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LIB 510
Trend Reports
Operator's Manual

Notice 1

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Notice 2

This document complies with the program revision v. 1.6.

Notice 3

Additional information such as Release Notes and Last Minute Remarks can be found on the program distribution media.

Trademarks

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1 Getting Started with Trend Reports

This chapter may be used as guidance for how to get started with Trend Reports, giving some useful references to other sections in the Operator's Manual.

1.1 Starting Trend Reports

Trend reports is started by selecting Trends in the main menu named Reports after which also the submenu of Trends becomes visible (see Figure 1).

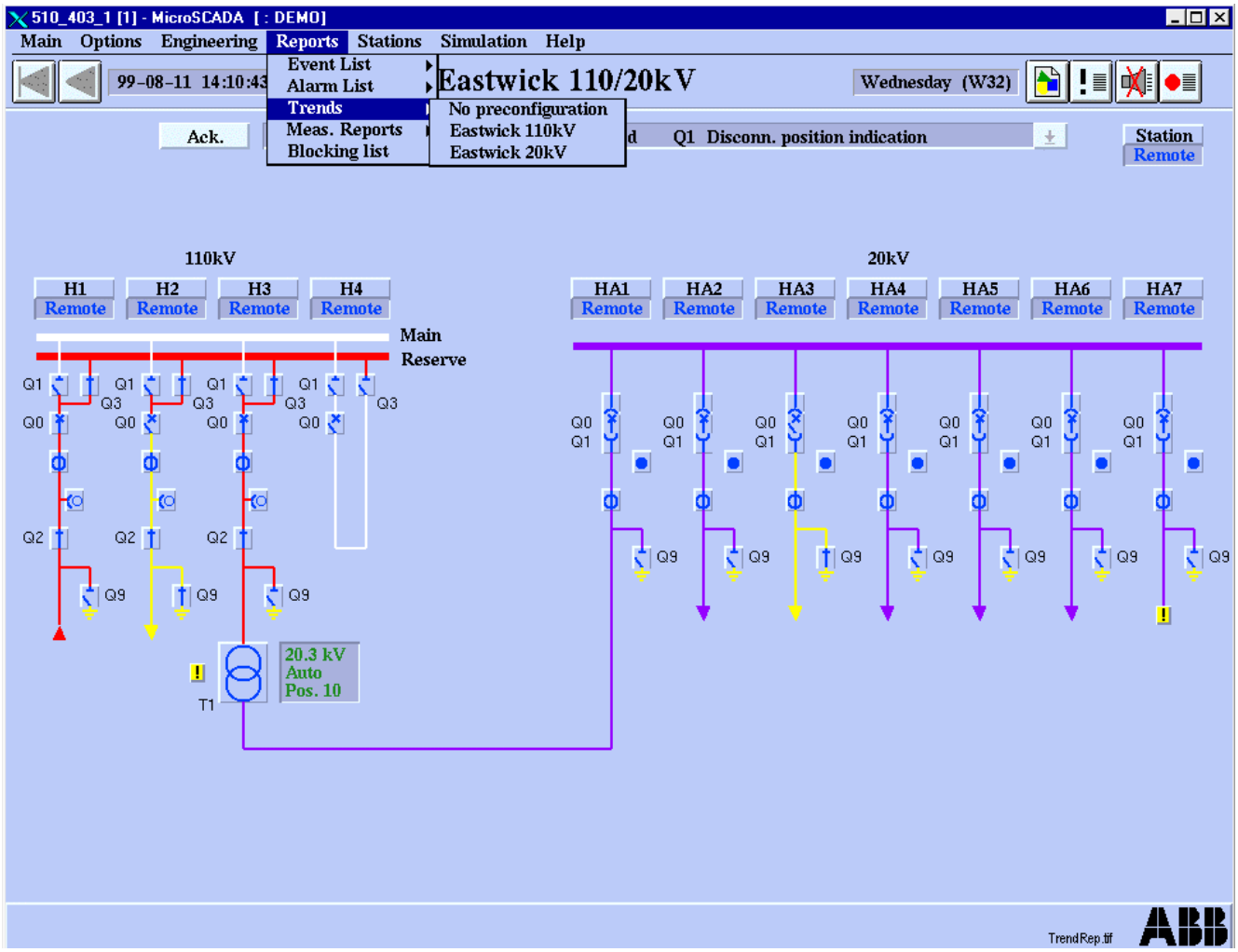

Figure 1. Starting trend reports

1.2 Selecting Objects for the Trend Reports

The procedure how to select objects for the trend reports is described in detail in chapter 5 .

1.3 Preparing Preconfigured Trend Reports

The procedure how to prepare preconfigured trend reports is described in detail in chapter 6 .

1.4 Selecting Preconfigured Trend Reports

The procedure how to select preconfigured trend reports is described in detail in chapter 5.3.1.

2 Trend Reports

2.1 Overview

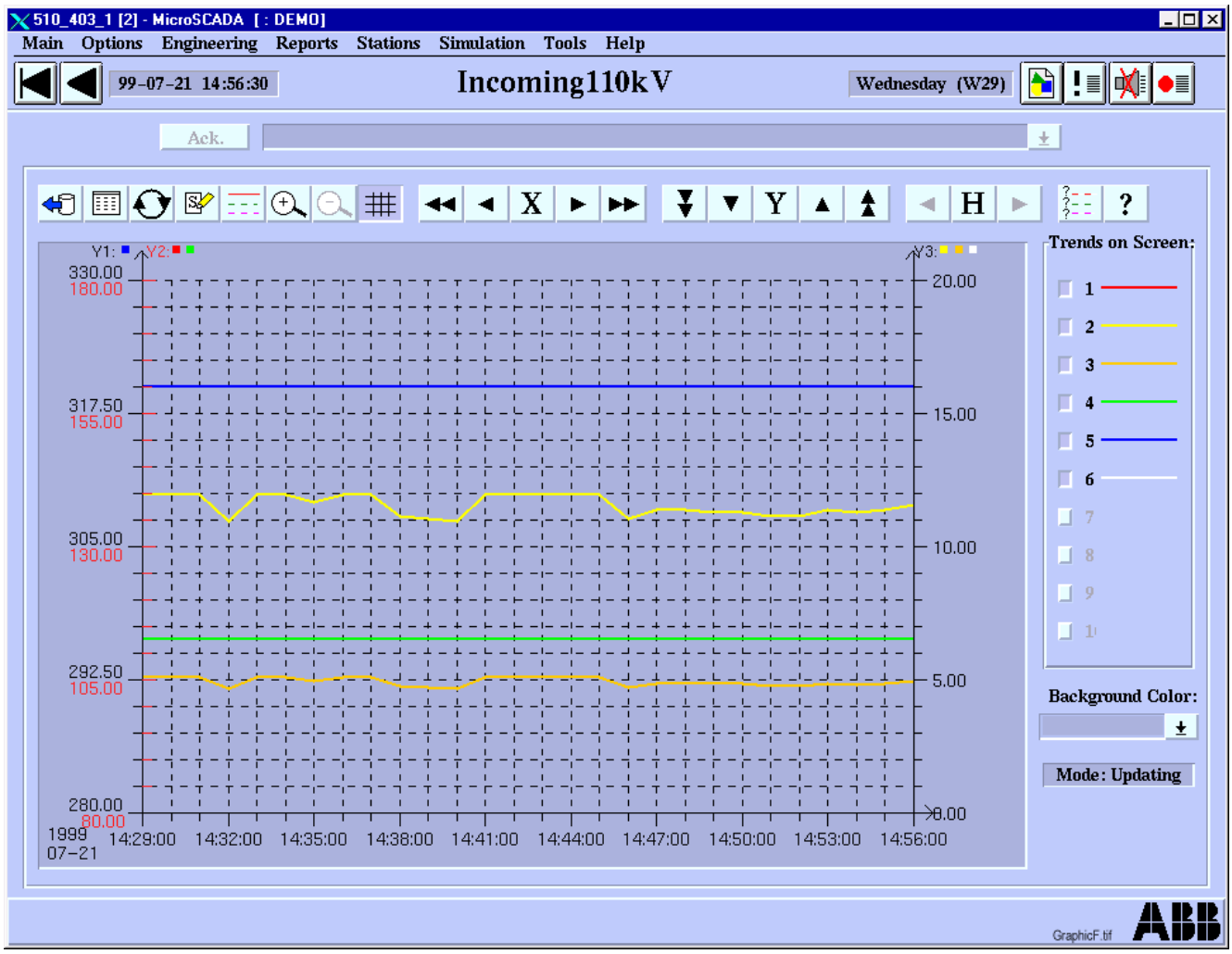

Figure 2. The trend graphical form

2.2 Description

This Tool is used within LIB 500 Applications for trend analyses and for showing measured values in the form of a curve or a table.

