AMR Data-Control 4.3.X

K-Soft Haustechnik-Management

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Introduction

Welcome to AMR-Data-Control 4.3.X!

This manual enables you to quickly get familiar with the windows-program of AMR Data-Control 4.3.X for recording measurement values and to quickly get started.

It describes how to install the package and how to execute most common program operations. It provides tips and makes you aware of some new features and functions of this program.

If you want to know more details or technical features, please proceed to the corresponding sections, where the available information are described.

What is AMR Data-Control 4.3.X?

AMR Data-Control 4.3.X is a windows-program used for recording and evaluating measuring values such as temperature, humidity etc., based on Ahlborn ALMEMO- or THERM-measuring device technique in Online- and Offline mode. This program operates under Windows 95/98, Windows 2000, Windows ME and Windows NT.

The **Online-Help** is the main source of information about AMR Data-Control 4.3.X. You can find here all necessary program functions by selecting any commands from the **Help menu**.

In addition, you can find **Help buttons** in all dialog boxes which provides specific information on the function of that dialog box.

This program uses the keyboard as well as the mouse for easy handling. Pointing the mouse to an **Icon** in the menu bar, displays a brief explanation of that menu command.

Overview

Delivery contents

Your AMR Data-Control 4.3.X package should contain the following:

- 5 or 6 AMR Data-Control 4.3.X program disks 3,5“ depending on program package or 1 CD
- AMR Data-Control 4.3.X user guide manual
- AMR Data-Control 4.3.X short reference
- AMR Data-Control 4.3.X registry card
- others

If any of the above listed part is missing, please contact your AMR Data-Control dealer.

System requirements

To run your AMR-Data-Control 4.3.X properly, your system should at least meet the following requirements. Normally, you can however install and operate with AMR-Data-Control 4.3.X, if your windows is properly installed, you have a free communication port RS232 and enough hard disk space available.

Hard-/Software	**Minimum-Configuration**	**Recommended Configuration**
Computer:	Intel Pentium, 200 MHz or any Windows 95/98 compatible PC	Intel Pentium 500 MHz
Operating system:	Windows 95/98/ME/NT/2000	Windows 95/98/ME/NT/2000
RAM:	32 MB	128 MB or more
Monitor:	Any windows-supported monitor	Monitor with VGA- or higher resolution graphic
Mouse:	Any windows-supported mouse	Any windows-supported mouse
Disk drive:	A 3,5“-disk drive (HD)	A 3,5“-disk drive (HD)
Port:	1 free serial port RS232	1 free serial port RS232
Printer:	Any windows-supported printer	Any windows-supported printer

Installing

AMR Data -Control 4.3.X is very easy to install. The data files in the delivered disks are mostly in the compressed form. You should however, before installing, make **safety copies** of your installation disks and read the file **Readme.txt** containing recent information.

To uncompress data files and to install in **Windows 95/98/2000/ME and Windows NT** click the **Start** button, select **Settings** then click **System Control**, start the program **Software** and then select the function **Installation**. To proceed please follow further instructions. The installation program automatically creates an „Data-Control 4.3.X“ program icon and installs this icon in „Start“ under the menu “Program“.

The complete installation of the software requires about 15 MB of space on your hard disk. The recording of 100.000 measuring values per channel requires about 3 MB memory capacity.

After successfully installing, please write down your **license number** on page 1 of this manual. You will find this number on your license contract.

Older Measuring Devices and Year 2000

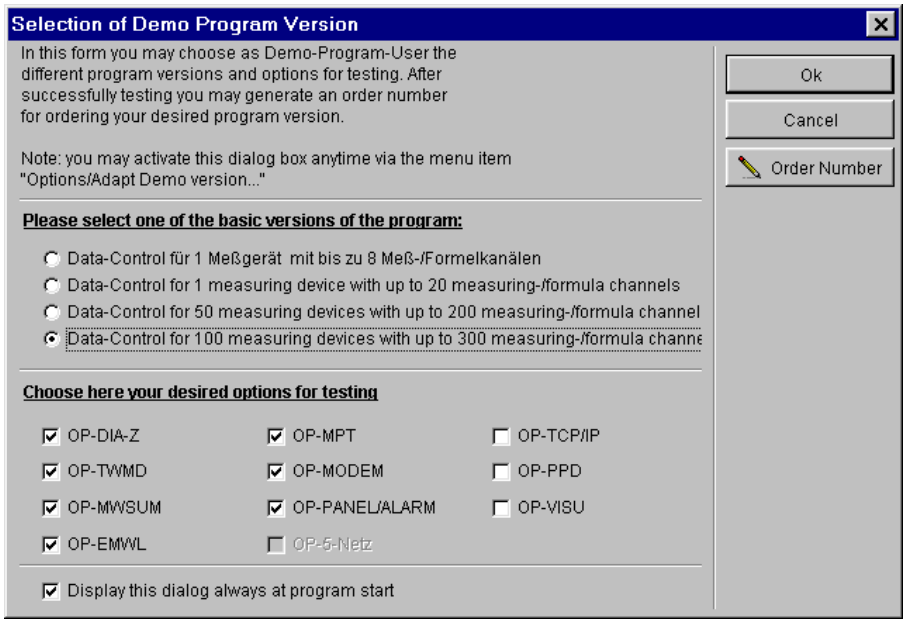
The program DATA-CONTROL 4.2.0/V5 including all special features is year 2000 compatible. There are no problems to be encountered. The software manages the date term internally as second difference and will operate until year 2128 in the present version. The years in the date term will always have four digits.

In old devices of the company AMR, the year in the date term transmitted by memory reading have only 2 digits. In this case the software uses the following method to extend the year number to 4 digits. The 2 digits for the year will be determined from the transmitted date. This number will be compared to year 96, if it is smaller, the number will be interpreted as year 20XX, in all other cases (96 until 99) the number will be interpreted as year 19XX.

As a prerequisite for a correct date handling in the software, the used computer and the operating system must provide a 4 digit year term. If you are using the operating systems Win95/98/2000/ME or Windows NT, please set in the country settings of the system control the standard short date format to "TT.MM.JJJJ".

Converting the Demo-Version into a Full-Version

The **Demo-version AMR Data-Control 4.3.X** is easy to extend into a full-version. At the shown dialog box you may choose and test your desired options before purchasing the software.



