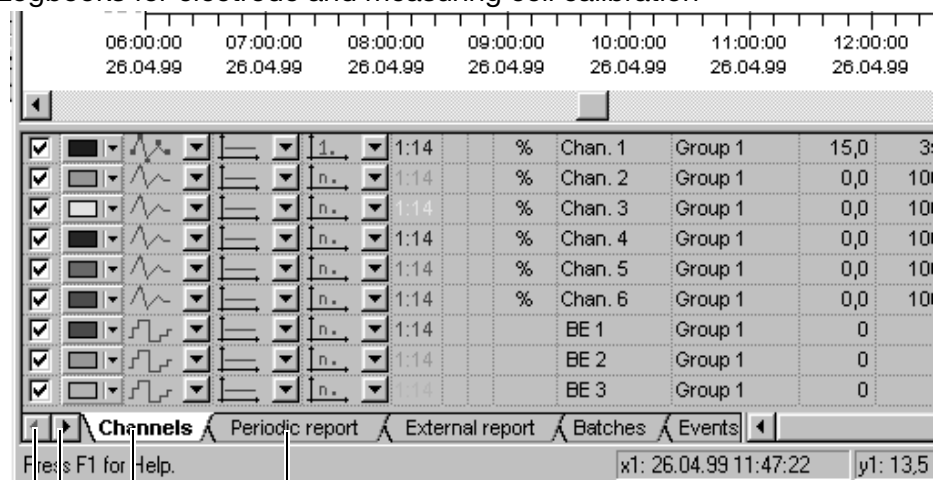
Characteristics → Display all measurements

Only every n^{th} measurement will be displayed as standard (according to the zoom factor). This also applies to the print preview and the printout. By checking the the “Printout” und “Print preview” tick boxes you can force all measurements to be printed or displayed.

4.5 Table area

The table area serves to control the graphic and other functions. Its operation is based on spreadsheet calculation programs. The area consists of several registers, which are introduced or removed depending on availability. The maximum available are:

- Channels
- Periodic report*
- Daily report*
- Monthly report*
- Yearly report*
- External report*
- Batches*
- Events
- Analog: Groups...
- Digital: Groups...
- Logbooks for electrode and measuring cell calibration²



Click here to select register as active register

Active register

Click here to introduce further registers (if available)

¹ These tables are only available for recorders with an instrument software version starting with 100 (e.g. 100.02.01).

² These tables are only available for recorders with an instrument software version starting with 163 (e.g. 163.01.01).

The right mouse button also has a special function in the table area. After pressing the right mouse button, a dialog window appears with functions which vary depending on the active register. The one single function which can be called up in all registers with the aid of the right mouse button is the Print function.

⇒ Section 4.5.8 “Print”

4 Open evaluation

4.5.1 Channels

Labels pointing to the Channels configuration window:

- Display channel
- Channel color
- Line type
- Line thickness
- Y-axis type
- Ratio of displayed measurement to actual measurement
- Display of channel unit
- Channel name
- Group name
- Start of scale
- End of scale
- Channel description

Channel	Group	Start of scale	End of scale	Channel description
Chan. 1	Group 1	15,0	35,0	Channel 1
Chan. 2	Group 1	0,0	100,0	Channel 2
Chan. 3	Group 1	0,0	100,0	Channel 3
Chan. 4	Group 1	0,0	100,0	Channel 4
Chan. 5	Group 1	0,0	100,0	Channel 5
Chan. 6	Group 1	0,0	100,0	Channel 6
E 1	Group 1	0	1	
E 2	Group 1	0	1	
E 3	Group 1	0	1	

Peak value display

Labels pointing to the Peak value display window:

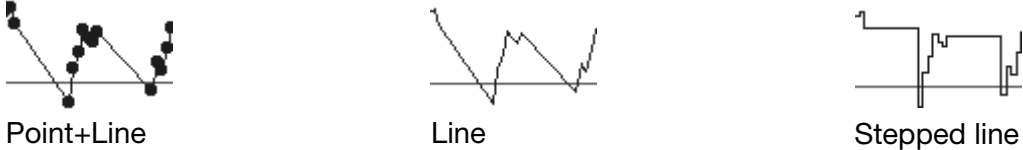
- Minimum values as a separate curve
- Maximum values as a separate curve