2.3 Features/Options

- Graphical trend presentation (up to 10 trends)
- Tabular trend presentation (up to 10 trends)
- Hairline function

- Color configuration
- Line styles
- Scaleable axis
- Scrolling in X and Y direction
- On/off switching of each curve
- Process data logging activation from station picture
- Update interval options from 30 seconds to 10 minutes
- Calculation formulas; direct, mean, sum and difference
- Trend data saving to file (Excel compatible)
- Zoom function
- Save/Open preconfigurations
- Possibility to enter values manually to a trend
- Printout option
- Authorisation support
- Help in all dialogs

3 Trend Picture Forms

There are two Trend picture forms: graphical and tabular form. Trend picture form is selected from Tools menu or by the corresponding button in the Trend picture toolbar.

3.1 Graphical Form

A trend is a time related follow-up of process data. All types of process objects can be illustrated as trends:

- input and output data
- binary data
- analog data
- digital data

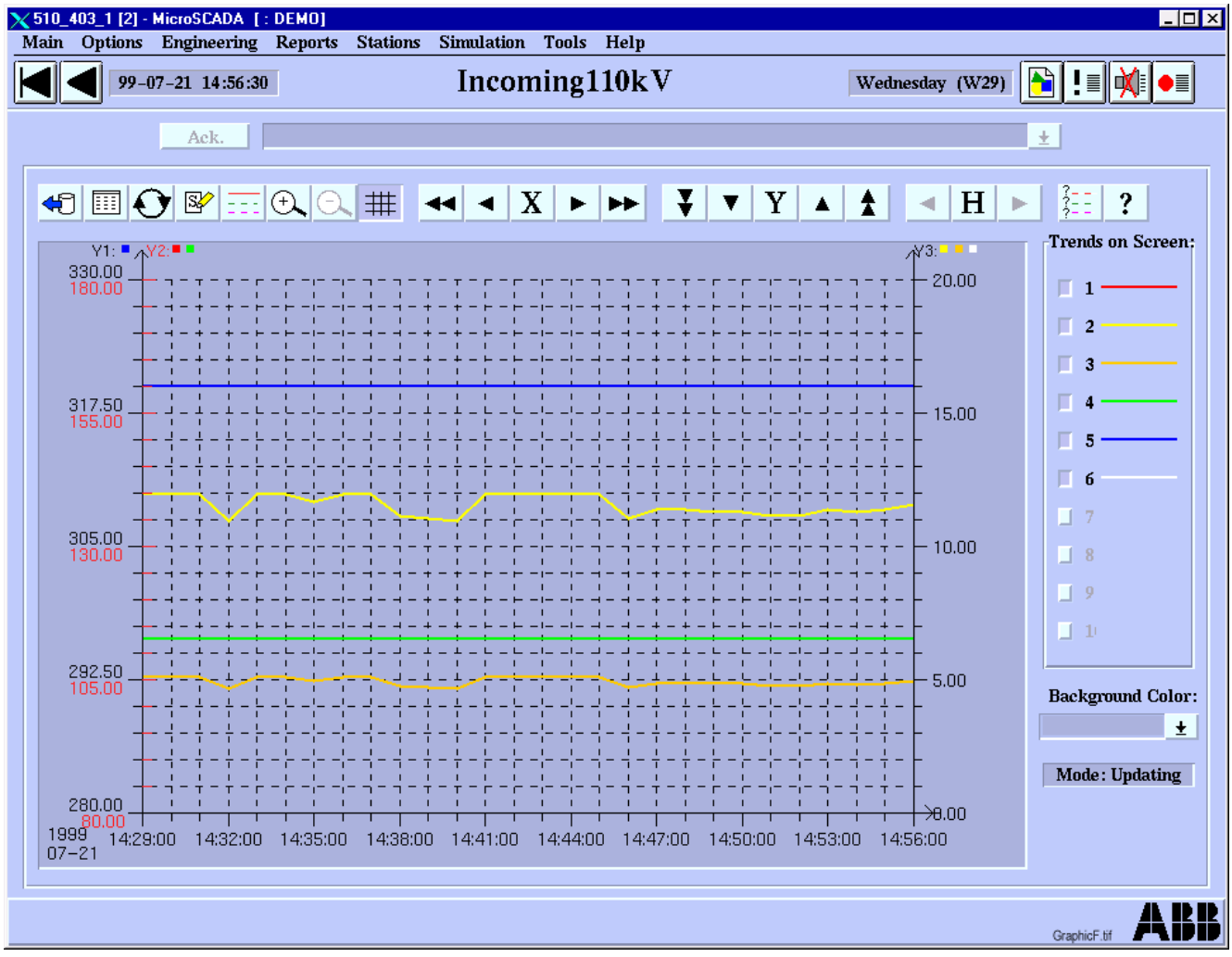

Figure 3. The trend graphical form

The trends can be presented in a ***graphical form*** as full-graphic curves or in a tabular form. These two forms share the same trends i.e. process data and presentation mode, but otherwise these forms can be used independently. This chapter describes the functionality of the graphical form picture.

3.1.1 General Functionality

In the graphical form of the LIB 510 trend picture up to ten trends i.e. process data logs can be presented as full-graphic curves on a two-dimensional coordinate system that consists of a horizontal time (X) axis and a vertical value (Y) axis. The curves can be scrolled in both X- and Y-directions and the parameters of both the axis as well as the line parameters of the trend curves can be changed. All curves can be temporarily hidden from the screen. The graphical form picture includes a multitude of tools which will be described later on in this chapter.

If a data registration has an invalid or an erroneous status, the curves are drawn in magenta. In case of a not sampled or an erroneous status the trend curve is given a Y-coordinate corresponding to zero value. This is done to be able to draw continuous curves when some values cannot be read. Manually entered values are indicated by cyan color.

3.2 Trend Basket, Introduction

The trend basket is the link between the station pictures (the process data) and the trend picture. In the station picture the user can select process data to be presented in the trend picture by opening the basket dialog from the menu and by selecting the symbol (picture function) of the process data. This is described in detail in the chapter dealing with the trend basket. Please note that logging of the selected process data will start when the trend basket is closed with the OK button in the station picture.

When the trend picture is shown, the user can select the data to be displayed in it by using the trend basket. When the trend basket is closed, the selected trends are brought to the trend picture and the parameters of the coordinate system are set according to the parameters of the trends.

3.3 Trend Picture Coordinates

The horizontal (X) axis of the trend picture coordinates represents the time of the trend, and the vertical (Y) axis represents the value of the trend. The X-axis is divided into 27 intervals which by default represent the longest time interval between consecutive registrations of the trends. The time of every third interval point is labelled below the X-axis. The date corresponding to the origin of the coordinates is also shown on the lower left corner of the graphical drawing area. The length of the interval and the end time of the X-axis, the time value furthest to the right, can be set with the Edit X-axis parameters tool.

The Y-axis is divided into 20 intervals. The quarter point values of the Y-axis are marked on the left side of the Y-axis. It must be noted that the trend picture does not

recognise any units or scales, only the values registered in the report database. To avoid confusion, trends with different units should not be shown at the same time.

When trends are brought to the trend picture, the axes are given the following parameters by default:

- the X-axis interval is set as the longest registration interval of the selected trends (the longest sampling interval).
- the X-axis end time is set as the latest registration of the selected trends.
- the Y-axis maximum is set as the biggest registered value of the selected trends added with approximately 5% of the Y-axis length.
- the Y-axis minimum is set as the smallest registered value of the selected trends subtracted by approximately 5% of the Y-axis length.

3.4 Trend Picture Presentation Modes

The trend picture has two presentation modes, updating and frozen. When in the updating mode, the trend picture reads the new values of the selected trends and presents them at regular intervals. The interval is the shortest registration interval of the trends and it cannot be changed. In this way the loss of information is minimised. In the graphical form the new values are added to the right, and the curves are scrolled left accordingly.

When in the frozen mode, the trend picture is not updated in order to make it easier for the user to concentrate on specific trend information. The mode is automatically set to frozen:

- when the picture is zoomed or scrolled
- when the basket dialog is opened
- when the hairline is shown.

Otherwise the mode can be selected from the tool bar or by opening the presentation mode dialog from the Tools menu.

3.5 Trend Picture Preconfigurations

The current set-up of the trend picture can be saved to a file. This provides an easy and fast way to switch from one set-up to another. The set-up can be saved using the Trend Picture preconfigurations tool. These preconfigurations can be opened from the Preonfigurations option of the basket dialog. The trend picture can be opened to show a preconfiguration by the LIB 500 standard menu.

3.6 Trend Picture Tools

The graphical form picture has a set of tools, which can be selected either from the tool bar or from the Tools menu. In the following the functionality of these tools is shortly described. More detailed information can be found in chapters further on.