Order Number shows you the designated **Order number** reserved for you. Please use this to order your system number needed to **activate the options**.

Software-basic versions

The software is available in four basic versions:

- For 1 measuring device with up to 8 measurement- and formula channels
- For 1 measuring device with up to 20 measurement- and formula channels
- For 50 measuring devices with up to 200 measurement- and formula channels
- For 100 measuring devices with up to 300 measurement- and formula channels

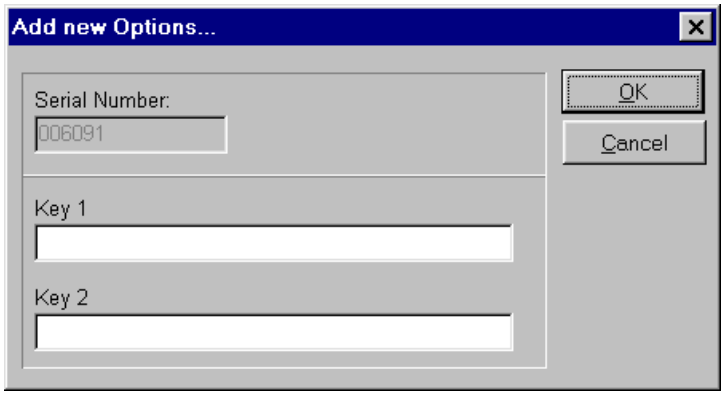
Brief description of the options

OP-DIA-Z	controls the cycle period for diagram setting and diagrams during ONLINE-measurement
OP-TWMD	save the files in daily, weekly and monthly files in different formats during ONLINE-measurement
OP-MWSUM	mean value calculation and summation
OP-PPD	calculation of the PPD-value (predicted percentage of dissatisfied people)
OP-EMWL	extended functions of the measurement data list
OP-MPT	printing of a Y/t diagram in several consecutive pages
OP-VISU	Project visualization with Pictures or graphs
OP-MODEM	use of modem for connecting measurement devices and computer
OP-TCP/IP	Data connection via TCP/IP - Protocol
OP-PANEL/ALARM	function-indicating panel, password system and events recording
OP-SMS	External alarm via SMS
OP-NET-SEND	External alarm via network
OP-VOICE-over-ISDN	External alarm via Voice with ISDN
OP-5-NETZ	extension of 1 measuring device to a net work with 5 measuring devices

The options are described in detail in the corresponding chapters in this manual.

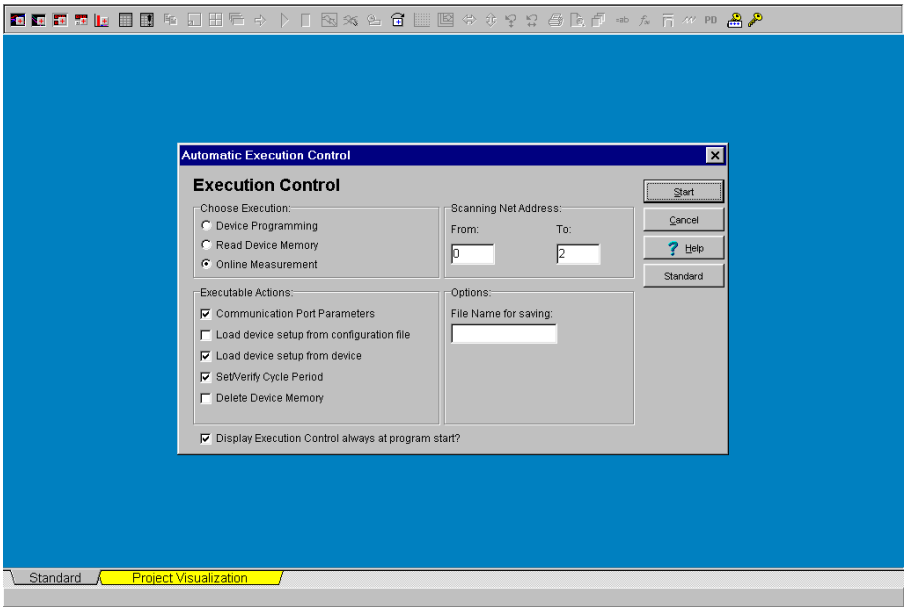
Activating the Options

By choosing in the main menu **Help** the sub-menu **activate options,** the shown dialog box will be opened. You may activate here further software options with the help of a registration key. The **registration key** is available from your distributor.



Comfortable Quick Start

The program is normally delivered, that after the first start the automatic execution control appears. This directs you comfortably through the complete program operation and leads you automatically to your first Y/t-diagram.



Connect your sensor to the ALMEMO – measuring devices before the quick start. Connect also the measuring devices if necessary to a network and then finally connect a measuring device to the serial **interface Com2** of your computer. The program is normally set to **9600 Baud** data transfer rate. This should match with the Baud rate of your measuring device, to establish communication.

Start After the start, the program scans automatically the measurement setup of the network detecting the connected elements and sensors. Proceed with "**Continue**" and follow the instructions in the automatic execution control on the screen. The execution control scans the whole program and creates a Y/t-diagram for your measuring devices together with the connected sensors. The data may be saved simultaneously.

Cancel All functions of the program may also be operated without using the automatic execution control. Cancel here the automatic execution control of the quick start.