Channel	Group	Start of scale	End of scale
LOW: Chan 1		10,0	40,0
HIGH: Chan 1		10,0	40,0
LOW: Chan 2		30,0	100,0

Press F1 for Help. x1: 06.06.00 15:28:50 y1: 21,0 °C

On paperless recorders with an instrument software version that does **not** start with 100, two measurement curves are always available. The LOW curve includes the data for the acquisition types average value, momentary value, minimum value, maximum value, and the minimum value for peak value measurement. The HIGH curve only contains the maximum values for peak value measurement.

Functions of the left mouse button

Display channel	Each channel can be introduced or removed. Only channels which are marked by a <input checked="" type="checkbox"/> are displayed in the graphics area.
Channel color	The color in which the measurements and channel-related data are displayed is selected here. The selection affects both the graphic and the table area.
Line type	The type of display (specific to each channel) is selected here.  <p>The image shows three different line styles for data representation. The first is 'Point+Line', showing a series of black dots connected by a thin line. The second is 'Line', showing a continuous, slightly jagged black line. The third is 'Stepped line', showing a line that moves vertically and then horizontally, creating a staircase effect.</p>
Line thickness	The line thickness for the representation of the curve can be selected here.
Y-axis type	The type of axis for a channel can be selected here. The choices available are: <ul style="list-style-type: none">- Main Y-axis It should be noted here that there can only ever be one channel with a main Y-axis. The Y-axis is located on the left-hand edge of the screen.- Auxiliary Y-axis The auxiliary Y-axis is located to the right of the main Y-axis. The scaling of the data is adapted to the main Y-axis.- No Y-axis No Y-axis is displayed for the selected channel.

Displays (not directly changeable)

Ratio of displayed measurements ...	The current display factor is displayed here. The factor changes when measurements are zoomed.
Display of channel unit	The channel unit configured on the instrument appear here.
Channel name	The channel name configured on the instrument appears here.
Group name	The group name configured on the instrument appears here.
Start of scale	The start of scale configured on the instrument appears here.

4 Open evaluation

End of scale	The end of scale configured on the instrument appears here.
Channel description	The channel description configured on the instrument appears here.

Functions of the right mouse button

In the channels register, the function of the right mouse button is simply to print out the graph of the displayed measurement.

More detailed information on the Print function is given in Section 4.5.8 “Print”.

4.5.2 Report

The table is only available for paperless recorders with an instrument software version starting with 100 (e.g. 100.02.01).

	Time range				Chan. 1 - Group 1						
	from		To		Minimum			Maximum		Mean	
	Date	Time	Date	Time	Date	Time	%	Date	Time	%	
1	19.04.99	13:00:00	19.04.99	15:00:00	19.04.99	14:24:10	17,5	19.04.99	14:59:36	21,1	19,2
2	19.04.99	15:00:00	20.04.99	07:02:11	19.04.99	15:44:03	20,5	19.04.99	15:21:03	21,4	20,9
3	20.04.99	07:02:11	20.04.99	09:00:00	20.04.99	07:02:14	17,1	20.04.99	07:21:05	25,4	22,2

Channels | **Periodic report** | External report | Batches | Events

Press F1 for Help. x1: 26.04.99 07:37:27 y1: 21

The report register (statistics) differentiates between:

- Periodic report
- Daily report
- Monthly report
- Yearly report
- External report

The individual registered reports for all channels are shown, including period, minimum, maximum and average value.

Functions of the left mouse button

With the aid of the left mouse button, the column width and row height can be altered within the report register.

Alter column width:

- * Position the mouse between two columns

Date	Time
------	------
- * With the left mouse button pressed, alter the column width by dragging the mouse
- * Release the mouse button

Alter row height:

- * Position the mouse between two rows

19.04.99
19.04.99
- * With the left mouse button pressed, alter the row height by dragging the mouse
- * Release the mouse button


The left mouse button also serves to mark a range. With the aid of the right mouse button these marked ranges can be exported in Excel 97 or text format using the "Export" function.