Figure 4. The Trend graphical form Toolbar

Number	Description
1	Trend basket
2	Tabular form
3	Presentation mode (toggles between updating/frozen mode)
4	Preconfigurations
5	Edit line parameters
6	Zoom in
7	Zoom out
8	Show/erase grid
9	Scroll one screen (=x-axis length) left
10	Scroll one step (=x-axis interval) left
11	Edit x-axis parameters
12	Scroll one step right
13	Scroll one screen right
14	Scroll one screen (=y-axis length) down
15	Scroll one step (=y-axis interval) down
16	Edit y-axis parameters
17	Scroll one step up
18	Scroll one screen up
19	Scroll hairline one step (=pixel) left
20	Show/erase hairline
21	Scroll hairline one step right
22	Trend identification
23	Help (graphical form main help)

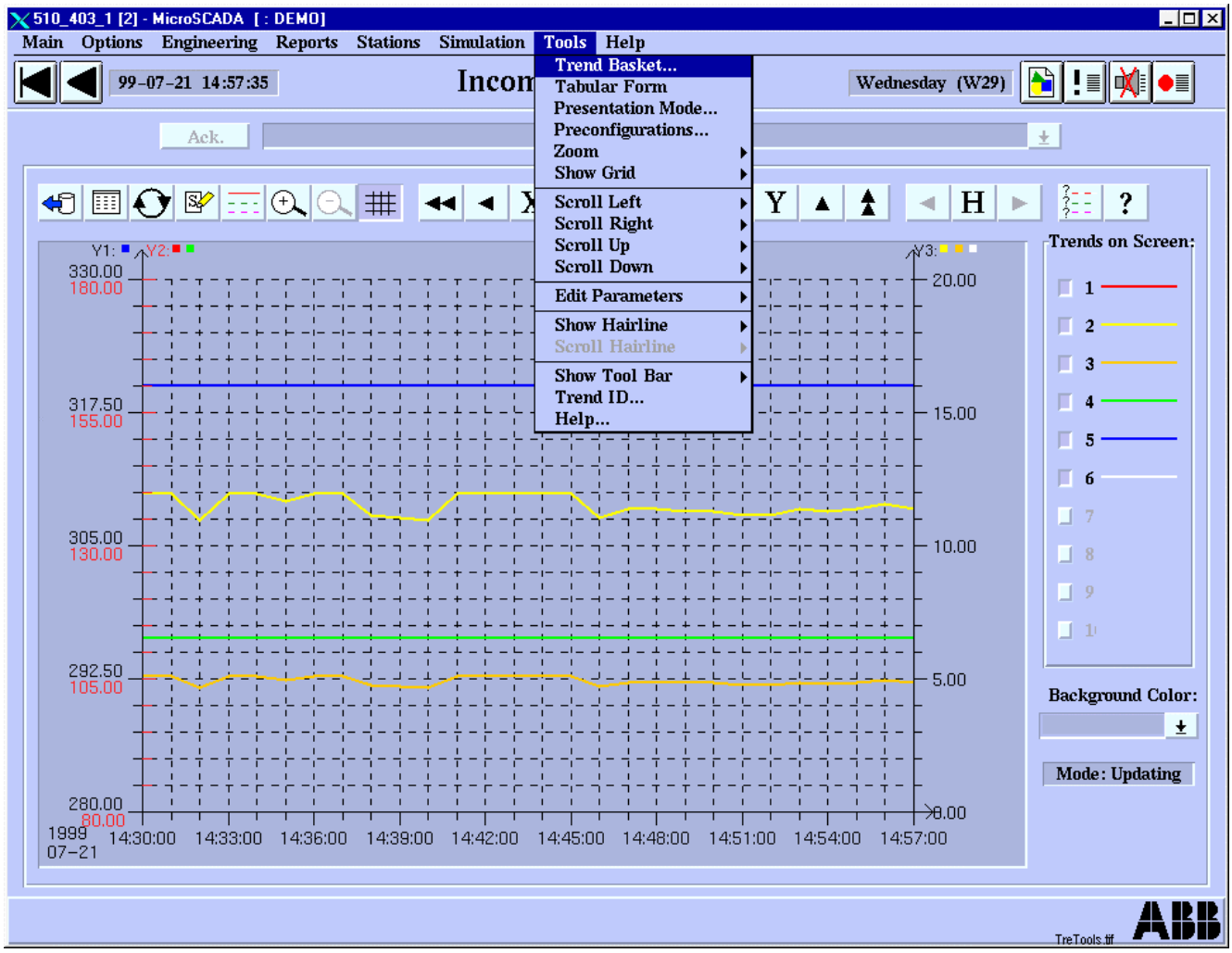

Figure 5. The Trend Tools menu for graphical form

Function	Explanation
Trend Basket	Opens the Trend Basket dialog from which the trends i.e. logged process data can be selected and the preconfigurations can be opened.
Tabular form	Switches the trend picture to show the trends in a tabular form. The graphical form can be returned by the corresponding button in the tabular form picture, so the two forms can be toggled.
Presentation mode	In this case the tool bar button and the corresponding Tools menu item function differently. The menu item opens the presentation mode dialog, where the user can set the trend picture mode to frozen or updating whereas the tool bar button toggles between the modes. The current mode is indicated by a field in the lower right part of the picture.
Preconfigurations	Opens the Trend Picture Preconfigurations dialog by which the current trend picture set-up can be saved.
X-axis and Y-axis parameters	Open the dialogs where the parameters of the axes can be set.
Edit line parameters	Opens a dialog by which the line parameters (line colors, widths and styles) of each trend curve can be adjusted. A sample of each line is shown on the right side of the picture beside the show trend buttons.
Zoom in and out	Zooming in takes place as follows: first click the zoom in button or the corresponding menu item and then select the desired area inside the grid area by dragging with the mouse. A box is shown to illustrate the selected area. Zooming out, which returns the previous view, is done by clicking the zoom out button/item.
Show grid	Shows or hides the grid. The curve values outside the grid area are cut regardless of whether the grid is shown or not.
Vertical and horizontal scrolling	The trend curves can be scrolled horizontally by the single and double arrow buttons on both sides of the "X" button or by the corresponding Tools menu items. The single arrow buttons scroll the curves by one step (interval) and the double arrow buttons by one page (axis length). The functionality of the vertical scrolling is similar to that of horizontal. Note that the mode is set to frozen when the curves are scrolled.
Show hairline	Shows or hides the hairline on the upper part of the picture. When the hairline is shown the value of each trend curve at the time marked by the hairline is shown on the right side of the picture instead of the curve sample lines. The time corresponding to the hairline position is shown beside the triangular hairline button.
Scroll hairline	The hairline can be moved either by clicking the mouse on the top of the hairline and dragging it within the grid area, or stepwise by using the arrow buttons on both sides of the "H" button or the corresponding menu items. When the hairline is moved, the trend values are updated.
Show tool bar	Shows and hides the tool bar. Even if the tool bar is hidden, the tools can be used from the Tools menu.
Trend identification	Shows a dialog with the names and units (if any defined) of all the trends in the picture.
Help	Opens the Graphical Form Help dialog with further info.

3.7 Miscellaneous

Each trend curve has a show trend button on the right side of the picture. With these buttons each trend curve in the picture can be temporarily hidden. The background color of the graphical drawing area can be selected from the combo box in the lower right part of the picture. When black color is selected, the axis, grid and the hairline are drawn in white.

3.8 Tabular Form

The trends can also be presented in a ***tabular form***. The two forms, graphical and tabular, share the same trends and presentation mode, but otherwise these forms can be used independently. This chapter describes the functionality of the tabular form picture.