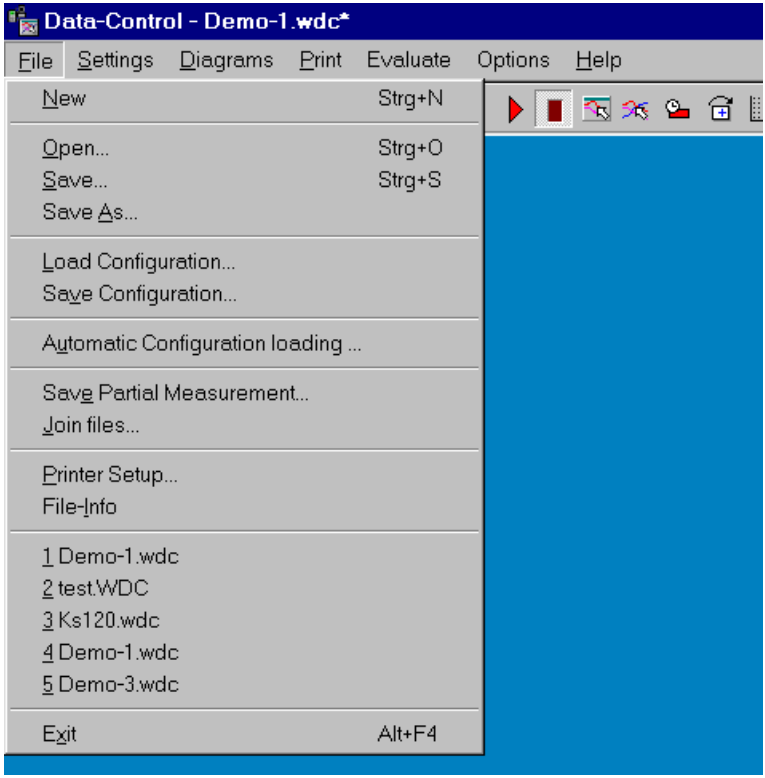
The User Surface

The Main Menu

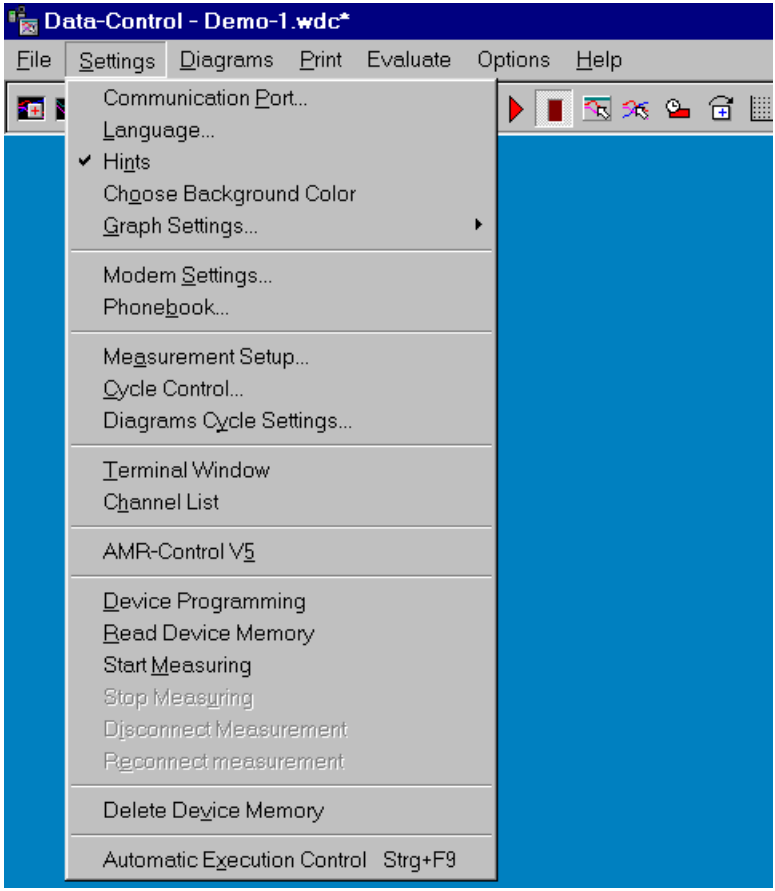
The user interface of AMR Data-Control is graphic and is in accordance to the common windows-standard. You can activate each function either via **menu bar** or via buttons in the **toolbar**. In addition, the buttons contain short hints about its function. Please note, only menus and buttons which are necessary for the program part, currently in use are active.

The main menu is made up of seven functional groups:

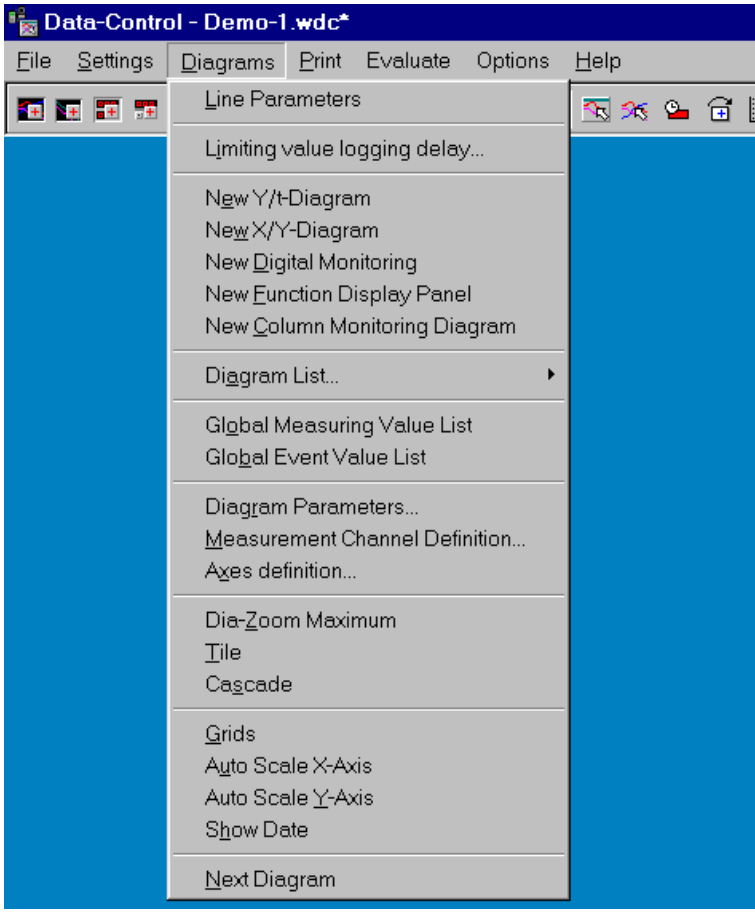
The **File** group contains general information about program execution and managing, saving of measurement and configuration data and printer settings.