Mark range:


- * Position the mouse in an entry
- * With the left mouse button pressed, select a range by dragging the mouse
- * Release the mouse button

4 Open evaluation

Mark column:

- * Position the mouse in the column heading ()
- * Press the left mouse button

Mark row:

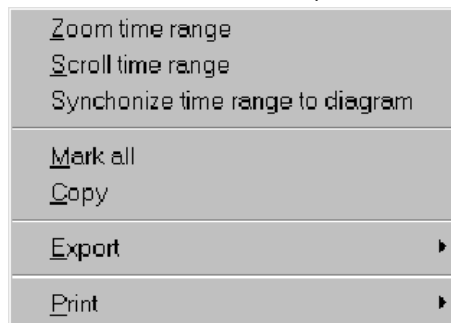
- * Position the mouse in the left-hand column of the row ()
- * Press the left mouse button

Additional keys:

With the aid of the shift key and the left mouse button, a range covering several rows/columns can be marked. Using the control key and the left mouse button, additional rows/columns can be marked.

Functions of the right mouse button

The following dialog window appears when the right mouse button is pressed (the mouse pointer must be in the table area).



Zoom time range	The measurements of the selected report are zoomed to the next displayable area and graphically displayed.
Scroll time range	If the start time of the report does not lie in the visible area, e.g. after a zoom, the graph can be shifted using “Scroll time range”, so that the start time (or the next possible) lines up with the left hand border of the window.
Synchronize time range to diagram	The entry in the table area which corresponds to the displayed measurement is searched for and started. The time information at the left-hand border of the window is important here.
Mark all	All table data are marked.
Copy	The marked data is copied onto the Windows clipboard and can therefore be imported, e.g. directly into Excel 97.
Export	Using the “Export” function, data can be stored in either Excel 97 or Text (*.txt) format, and subsequently processed further. Export of measurements takes place oriented by row. If a column is marked, the measurements of the other columns will be exported as well. ⇒ Section 4.5.9 “Data export into Excel 97”
Print	⇒ Section 4.5.8 “Print”

4.5.3 Batches

The table is only available for paperless recorders with an instrument software version starting with 100 (e.g. 100.02.01).

	Batch begin :	Batch end :	Batch duration: (hh:mm:ss)
1	19.04.99 07:34:40	26.04.99 09:45:13	43:24:46
2	26.04.99 09:45:31	26.04.99 09:45:37	0:00:06
3	26.04.99 13:40:19	26.04.99 13:40:36	0:00:17

◀ ▶ Periodic report External report **Batches** Ever ▶

Press F1 for Help. x1: 26.04.99

All recorded batch files are listed in this register.

Functions of the left mouse button

Within the batch register, the column width and row height of the individual listings can be altered using the left mouse button.

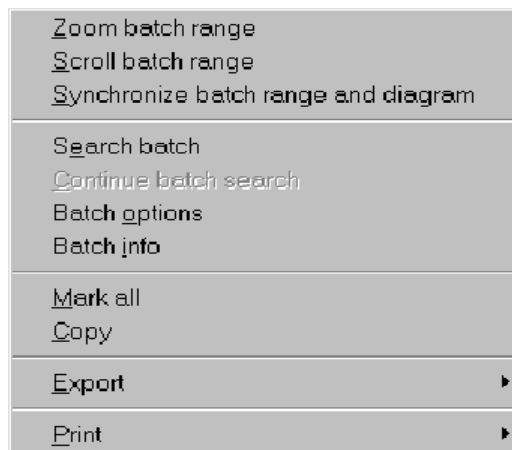
The left mouse button also serves to mark a range. With the aid of the right mouse button, these marked ranges can be exported in Excel 97 or text format (*.txt) using the "Export" function.

⇒ Section 4.5.9 "Data export into Excel 97"

More detailed information on altering column width and row height as well as marking a range is available in Section 4.5.2 "Report".

Functions of the right mouse button

The following dialog window appears when the right mouse button is pressed (the mouse pointer must be in the table area).