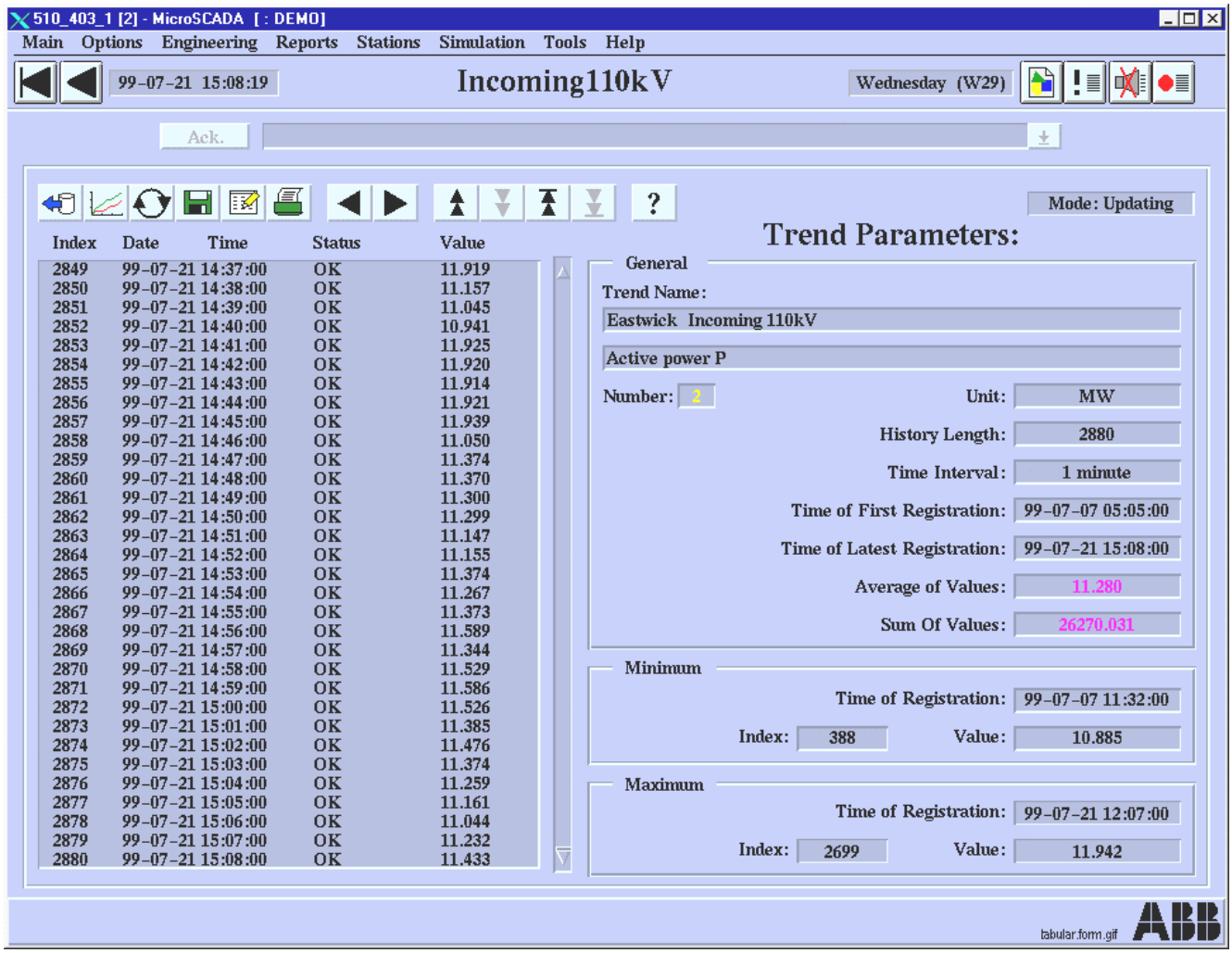

Figure 6. The Trend tabular form

3.8.1 General Functionality

In the tabular form of the LIB 510 trend picture up to ten trends can be presented one by one on a scrollable list, where one line corresponds to one data registration.

These lines contain:

- index
- time stamp
- status
- value

The default accuracy is three decimals. A set of trend parameters, e.g. minimum, maximum, sum and average is presented for each trend. The user can switch from one trend to another with a click of a button. The tabular form picture includes a multitude of tools which will be described later on in this manual.

If a data registration has an invalid or an erroneous status, the corresponding line is drawn in magenta. In case of a not sampled or an erroneous status the value is not shown. Manually entered values are indicated by cyan color.

The trend basket can be used in a similar way as in the graphical form picture. When new trends are brought into the picture, the trend that is the first on the Trend Curves list is brought to the tabular form picture list.

3.8.2 Trend Parameters

On the right side of the list there is a group of fields containing parameters that are read from the logged process object or calculated from the data. These parameters are updated every time the trend picture is updated. The sum and average of values are drawn in magenta if the trend data contains registrations with invalid or manually entered status. The unit of the process object is shown only if the object is of analog or pulse counter type. The color of the trend number corresponds to the line color in the graphical form picture.

3.8.3 Trend Picture Presentation Modes

The tabular and the graphical form picture have the same presentation mode, i.e. both forms are updating and frozen at the same time.

Since a MicroSCADA datalog is of buffer (FIFO) type, the oldest value is dropped out and newer values are moved by one step at update, if the datalog is filled to its maximum length. In this situation the scrollbar does not move at update since the datalog scrolls by itself.

When in frozen mode, the trend picture is not updated in order to make it easier for the user to concentrate on specific trend information. The mode is automatically set to frozen:

- when there are no trends to show
- when the list is scrolled by scrollbar or tools
- when the basket or enter values dialog is opened

Otherwise the mode can be selected from the tool bar button or by opening the presentation mode dialog from the Tools menu.

3.8.4 Trend Picture Tools

The tabular form picture has a set of tools, which can be used either by the tool bar buttons or from the Tools menu. In the following, the functionality of these tools is shortly described. More detailed information can be found in the tool dialog help texts.

Figure 7. The Trend Toolbar

Number	Description
1	Trend basket
2	Graphical form
3	Presentation mode (toggles between updating/frozen mode)
4	Save trend to a file
5	Enter values
6	Print trend
7	Show previous trend
8	Show next trend
9	Scroll one page up
10	Scroll one page down
11	Go to beginning
12	Go to end
13	Help (tabular form main help)

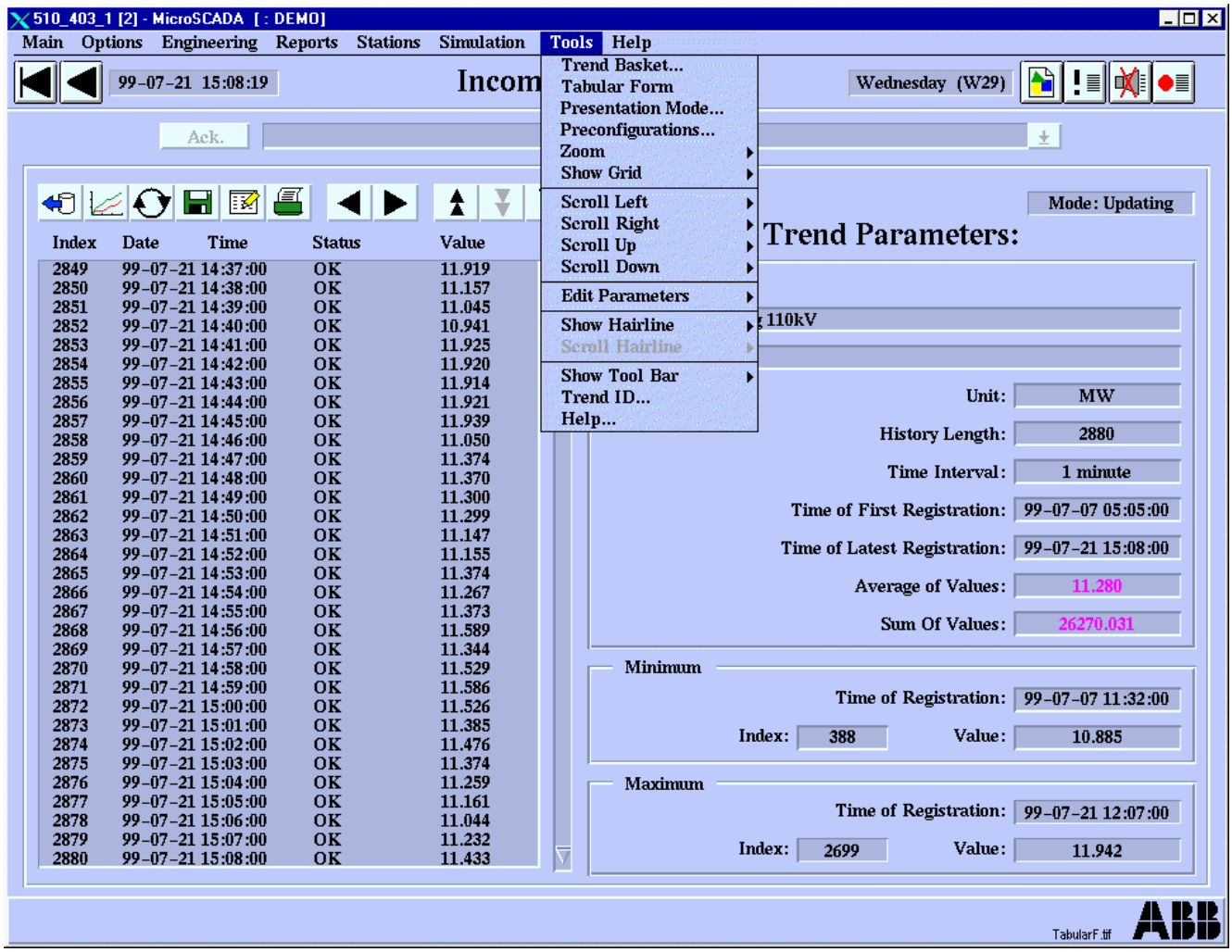

Figure 8. The Trend Tools menu for tabular form

Function	Explanation
Trend Basket	Opens the Trend Basket dialog from which the trends can be selected and the preconfigurations can be opened.
Graphical form	Switches the trend picture to show the trends in a graphical form. The tabular form can be returned by the corresponding button in the graphical form picture, so the two forms can be toggled.
Presentation mode	In this case the tool bar button and the corresponding Tools menu item function differently. The menu item opens the presentation mode dialog, where the user can set the trend picture mode to frozen or updating whereas the tool bar button toggles between the modes. The current mode is indicated by a field in the upper right part of the picture.
Save to file	With this dialog any range of a trend can be saved to an ASCII file. The default format of the file is .CSV, where the columns are separated by a semicolon (;). This file type can be read by a spreadsheet program, e.g. Microsoft Excel.
Enter values	With this tool the user can manually enter values into a trend. To enter values, select the Enter values button from the tool bar or the corresponding item from the Tools menu. Then click the line of the desired registration on the list. The line is shown highlighted, the presentation mode is set to frozen and the Enter Value dialog is opened.
Print trend	With this tool the user can print a trend to a matrix printer, which is configured as a transparent printer in MicroSCADA.
Show next/previous trend	These buttons/items bring the next or previous trend to the list. As stated before, the set of trends is the same as in the graphical form. When a new trend is shown, the list is scrolled to show the latest registrations.
Scroll page up/down	Scrolls the list one page (32 lines) up or down.
Go to beginning/end	Scrolls the list to show the first or latest registration.
Show tool bar	Shows and hides the tool bar. Even if the tool bar is hidden, the tools can be used by the Tools menu.