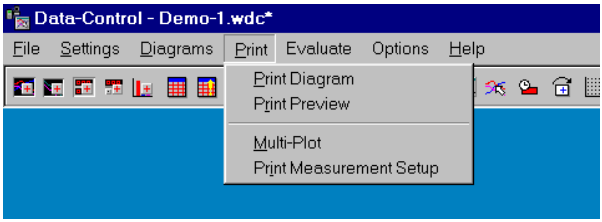
The **Settings** group allows a remote parametering of all program device setting of the connected measuring devices and sensors.



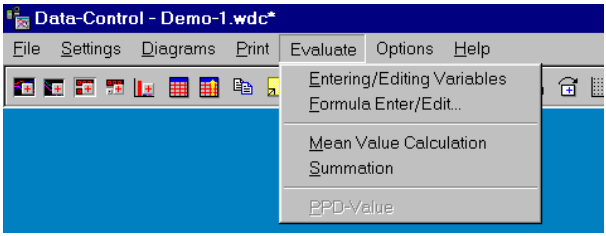
The **Diagrams** group covers all functions for the representation of the measurement data in online mode and also for the representation of the saved measurements.



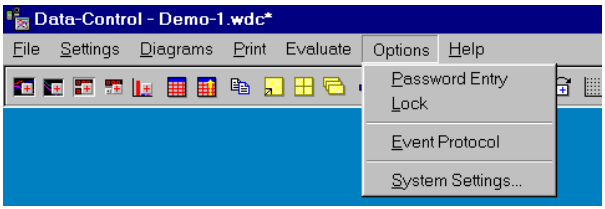
All printer- and output possibilities are defined and listed in the menu **Print**.



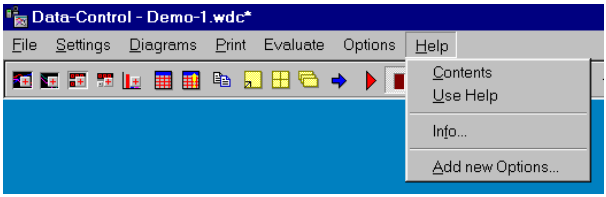
The **Evaluate** group offers possibilities to define your own evaluation function or to choose from a pre-defined evaluation functions.



The **Options** group allows you to protect your files with pass word, to set your system features and to adjust your demo-version onto your actual needs.

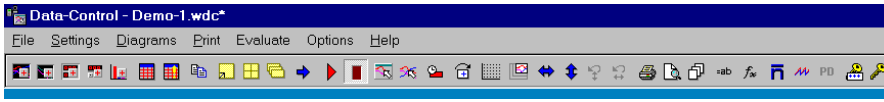


The **Help** group contains an extensive Online-Help system, which is available in different languages.



The Toolbar

In addition to menu bar, the functions of the menus may be activated via **buttons** in the toolbar of each dialog box. Only buttons which are necessary for the program part, currently in use, are active. The toolbar on the main screen essentially contains buttons for the menu „Diagrams“, „Print“, „Evaluate“.



These button commands are described below:

creates new Y/t-Diagram

creates new X/Y-Diagram

creates new Digital-Monitoring-Diagram

creates new function display panel (Option OP-PANEL/ALARM)

creates new Column-Monitoring-Diagram

creates global measurement value list

creates global event list

inserts Diagram in the memory clipboard

display diagram in entire screen mode

arrange diagrams in tiles

arrange diagrams in cascades

go to next diagram

start measuring

stop measuring

modify diagram parameters

modify line parameters

sets delay logging for limiting value

switches the function „Diagram-Settings Apply to All“ ON and OFF

switches the grid lines ON and OFF

Auto-Zoom

automatically scales the X-axis to maximum

automatically scales the Y-axis (axes) to maximum

Previous view Y-axis

Previous view X-axis

Print

Page Preview

Multi-Plot (Option OP-MPT)

enter/edit variables (not in light Version)

Formula enter / edit (not in light Version)

Mean Value Calculation (Option OP-MWSUM)

Sum Calculation (Option OP-MWSUM)

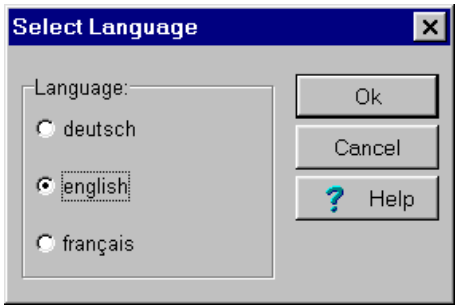
PPD-Index (predicted percentage of dissatisfied people) (Option OP-PPD)

Pass word entry (Option OP-PANEL/ALARM)

locking program for unauthorized use (Option OP-PANEL/ALARM)

Selecting a Language

Select from the main menu **Settings** the command **Language**. The dialog box Select Language will appear. There you may choose your desired language. All text and hints will be displayed in the chosen language.



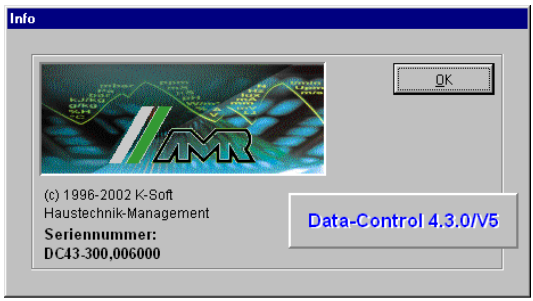
Checkmark your desired language and click OK.

Note: The selected language is immediately active. Re-starting the program is not necessary.

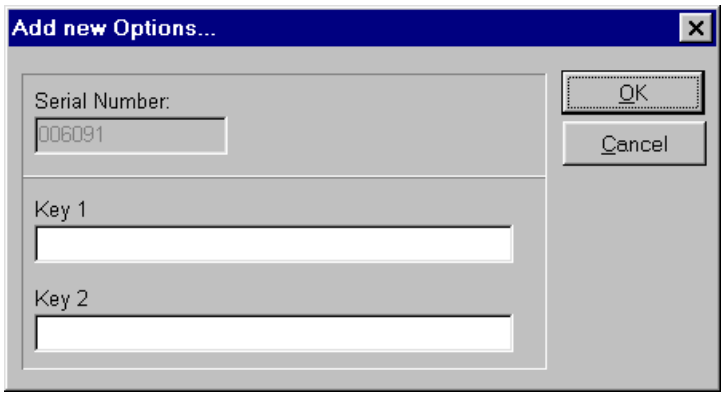
Help

The Online-Help may be activated in the main menu **Help** under the command **Contents**. Just click the colored marked help file with the left mouse button to proceed to the corresponding help topic. With the command **Use Help**, you can proceed to the general help topics of the Windows-Operating System.