Zoom batch range

The measurements are zoomed to the next displayable area and graphically displayed.

4 Open evaluation

Scroll batch range	If the start time of the batch data does not lie in the visible range, e.g. after a zoom, the graph can be shifted using “Scroll batch range”, so that the start time (or the next possible) lines up with the left-hand border of the window.
Synchronize batch range and diagram	The entry in the table area which corresponds to the displayed measurement is searched for and started. The time information at the left-hand border of the window is important here.
Search batch	<p>The “Search batch” function allows specific batch files to be found. The search can be made easier by selecting various criteria. If no criteria are given, all batch files will be searched.</p> <p>Before a search criterion can be fed in, it must be activated. Active search criteria are recognizable by the check <input checked="" type="checkbox"/>.</p>
Continue batch search	The “Continue batch search” function, which is only available after a “Search batch” function has been carried out, repeats a defined search for specific batch files.
Batch options	<p>The list of available batches can be reduced by using “Batch options”.</p> <p>Before an option can be fed in, it must be activated (<input checked="" type="checkbox"/>.</p>
Batch info	Using “Batch info”, the batch information of the selected batch is displayed. Using the ENTER, ESC keys, or by clicking on the <input checked="" type="checkbox"/> button, the information window is closed again.
Mark all	All table data are marked.
Copy	The marked data is copied onto the Windows clipboard and can therefore be imported, e.g. directly in Excel 97.
Export	<p>With the aid of the “Export” function, data can be stored in either Excel 97 or Text (*.txt) format, and subsequently processed further.</p> <p>Export of measurements takes place oriented by row. If a column is marked, the measurements of the other columns will be exported as well.</p> <p>⇒ Section 4.5.9 “Data export into Excel 97”</p>
Print	More detailed information on the Print function is available in Section 4.5.8 “Print”.

4.5.4 Events

	Date	Time	Event	Status
1	26/02/99	11:57:08	New configuration	
2	26/02/99	12:31:02	Power off	
3	01/03/99	06:51:28	Power on	
4	01/03/99	07:49:54	Power off	
5	01/03/99	07:49:59	Power on	
6	01/03/99	15:45:12	Power off	
7	02/03/99	06:57:47	Power on	

Channels External report Batches **Events** Analog. Gri

Functions of the left mouse button

Within the events register, the column width and row height of the individual listings can be altered by using the left mouse button.

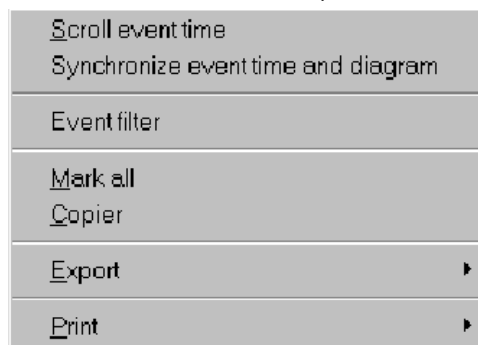
The left mouse button also serves to mark a range. With the aid of the right mouse button these marked ranges can be exported in Excel 97 or in text format (*.txt) using the "Export" function.

⇒ Section 4.5.9 "Data export into Excel 97"

More detailed information on altering column width and row height as well as marking a range is available in Section 4.5.2 "Report".

Functions of the right mouse button

The following dialog window appears when the right mouse button is pressed (the mouse pointer must be in the table area).



Scroll event time

If the event time does not lie in the visible range of the diagram, e.g. after a zoom, the graph can be shifted using "Scroll event time", so that the time (or the next possible) lines up with the left hand border of the window.

Synchronize event time and diagram

The entry in the table area which corresponds to the displayed measurement is searched for and started. The time information at the left-hand border of the diagram window is important here.

Event filter

The list of displayed events can be reduced by using "Event filter".

For example, if the "System Messages" field is deactivated () , then, amongst others, the "New configuration" as well as the "Power on" and "Power off" messages will not be displayed.