4 Presentation Mode

With this dialog the operator can select the presentation mode of the trend picture from two options: updating and frozen. When the mode is set to updating, the trend picture is updated at regular intervals. The length of the interval is defined by the current set of trends as the shortest interval between registrations. If the mode is set to frozen, the trend picture is not updated.

The two radio buttons in the upper part of the dialog can be used to select the mode. The OK button applies the changes to the trend picture, Cancel withdraws all changes.

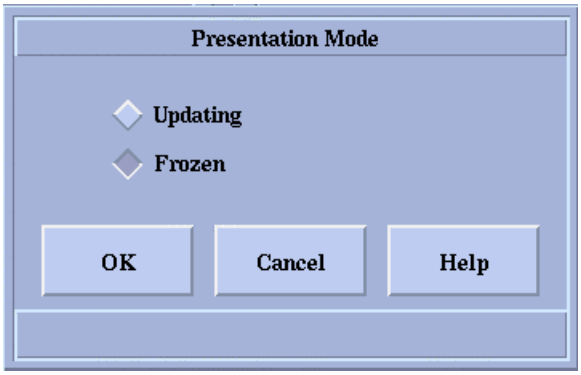

Figure 9. The Presentation mode dialog

5 Trend Basket

5.1.1 Functionality

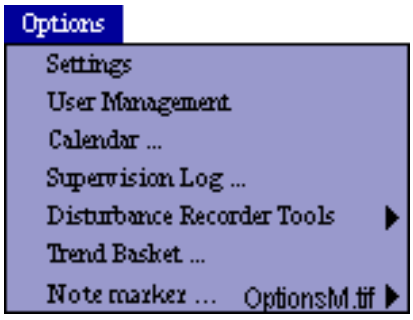

Figure 10. Trend basket

The trend basket is the link between the station pictures (the process data) and the trend picture. With the trend basket dialog the user can select data from the station picture to be logged and shown in the trend picture.

By default LIB 500 enables simultaneous logging of 20 process objects. The maximum length of these data logs is 2880 registrations which equals to 48 hours with the update interval of one minute. The update interval can be selected from five options ranging from 30 seconds to 10 minutes. The logging function, i.e. how the value is calculated before registration, can also be selected (see the Trend Settings chapter for details).

The trend basket consists of two dialogs. The other dialog is shown in the station picture and the other in the trend picture. The dialogs have a similar appearance but a slightly different functionality. The dialogs are described in the following chapters.

5.2 Station Basket

The basket dialog opened in the station picture is shown in Figure 11. Its purpose is to set process objects from the station picture to the trend data logs.

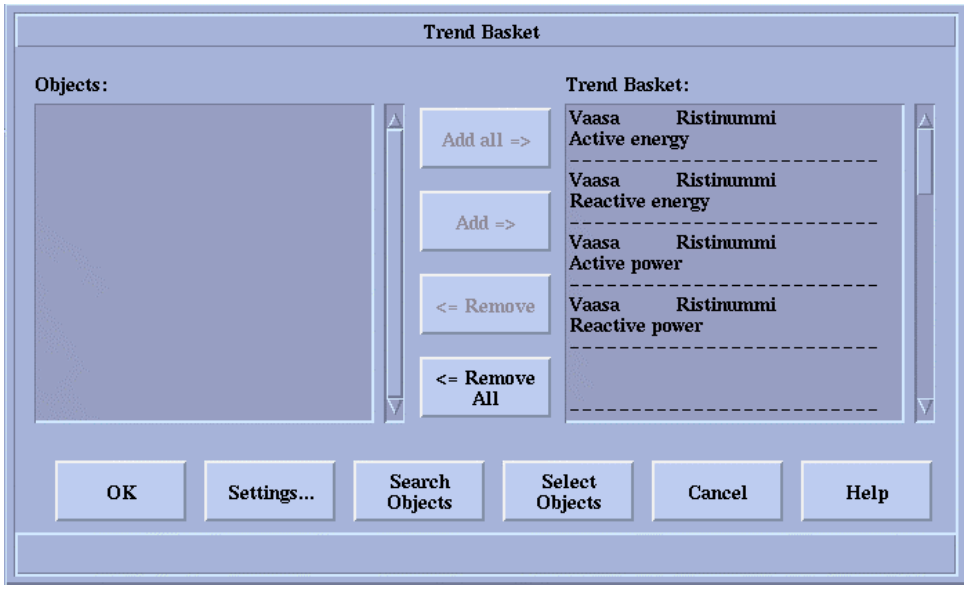

Figure 11. The station basket

In order to avoid irregularity in the data logs the trends are cleared (all registrations are removed):

- when the process objects to be logged are changed
- when the update interval or the logging function is changed
- on request by a specific button in the settings dialog.

The basket main dialog has two lists: the Objects list to the left contains the process objects selected or searched from the station picture and the Trend Basket list to the right contains the objects that are logged and can be presented as trends. On both these lists, each object is presented with two text lines. The upper line contains the object id and the lower line contains the object text. These two line blocks are separated by a dashed line. An empty block (no text between the dashed lines) in the Trend Basket list refers to a free trend.

There are two ways to read process object information from the station picture:

- searching objects
- selecting objects.

The former searches for all the process objects contained in the picture functions of a station picture and the latter reads in all the process objects within a single picture function.

To search objects, click the Search Objects button. This brings all the process objects within the current station picture onto the Objects list. Note that since a station picture can contain thousands of process objects, this function should be used cautiously. To select process objects, click the Select button and then the desired picture function. This brings the process objects within the picture function onto the Objects list.

Table 1 The other buttons on the dialog work as follows:

Function	Explanation
Add All	Adds all objects from the Objects list to the Trend Basket list. If duplicates (objects that already are in the Trend Basket list) are found, an information dialog is shown.
Add	Adds selected objects from the Objects list to the Trend Basket list. If duplicates are found, an information dialog is shown. If the number of free data logs in the Trend Basket list is smaller than the number of objects in the Objects list, this button is not available.
Remove	Removes selected objects from the Trend Basket list.
Remove All	Removes all objects from the Trend Basket list.
Settings	Opens a dialog where the update intervals and logging functions can be changed and the trend cleared.
OK/Cancel	OK starts the logging of the selected objects. Cancel withdraws all changes.

5.2.1 Trend Settings

With this dialog the user can change the update intervals and logging functions of the trends and also set the trend to be cleared (all registrations removed).

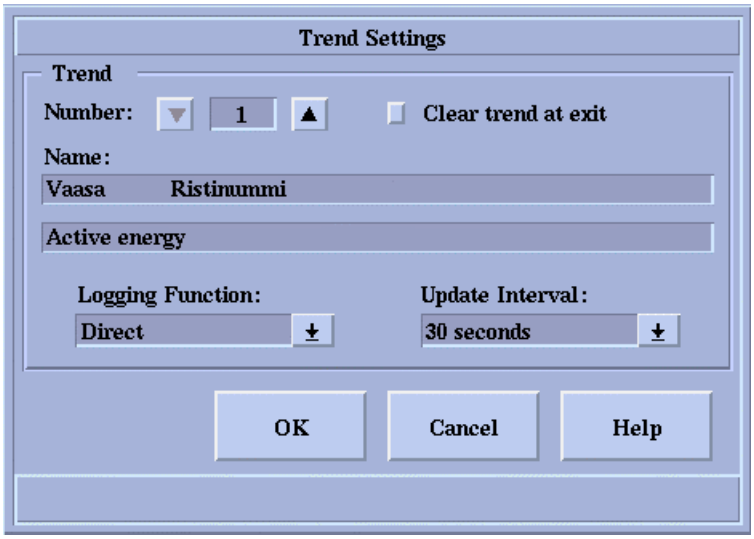

Figure 12. The Trend settings of the station picture

The number of the trend corresponding to its position in the Trend Basket list of the basket main dialog and the trend name (the object id and object text of the process object) are shown on the upper part of the dialog. Next or previous trend can be selected with the arrow buttons beside the trend number field.

The logging function can be selected from the combo box on the lower left part of the dialog. The logging function determines the calculation performed before the registration of a process object value.