Clicking **Info** enables you to obtain the displayed information about the program.



Via the menu item **Add new options** the shown dialog box will be opened. You may activate here further software options with the help of a registration key. The registration key is available from your distributor.

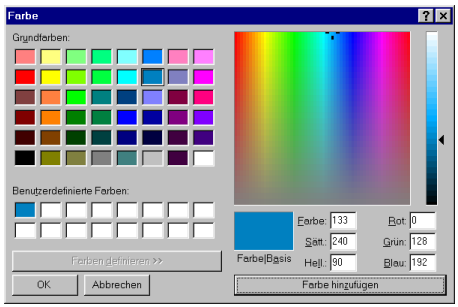


Hints

You may activate **Hints** in main menu **Settings**. The program displays the corresponding hints for each buttons or menus, if you move the mouse near the buttons or menus. Normally hints are always set active.

The Background Color

In the main menu **Settings** you may choose the **Background Color** for your screen. The program will then display the chosen background color.



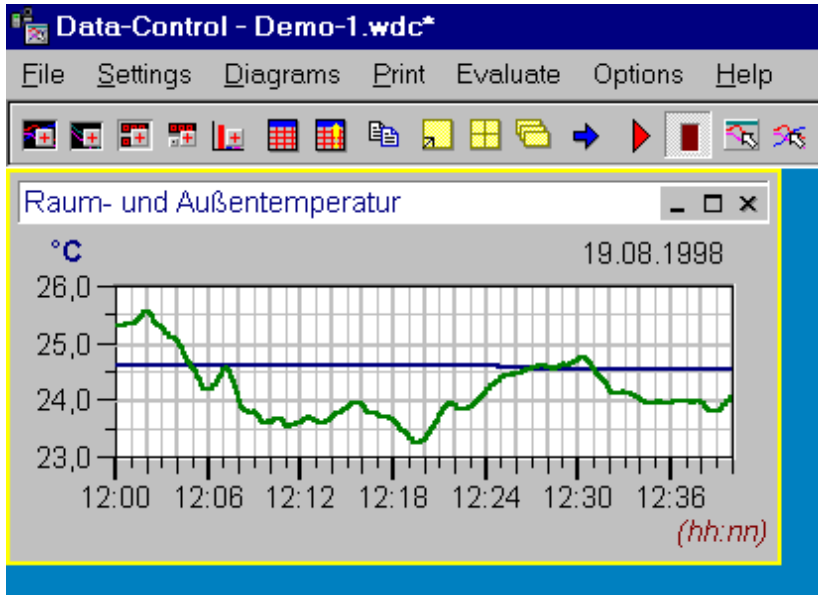
The Diagrams

Representation Possibilities

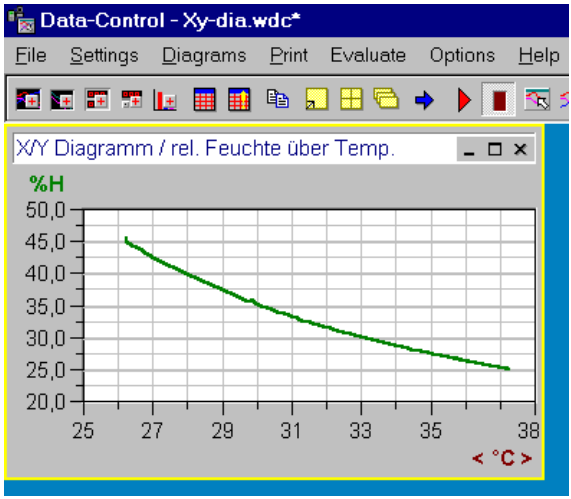
The program offers you six possibilities to create diagrams from your measuring and evaluation data and to create a measurement data list which is described in the following chapter. With the help of the diagrams (and the measurement data list), you can create a historic –already recorded and stored – data and also an actual trend data during the measuring process. The items in the main menu **Diagrams** or the buttons in the toolbar enable you to create, delete, arrange, scroll and format each of these diagrams –also during the measuring process.

You may also enlarge your diagram view. To do so, position the mouse over the diagram border or corner, click the left mouse button and drag the diagram to the desired size. In addition, it is always possible to obtain an entire screen view. Details about each of these diagrams are described in the respective topics in this manual.

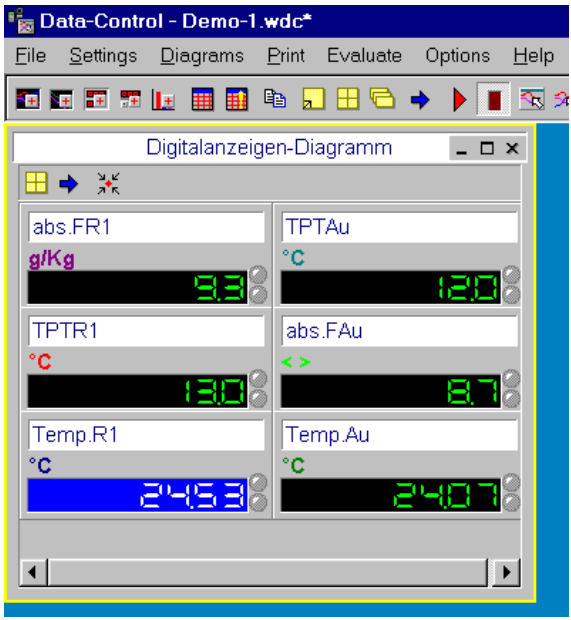
The **Y/t - Diagram** shows the measurement values with respect to time.