4 Open evaluation

Mark all	All table data are marked.
Copy	The marked data is copied onto the Windows clipboard and can therefore be imported, e.g. directly into Excel 97.
Export	<p>With the aid of the “Export” function, data can be stored in either Excel 97 or Text (*.txt) format, and subsequently processed further.</p> <p>Export of measurements takes place oriented by row. If a column is marked, the measurements of the other columns will be exported as well.</p> <p>⇒ Section 4.5.9 “Data export into Excel 97”</p>
Print	More detailed information on the Print function is available in Section 4.5.8 “Print”.

4.5.5 Analog: Groups...

The measurements of the analog inputs are listed in this register.

	Date	Time	Chan. 1 %	Chan. 2 %
1	19.04.99	14:10:50	18,3	<<<<<<<<
2	19.04.99	14:10:55	18,4	<<<<<<<<
3	19.04.99	14:11:00	18,3	0,0
4	19.04.99	14:11:05	18,3	0,0

External report Batches Events **Analog: Group 1** Digital:
 Press F1 for Help. x1: 26.04.99

<<<< = below measurement range >>>> = above measurement range

Functions of the left mouse button

Within the analog data register, the column width and row height of the individual listings can be altered by using the left mouse button.

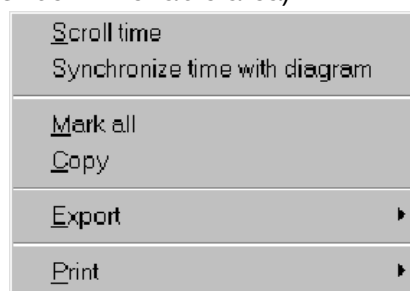
The left mouse button also serves to mark a range. With the aid of the right mouse button these marked ranges can be exported in Excel 97 or text format (*.txt) using the "Export" function.

⇒ Section 4.5.9 "Data export into Excel 97"

More detailed information on altering column width and row height as well as marking a range is available in Section 4.5.2 "Report".

Functions of the right mouse button

The following dialog window appears when the right mouse button is pressed (the mouse pointer must be in the table area).



Scroll time

If the measurement for a date/time does not lie in the visible area, e.g. after a zoom, the graph can be shifted using "Scroll time", so that the time (or the next possible) lines up with the left-hand border of the window.

Synchronize time with diagram

The entry in the table area which corresponds to the displayed measurement is searched for and started. The time information at the left hand border of the window is important here.

4 Open evaluation

Mark all	All table data are marked.
Copy	The marked data are copied onto the Windows clipboard and can therefore be imported, e.g. directly into Excel 97.
Export	<p>With the aid of the “Export” function, data can be stored in either Excel 97 or Text (*.txt) format, and subsequently processed further.</p> <p>Export of measurements takes place oriented by row. If a column is marked, the measurements of the other columns will be exported as well.</p> <p>⇒ Section 4.5.9 “Data export into Excel 97”</p>
Print	More detailed information on the Print function is available in Section 4.5.8 “Print”.

4.5.6 Digital: Groups...

The measurements of the digital inputs are listed in this register.

	Date	Time	BE 1	BE 2	BE 3
1	19.04.99	14:10:50	0	1	0
2	19.04.99	14:10:55	0	1	0
3	19.04.99	14:11:00	0	1	0
4	19.04.99	14:11:05	0	1	0

◀ ▶ Batches Events Analog: Group 1 **Digital: Group 1** ▶

Press F1 for Help. x1: 26.04.99 12:37:54

There are the same functions and possibilities as in the register for analog measurements.

⇒ Section 4.5.5 “Analog: Groups...”

4 Open evaluation

4.5.7 Logbooks for electrode and measuring cell calibration

The tables are only available for recorders with an instrument software version starting with 163 (e.g. 163.01.01).