Table 2 The four options have the following meanings:

Option	Meaning
Direct	no calculation, the value is directly registered
Mean	the registered value is the mean of the previous registered values
Sum	the registered value is the sum of the registered values
Difference	the registered value is the difference between two consecutive values

The update interval determines the sampling interval of the trend. It can be selected from the combo box on the lower right part of the dialog. There are five options ranging from 30 seconds to 10 minutes. Note that several trends with a short update interval can load the system remarkably.

In order to avoid irregularity in the data logs the trends are cleared when the logging function or update interval is changed. To avoid data loss, a confirmation dialog is shown when these parameters are changed.

On the right side of the trend number field there is a toggle button by which the trend can be cleared at exit, i.e. when the basket main dialog is closed with OK.

The OK button in this dialog sets the changes to the basket main dialog. Cancel withdraws all changes.

5.3 Trend Basket Dialog

The trend basket dialog opened in the trend picture is shown in Figure 13. Its purpose is to set data from the trend data logs to the trend picture.

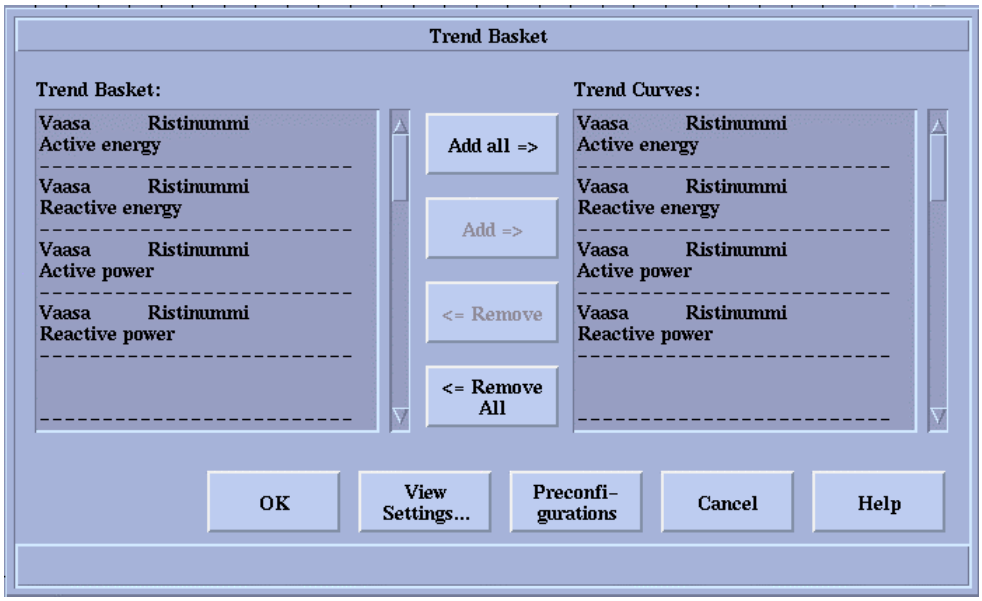

Figure 13. The Trend basket dialog

The Trend Basket dialog has two lists: the Trend Basket list to the left contains the objects that are logged and the Trend Curves list to the right contains the objects that are currently shown in the trend picture. On both these lists each object is described with two text lines. The upper line contains the object id and the lower line contains the object text. These two line blocks are separated by a dashed line. An empty block (no text between the dashed lines) in the Trend Basket list refers to a free trend.

Table 3 The buttons on the dialog work as follows:

Function	Explanation
Add All	Adds all objects from the Trend Basket list to the Trend Curves list. If duplicates (objects that already are in the Trend Basket list) are found, an information dialog is shown and the duplicate is removed.
Add	Adds selected objects from the Trend Basket list to the Trend Curves list. If duplicates are found, an information dialog is shown and the duplicate is removed.
Remove	Removes selected objects from the Trend Curves list.
Remove All	Removes all objects from the Trend Curves list.
View Settings	Opens a dialog where the update intervals and logging functions can be viewed.
Preconfigurations	Opens a dialog from which a preconfiguration can be opened.
OK/Cancel	OK sets the selected objects to the trend picture. Cancel withdraws all changes.

5.3.1 Selecting Trend Picture Preconfigurations

With this dialog the user can open any of the trend picture preconfigurations, provided that one has been saved.

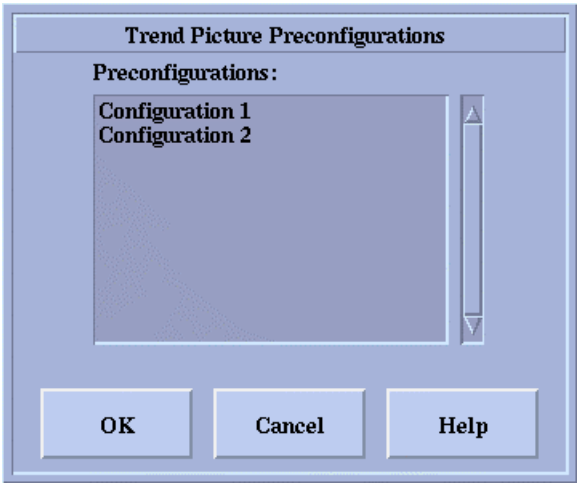

Figure 14. The Trend Picture Preconfigurations dialog

The names of the saved preconfigurations are shown on the list. One of the preconfigurations can be selected with the mouse. OK opens the preconfiguration, Cancel cancels the selection.

NOTE! All the objects included in the preconfiguration must be logged in order for the preconfiguration to be opened.

6 Preparing Trend Picture Preconfigurations

With this dialog the user can save the current trend picture set-up as a named preconfiguration, which can be opened from the basket dialog or from the LIB 500 standard menu. The following parameters are saved: the current set of trends (logged process objects), the trend curve line parameters (line style, line color and line width), the X-axis and Y-axis parameters and the background color.

Existing preconfigurations can be deleted and renamed with the Delete and Rename buttons on the right side of the list.

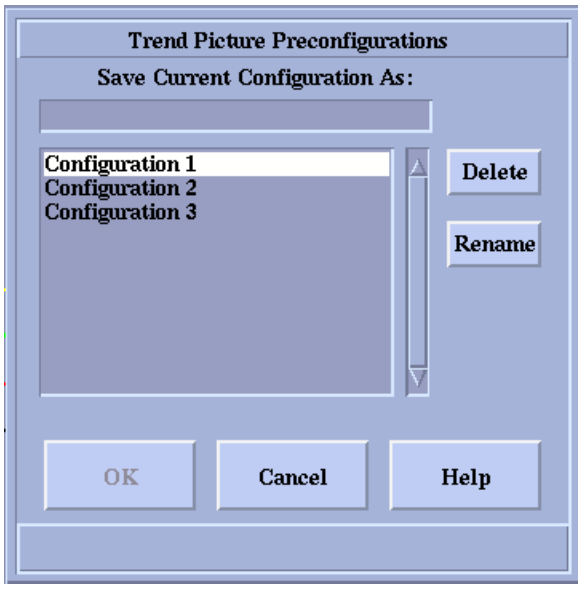

Figure 15. The Save Trend Preconfigurations dialog

The existing preconfigurations are shown on the list. The name of the configuration (max. 15 characters) must be entered into the field above the list before the preconfiguration can be saved. When the preconfiguration is opened, its name is set as the trend picture title.

To delete a preconfiguration, select a preconfiguration from the list and click the Delete button. To rename a preconfiguration, select one from the list and click the Rename button. This opens a new dialog where the new preconfiguration name can be entered.

NOTE! If the preconfiguration is wanted to be opened, the included process objects must be logged, i.e. remain in the trend basket.

The OK button saves the preconfiguration, Cancel withdraws all changes. Saving a preconfiguration requires at least Engineering (2) level user authorization.

7 Trend Picture Settings

7.1 Edit X-Axis Parameters

With this dialog the user can edit the X-axis parameters of the LIB 510 trend picture. These parameters include the X-axis time interval and X-axis end time (the time value furthest to the right on the X-axis).

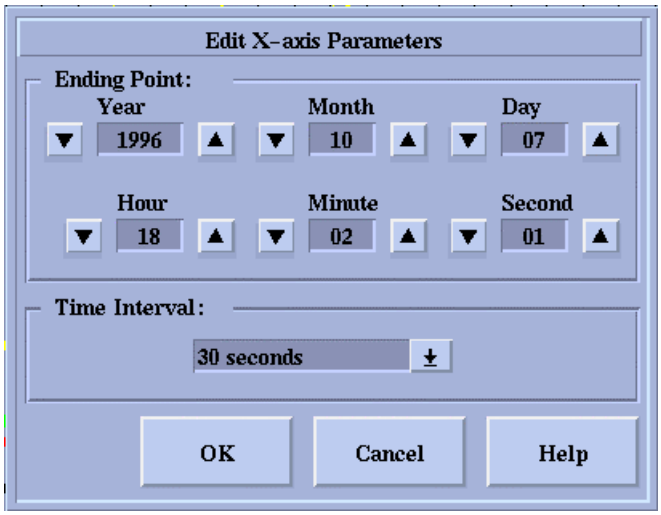

Figure 16. The Edit X-axis Parameters dialog

The X-axis time interval can be selected from the combo box on the lower part of the dialog. When the interval is changed, the end time of the X-axis remains the same and the trend curves are shown according to the new interval.