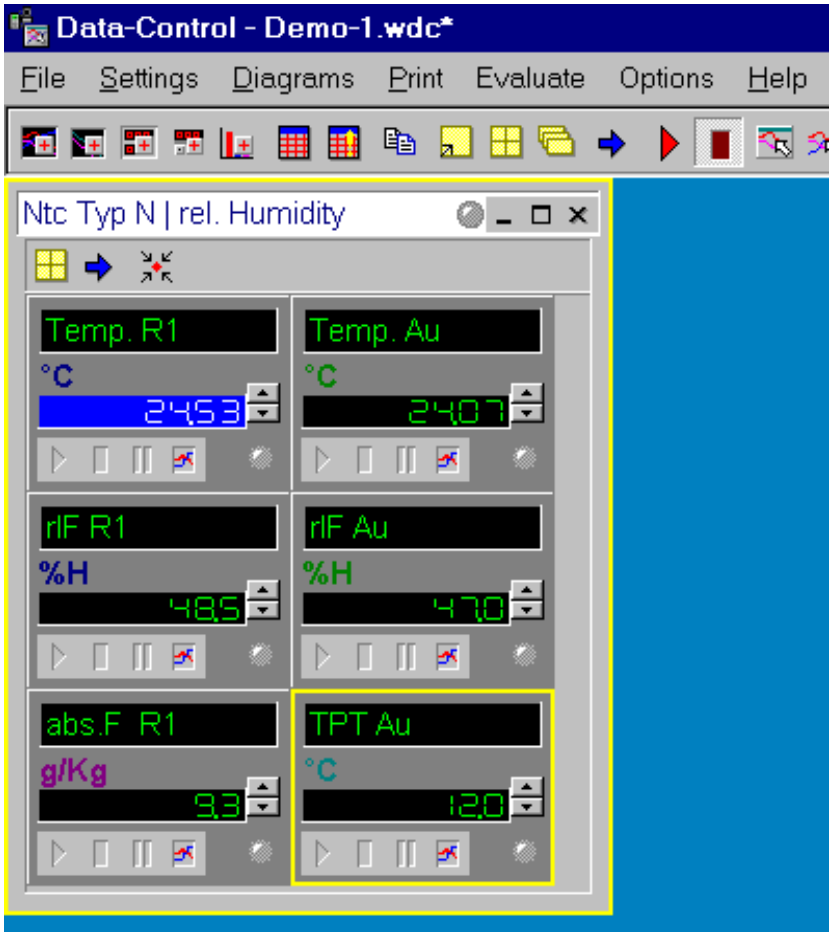
The **X/Y - Diagram** shows the measurement values with respect to a measurement channel. The first channel of the measurement channel definition determines the value of the x-axis.



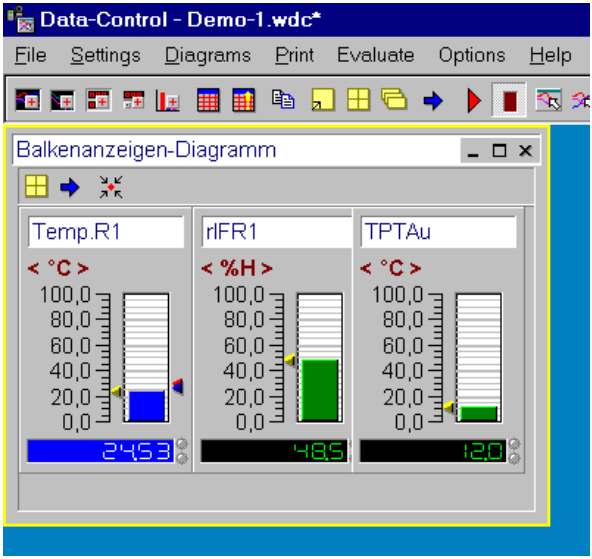
The **Digital Monitoring Diagram** displays the measurement channel in numbers and is used for online visualization.



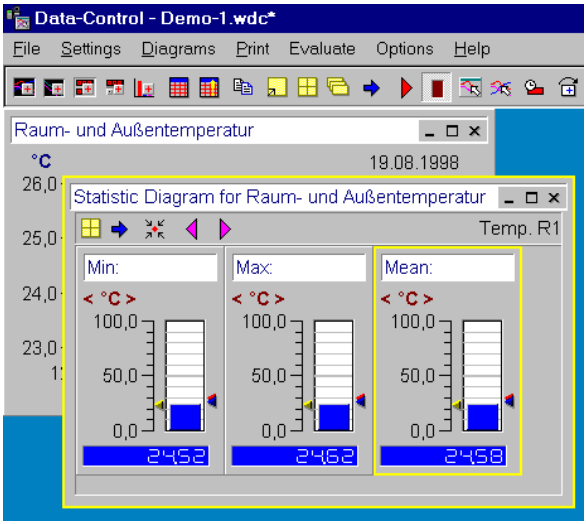
The **Function Display Panel** shows the measurement channels like the digital monitoring diagram in numbers and it is intended for online- visualization. From the function display panel, you may start and stop the measurement of each and every channel. Limiting value violation will likewise be displayed (Option OP-PANEL/ALARM).



The **Column Monitoring Diagram** displays the measurement channel in form of columns and is also used for online visualization.

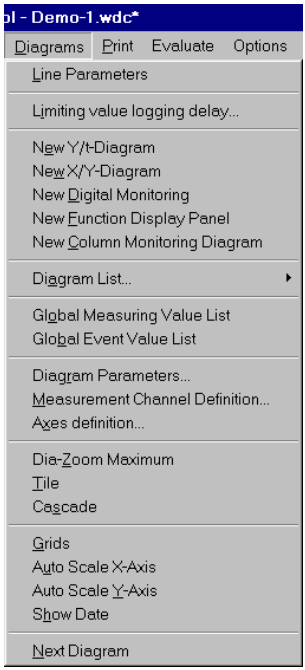


The **Statistic Diagram is an additional function to the Y/t-diagram**. It displays the minimum, mean and maximum values of a selected line in the Y/t-diagram.