	Date	Time	Status	Calibration	Temperature	Zero point	Slope: acidic	Slope: alkaline
1	22.07.2002	11:59:48	OK	No	20.0	7.00	100.0	100.0
2	22.07.2002	10:55:56	OK	Yes	22.1	6.94	100.4	100.4
3	25.07.2002	16:04:16	Pre-alarm	Yes	22.1	6.97	100.1	100.7
4	12.08.2002	09:32:14	OK	No	22.1	6.97	100.1	100.1

◀ ▶ Logbook 2: pH / Logbook 3: Free chlorine / Logbook 4: Chlorine dioxide / Lc

Press F1 for Help. x1: 12.08.200

A separate logbook is displayed for each electrode or measuring cell that is connected. The following was used in the display example:

- Logbook 2: pH
- Logbook 3: free chlorine
- Logbook 4: chlorine dioxide

The following is entered in the logbook with each alteration of the calibration values:

date, time, evaluation of the electrode or cell, calibration, calibration conditions and the new calibration values.

Functions of the left mouse button

The left mouse button is used to alter the column width and the row height of the individual entries within the logbook register.

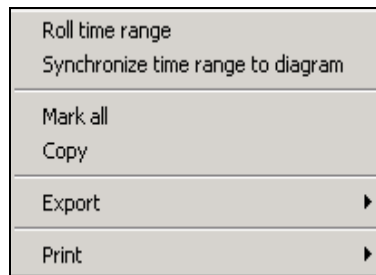
In addition, the left mouse button also serves to mark a range. The right mouse button is used to export these marked ranges in Excel 97 or text format (*.txt) using the "Export" function.

⇒ Section 4.5.9 "Data export into Excel 97"

Further information on altering the column width and the row height, as well as how to mark a range can be found in Section 4.5.2 "Report".

The functions of the right mouse button

The following dialog window appears when the right mouse button is pressed (the mouse pointer must be within the table area).



Roll time range

If the start time of the logbook entry does not lie within the visible range, e.g. after a zoom, the curves can be shifted using “Roll time range”, so that the start time (or the next possible) lines up with the left-hand border of the window.

Synchronize time range to diagram

The entry in the table area which corresponds to the displayed measurement is looked up and started. The time information at the left-hand border of the window is essential here.

Mark all

All table data are marked.

Copy

The marked data are copied to the Windows clipboard and can therefore be imported, e.g. directly in Excel 97.

Export

Using the “Export” function, data can be stored in either Excel 97 or text (*.txt) format and subsequently processed. Export of measurements takes place row-oriented. If a column is marked, the measurements of the other columns are exported as well.

⇒ Section 4.5.9 “Data export into Excel 97”

Print

Section 4.5.8 “Print”

4 Open evaluation

4.5.8 Print

When the “Print” function is called up, the following dialog window appears initially.



Print preview

The “Print preview” function permits a document to be previewed on screen before it is printed. Depending on the active register, further selection possibilities appear before the print preview, e.g. which data should be displayed.

Print

Starts the print process. Please note that when the display is zoomed, several pages may be printed out.

Header / Footer

Headers and footers can be defined here. Any character strings and instrument-specific variables are available.

Select font name and size

Left Aligned	Centered	Right Aligned
	\$R	

Distance to Frame:
Header: 1.02 cm Footer: 1.02 cm

Page numbering
First Page No. auto

OK Cancel Save settings to profile

Set cells for text and control elements

Set paper margins

Set first page number

Switch over to header area

Instrument-specific variables are introduced by a “\$”- or by a “#”-sign.

4 Open evaluation

The following variables are available:

\$P	Current page number
\$N	Number of pages
\$D	Current print date (time and date)
\$D{%d.%m.%y}	Current print date (date only)
\$F	Evaluation name
\$A	Program name
\$R	Register name
#DEVICE	Device name
#DESCRIPTION	Additional description
#GROUP	Group name
#TIME	Current time
#DATE	Current date
#START_TIME	Start time of the evaluation
#START_DATE	Start date of the evaluation
#STOP_TIME	End time of the evaluation
#STOP_DATE	End date of the evaluation

Within the “Batch” register appear:

#CHARGE_LEFT0 ... #CHARGE_LEFT9	Batch data name
#CHARGE_RIGHT0 ... #CHARGE_RIGHT9	Batch data

Page setup

The “Page setup” function offers additional control of the visual appearance of the print out.

Printer setup


The “Printer setup” function calls up a dialog window from Windows, in which, amongst others, the paper format and the paper orientation (portrait, landscape) can be selected.