The X-axis end time can be set either by entering new values into the fields or by setting the values stepwise with the arrow buttons beside each field. If the entered value is invalid, the old value is returned to the field.

The OK button sets the changes to the trend picture, Cancel withdraws all changes.

7.2 Edit Y-Axis Parameters

With this dialog the user can edit the Y-axis parameters of the LIB 510 trend picture. These parameters include the Y-axis minimum and maximum.

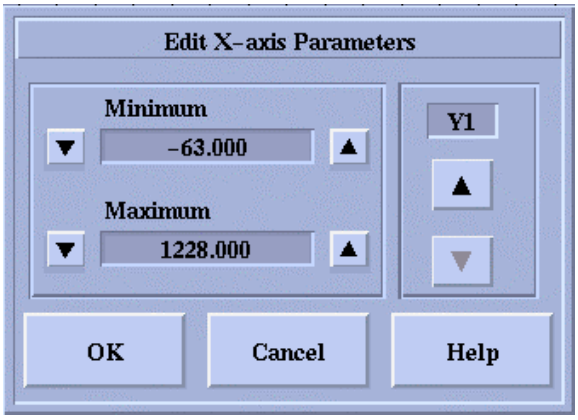

Figure 17. Edit X-axis Parameters dialog.

The Y-axis minimum and maximum can be set either by entering new values to the fields or by setting the values stepwise with the arrow buttons beside each field. These buttons increase or decrease the value by 10 %. If the entered value is invalid, the old value is returned to the field.

The OK button applies the changes to the trend picture, Cancel withdraws all changes.

7.3 Edit Line Parameters

With this dialog the user can edit the trend curve line parameters of the LIB 510 trend picture. These parameters include the line style, line color and line width.

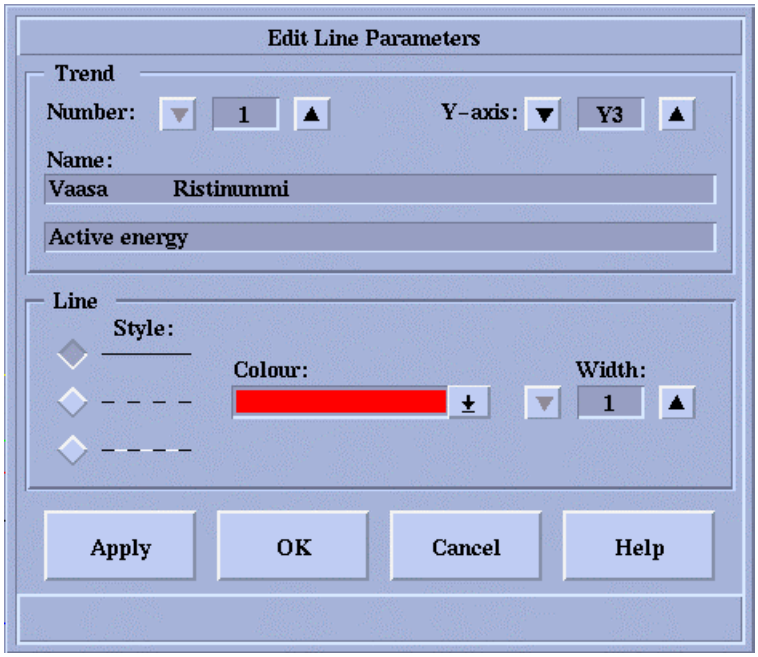

Figure 18. The Edit Line Parameters dialog

The arrow buttons beside the trend number field produce the line parameters of the next or previous trend on the dialog. The trend name (object id and object text of the logged process object) is shown in the two fields in the upper part of the dialog.

The line style can be selected from three options with the radio buttons in the lower left part of the dialog. A sample line is shown beside each button.

The line color can be selected from the color palette in the middle of the dialog. A set of ten predefined colors is offered.

The line width can be set either by entering the value into the field or stepwise with the arrow buttons beside the field. Line width values from one to five pixels are valid. If a non-valid value is entered, the old value is returned.

The OK button applies the changes to the trend picture, Cancel withdraws all changes.

7.4 Background Colors

The background color of the graphical drawing area can be selected from the combo box (Figure 19) in the lower right part of e.g. Figure 22. When black is selected for the background color, the axis, the grid and the hairline are drawn in white.

Figure 19. The trend background color

8 Zoom

Zooming in takes place as follows: first click the zoom in button or the corresponding menu item and then select the desired area inside the grid area by dragging with the mouse. A box (1) is shown to illustrate the selected area. Zooming out, which returns the previous view, is done by clicking the zoom out button/item.

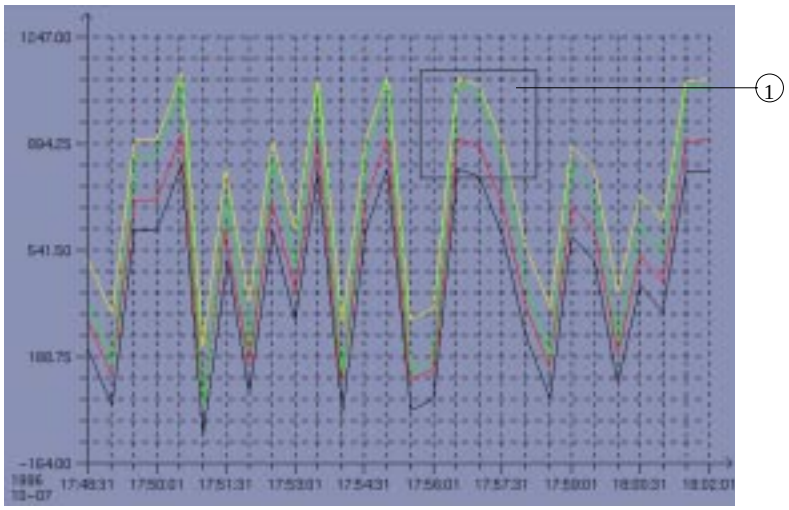

Figure 20. The Trend Zoom box

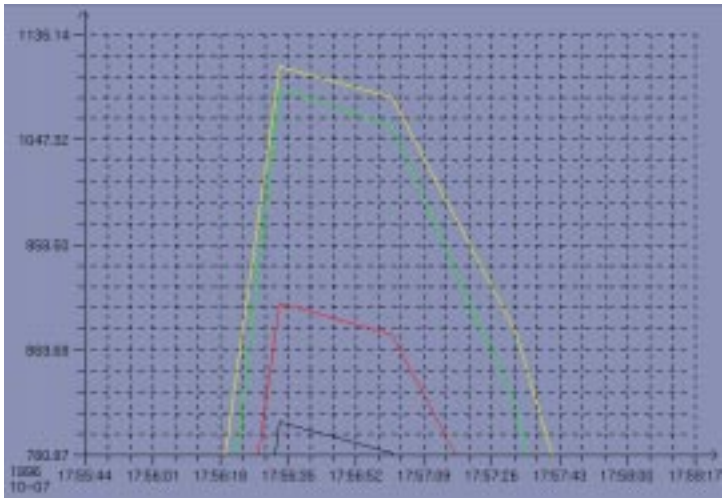

Figure 21. The Trend Zoom in area

9 Hairline

The hairline can be moved either by clicking the button on the top of the hairline and dragging it within the grid area or it can be moved stepwise by using the arrow buttons on both sides of the "H" button or the corresponding menu items. When the hairline is moved, the trend values corresponding to the hairline time are shown in the fields on the right side of the picture.