Creating a Diagram

The diagrams for the presentation of your measurement and evaluation data may be created either via the items in the main menu **Diagrams** or with the help of the **Buttons** in the toolbar.



creates new Y/t-Diagram

creates new X/Y-Diagram

creates new Digital-Monitoring-Diagram

creates new function display panel (Option OP-PANEL/ALARM)

creates new Column-Monitoring-Diagram

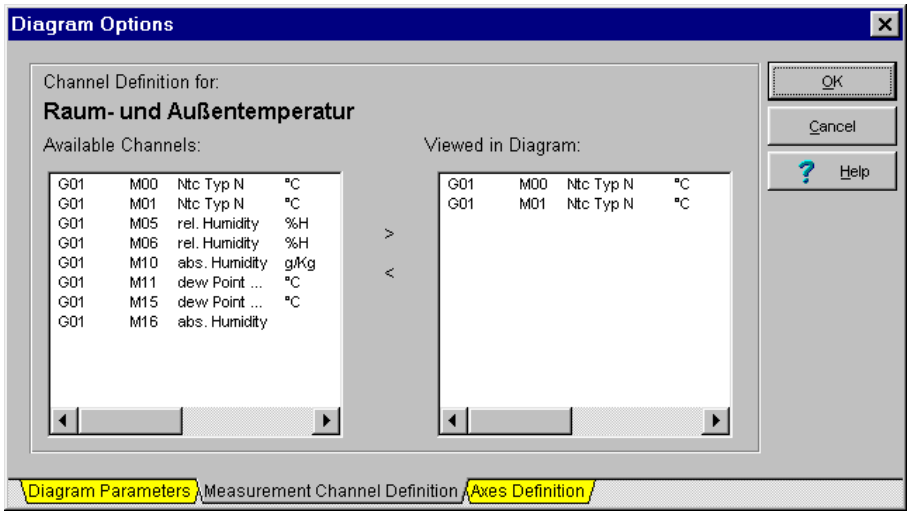
After activating one of the functions mentioned above, the selected diagram will be displayed in its partial view. The functions for creating and formatting a diagram are explained below.

Note: The statistic diagram is a supplement function to the Y/t-diagram and could only be drawn up from the local menu.

Assigning a Channel

After selecting your desired diagram type, choose in the main menu **Diagram** the item **Measurement Channel Definition**, In the dialog box you may define or modify the measuring or formula channels in your diagram.

This dialog box appears automatically if an online connection to the available channels exists or if a saved file is opened.



To **add** channels to a diagram, click the desired channel on the left window with the left mouse or hold the left mouse pressed to select more channels at a time, then click the arrow button going to the right to enter these channels in the diagram.

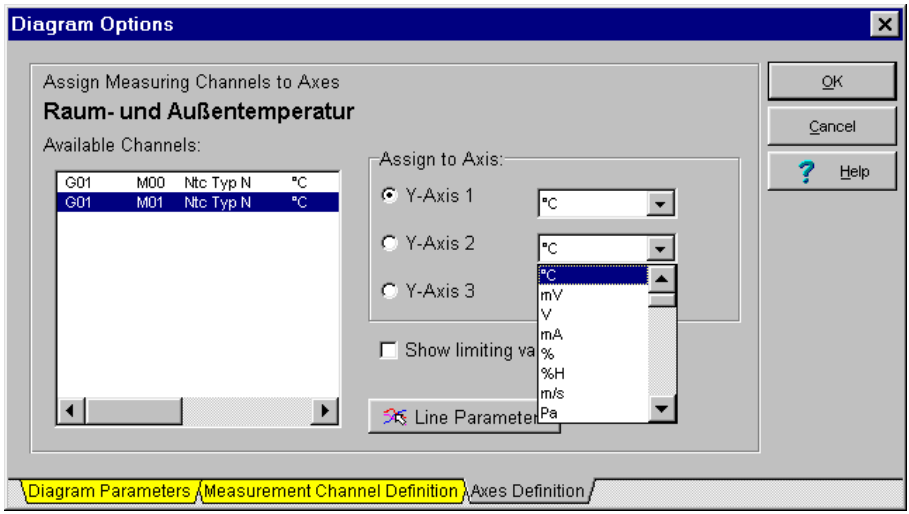
To **remove** channels from a diagram, click the desired channels on the right window then click the arrow button going to the left to remove these channels from the diagram.

Note:: You may also activate this function by double clicking a diagram title or via the local menu.

Defining an Axis

Select in the main menu **Diagram** the item **Axes Definition**, to choose a Y-axis for the Y/t or X/Y diagram. The corresponding diagram must be active.

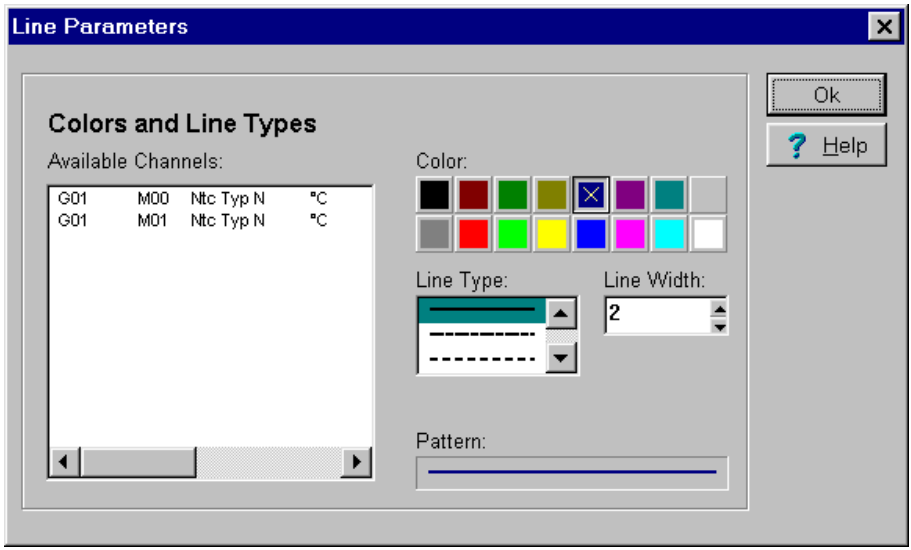
A maximum of three Y-axes at a time may be shown in a diagram. A selection box displays all possible units. Activate **Show limiting values** to show values defined as limits in the channel table.



Note: The function Axes Definition is only available for the Y/t and X/Y-diagrams. **Digital monitoring diagrams, function display panel, column monitoring diagrams and statistic diagrams have no Y-axes**.

Setting of Line Parameters

Via the item **Line Parameter** in the main menu **Diagram**, you may get into the dialog box for the line parameters. Here you may set for each measurement line the color, line type, and line width. Select a line on the left window and modify the corresponding line parameter by clicking with the left mouse button.