4 Open evaluation

4.5.9 Data export into Excel 97

Data export into Excel¹ is explained in more detail in this section by means of an example.

Export as a data file

- * Open the evaluation via the *Evaluation* → *Open* menu or by pressing the  button.
- * Activate the *Analog: Group 1* register by clicking on it with the left mouse button.

	Date	Time	Chan. 1 %	Chan. 2 %
1	19.04.99	14:10:50	18,3	<<<<<<<<<
2	19.04.99	14:10:55	18,4	<<<<<<<<<
3	19.04.99	14:11:00	18,3	0,0
4	19.04.99	14:11:05	18,3	0,0

External report | Batches | Events | **Analog: Group 1** | Digital: |

Press F1 for Help. x1: 26.04.99

Row numbering

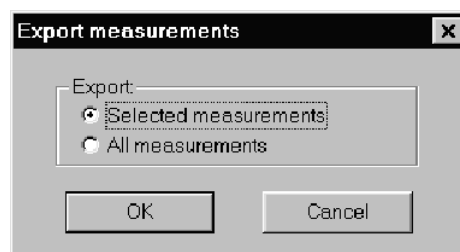
- * Mark a range by holding down the left mouse button and moving the mouse downwards over the row numbering. Release the mouse button when the desired range is marked.

	Date	Time	Chan. 1 %	Chan. 2 %
146	19.04.99	14:22:55	17,6	0,0
147	19.04.99	14:23:00	17,5	0,0
148	19.04.99	14:23:05	17,5	<<<<<<<<<
149	19.04.99	14:23:10	17,6	0,0

Batches | Events | **Analog: Group 1** | Digital: Group 1 |

Press F1 for Help. x1: 26.04.99

- * Press the right mouse button and call up *Export* and then *Excel 97 (*.xls)*.
- * In the following dialog choose *Selected measurements* and confirm with OK.



1. Excel is a registered trademark of the Microsoft Corporation

4 Open evaluation

- * In the dialog window which follows, the path can be selected and the file name entered, under which the data will be stored in Excel format.



The data file cannot be stored if the data file already exists and is open at the same time in Excel.

After successful storage the data file can be opened using Excel.

Further processing with Excel

- * Start Excel and open the previously stored data file. Normally, an empty worksheet (table 1) will be opened. Change to the required worksheet (e.g. Group1_1).



At the beginning of the data file is a 8-digit header followed by the measurement data. The total length (header and data) can not exceed 65536 rows. If there are more measurement data than this in the PCA evaluation program, they are automatically divided into a number of tables.

If the data in Excel is to be graphically displayed or calculated, it must first be converted.

- * Mark the data to be converted (e.g. a column).
- * The Text Assistant must be started via the Excel *Data* → *Text in columns...* menu.
- * By selecting *Fixed width* and operating the *END* button, transfer the data into a number format. The data are now available for graphical display or calculation.

Export by text file (*.txt)

Export to Excel using a text file is particularly useful with older versions of Excel.


- * Within the PCA program, export the data into a text file.
- * Start Excel (e.g. Version 5.0).
- * Open the generated text file via the *File* → *Open* menu (File type = Text file).
- * In the Excel Text Assistant, steps 1 to 3 are confirmed with “Further”.
- * During steps 2 to 3 the field-separator “Tab” must be deactivated and the “Comma” activated.
- * Quit the Text Assistant with “End”.

Now the data of the text file is also available for a graphical display or for calculation.

4 Open evaluation

Export via the clipboard

There is a further option of importing data into Excel by using the left mouse button within the various tables of the PCA evaluation program.

- * Open the evaluation via the *Evaluation* → *Open* menu or by operating the  button.
- * Activate the *Analog: Group 1* register by clicking on it with the left mouse button.