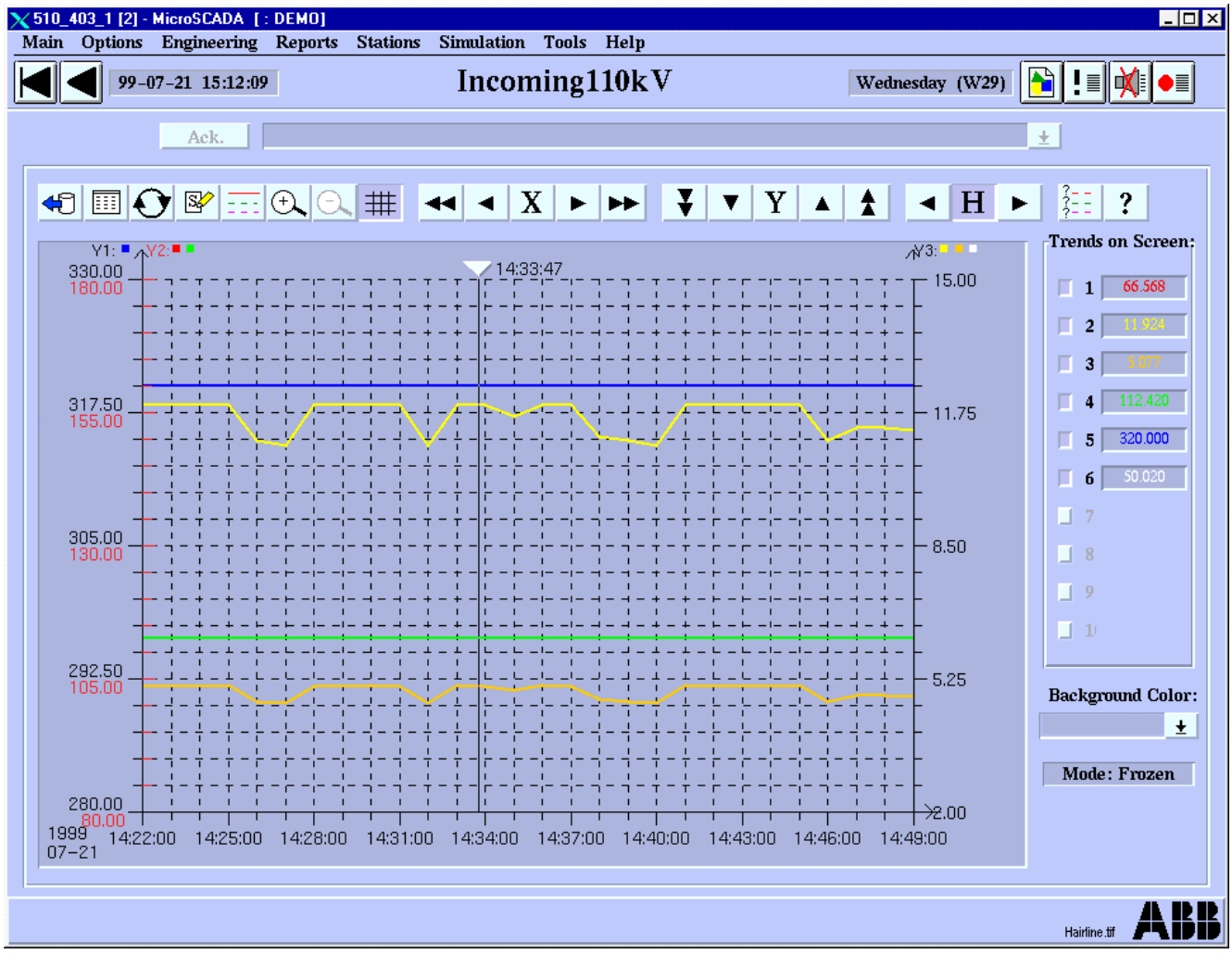

Figure 22. The Trend hairline

10 Save to ASCII File

With this dialog the user can save the trend currently on the tabular form list to an ASCII file. The whole trend or a selected index range can be saved. The saved ASCII file contains the following data:

- index
- time stamp
- status code (integer)
- value.

The default accuracy of the value is three decimals. In case of a not sampled or an erroneous status, the value is not saved. The default format of the file is .CSV, where the columns are separated by a semicolon (;). This file type can be read by a spread sheet program, e.g. Microsoft Excel.

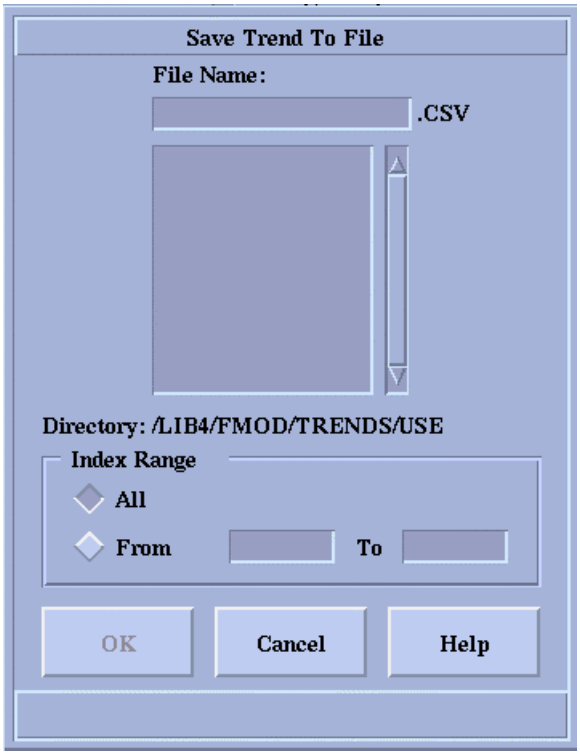

Figure 23. The Save Trend To File dialog

The existing file names are shown on the list and the directory (which is configurable) is shown under the list. The name of the file to be saved must be entered into the field above the list before the file can be saved. The maximum length of the name is ten characters. Selecting any name from the list with the mouse sets the selected name to the name field where it can be edited or the existing file can be overwritten.

Under the directory name there is a pair of radio buttons for selecting the index range. If the upper button is set, the whole trend is saved. If the lower button is set, the trend is saved according to the index range defined by the values in the fields next to the button. The first and the last index are given as default, but the desired indexes can be entered into the fields.

The OK button saves the trend, Cancel only closes this dialog.

NOTE! Saving a large range of a trend can load the system temporarily.

11 Enter Values

With this dialog the user can enter values into a trend manually and one by one. The manually entered values are shown in cyan both in a tabular and a graphical form.

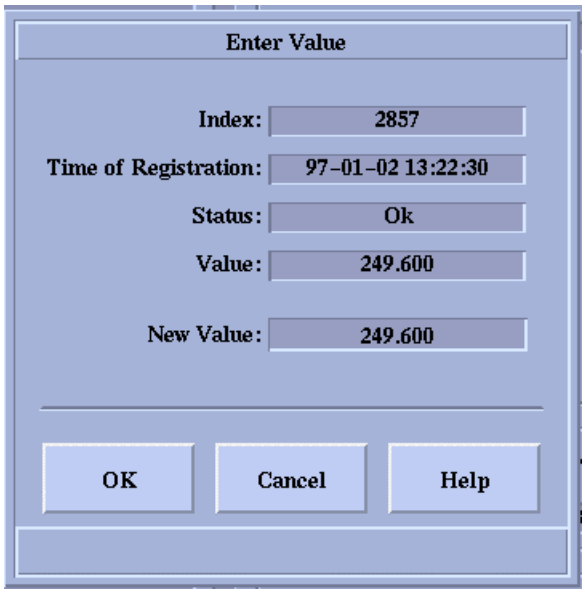

Figure 24. The Enter Value dialog

The fields of this dialog show the index, time of registration, status and value of the selected registration. The New Value field shows the current value as the default new value to be entered into the trend. If the current value does not exist due to an erroneous or not sampled status, the default new value is zero. The new value can also be typed in the field.

The OK button applies the new value to the trend and sets the mode to updating, Cancel only closes this dialog. Note that the time of registration remains the same.

12 Print Trend

With this dialog the user can print the trend currently on the tabular form list to a matrix printer, which is configured as a transparent printer in MicroSCADA. The whole trend or a selected index range can be printed. The printout contains the index, time stamp, status text and value data. The default accuracy of the value is three decimals. In case of a not sampled or an erroneous status the value is not printed.

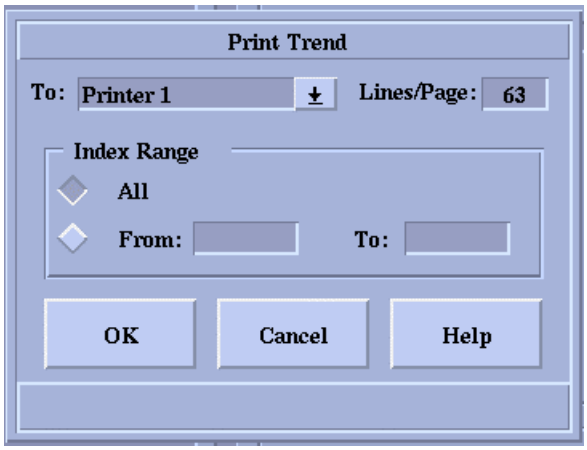

Figure 25. The Print trend dialog

A header is printed on the top and a page number at the bottom of each page. The header consists of the name of the trend and a time stamp indicating the time of printing.

Transparent printers found in the printer mapping vector of the current application can be selected from the combo box in the upper left part of the dialog. Note that if no transparent printers are found, the OK button of the dialog is not available and the trend cannot be printed.

To the right of the printer combo box there is a field where the number of lines per page can be set. The default value is 63 and the range is from 1 to 999 lines per page.

Under the combo box there is a pair of radio buttons for selecting the index range. If the upper button is set, the whole trend is printed. If the lower button is set, the trend is printed according to the index range defined by the values in the fields next to the button. The first and last indexes are given as default, but the desired indexes can be entered into the fields. The OK button prints the trend, Cancel withdraws all changes.

NOTE ! Printing a large range of a trend can load the system temporarily.

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