	Date	Time	Chan. 1 %	Chan. 2 %
1	19.04.99	14:10:50	18,3	<<<<<<<<
2	19.04.99	14:10:55	18,4	<<<<<<<<
3	19.04.99	14:11:00	18,3	0,0
4	19.04.99	14:11:05	18,3	0,0

External report Batches Events **Analog: Group 1** Digital:
 Press F1 for Help. x1: 26.04.99

- * Mark a column by moving the mouse over the column title (e.g. Chan. 1) and pressing the left mouse button.
- * Call up the “Copy” function using the right mouse button. The data are now stored on the Windows clipboard.
- * Start Excel, open a worksheet, and insert the data in the worksheet with the aid of the Excel *Edit* → *Insert* menu.



When data are exported via the clipboard, the data are directly available in number format and need not be converted using the Excel Text Assistant.

5 Communications server

Section 2.2 “Store measurement data” has already described how measurement data can be read into a PC and archived. A further possibility is to use the communications server program, which is supplied as an option. It is available for reading measurement data out of the paperless recorder via the serial interface (RS232, RS422 or RS485).

Compared to data storage on diskette, the communications server has the advantage that the measurement data of one or more recorders can be automatically archived at specific times. So it is conceivable that data backup could take place during the night or at other break times. In addition, larger time periods can be generated using the communications server than with the diskette.

As a prerequisite for operating the program, the paperless recorder used has to be fitted with a serial interface.

Further information about the communications server program can be found in the Operating Instructions B 95.5098.

5 Communications server

6.1 PC keyboard

Table 1: Keys within the graphic


Key (key combination)	Function
Home	Take zoom back
End	Restore previous zoom setting
Page Up	Zoom forward
Page Down	Zoom backwards
Cursor left	Scroll time period to left
Cursor right	Scroll time period to right
Ctrl-Cursor left	Scroll time period to left (by one complete window width)
Ctrl-Cursor right	Scroll time period to right (by one complete window width)
Shift-Cursor left	Shift guideline to the left
Shift-Cursor right	Shift guideline to the right
Shift-Ctrl-Cursor left	Shift guideline to the left (larger step width)
Shift-Ctrl-Cursor right	Shift guideline to the right (larger step width)

Table 2: Keys within the register

Key (key combination)	Function
Cursor left	Move left one column
Cursor right	Move right one column
Page Up	Turn over to next page of list
Page Down	Turn back to previous page of list
Ctrl-Home 1	Jump to the first column of the first list entry
Ctrl-End	Jump to the last column of the last list entry

6 Appendix

6.2 Tips and Tricks

- A time adjustment (e.g. summer time/winter time) should only be made when PCA and the communications server are not running. If the clock is put back by 1hr, all instruments with a short cycle time (e.g. hourly or shorter) should be read in once manually (using the  button in the unit list), as otherwise the next read event moves back by 1hr. After the read-in, the communications server accepts the current time again.
- The automatic adjustment facility from summer time to winter time should not be used, as under certain circumstances the data for the additional “changeover hour” cannot be evaluated by PCA.
- Before accessing the hard disk, PCA and the communications server, check that at least 10MB of free disk space is available. However, this check cannot safeguard all possible system configurations and PCA applications.

For this reason, when working with PCA or Windows, it is recommended that approx. 100 MB of free hard disk memory is available in the program directory.

A

alter
 column width 33
 row height 33
archive 6

B

batches 25, 35

C

channel 30
channel color 31
channel, displaying 31
copy 34

D

data export 46
display ratio 27

E

evaluation 6, 8, 10, 17–18
evaluation ... open 12, 21, 23
export 46

F

filter 37
font size 27

G

graphics area 23–24
graphics characteristics 26

K

keyboard 51
keys 4

L

line thickness 31
line type 31

M

mark
 column 34
 range 33
measurement data, archiving 6, 49
measurement data, saving 6, 49
measurement data, visualizing 8
minimum configuration 4

N

note signs 3

O

open evaluation 12

P

peak value display 30
prepare 8
presentation 4
print 26, 44

S

screen texts 4
scroll 34, 36–37, 39
search 36
speed 27
synchronize 34, 36–37, 39, 43

T

table
 analog data 39
 batches 35
 channels 30
 digital data 41
 events 37
 report 33
table area 23, 29
time period 22
tips and tricks 52

Y

Y-axis type 31

Z

zoom 23, 25



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