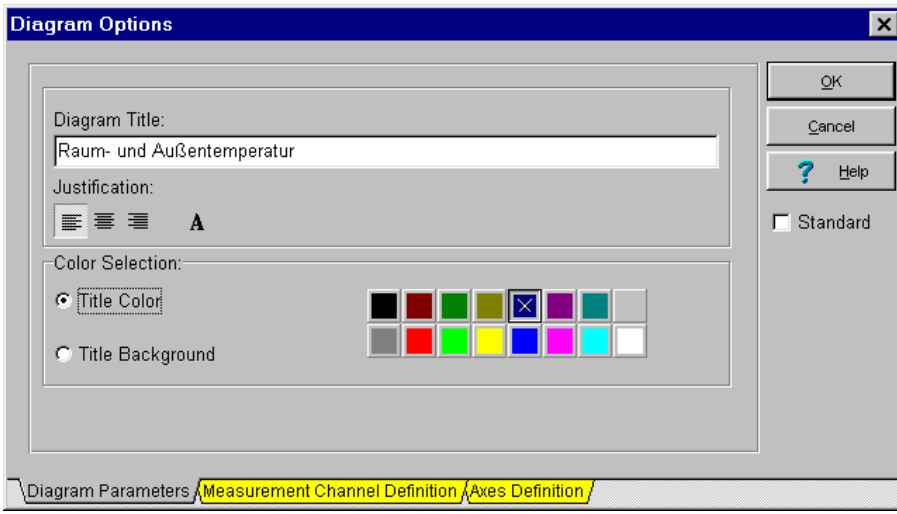


The line parameters are also available via this button in the toolbar.

Note: The function Line Parameter is only available for the Y/t and X/Y-diagrams. **The digital monitoring diagrams, function display panel, the column monitoring diagrams and statistic diagrams have no Y-axes**.

Setting of Diagram Parameters

To modify diagram title, text color, text background color, font type and text justification, choose in the main menu **Diagram** the item **Diagram Parameter**.

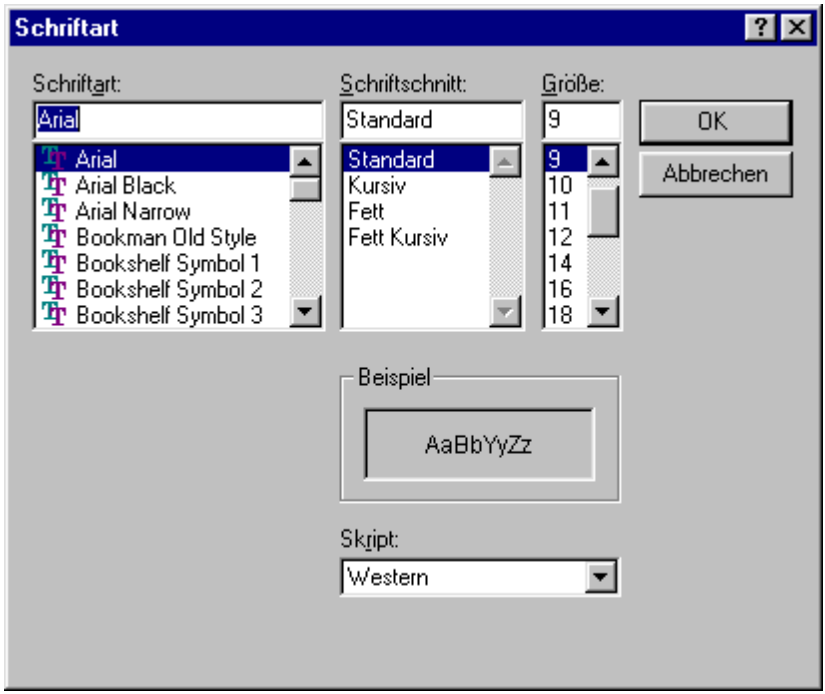


Text **left justified**

Text **centered**

Text **right justified**

Opens the selection menu to change the **Font Type** for the available font types (**Optional**).

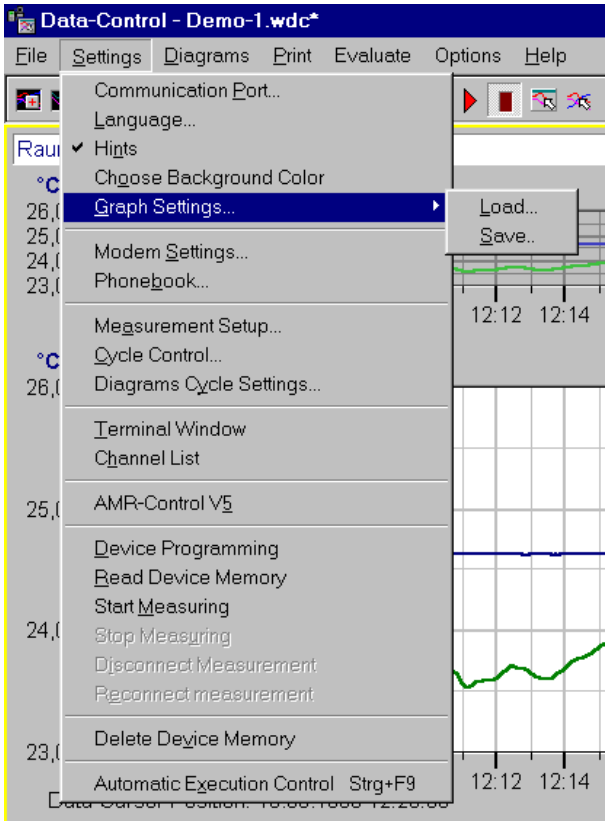


The diagram parameters may be activated via this button in the tool bar.

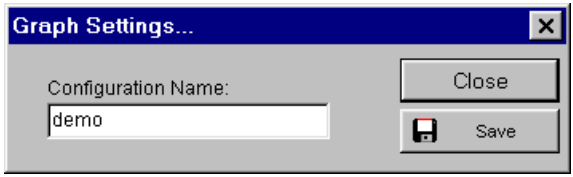
If this button in the tool bar is active, current diagram settings will be copied to other diagram.

Load / Save Diagram Parameters

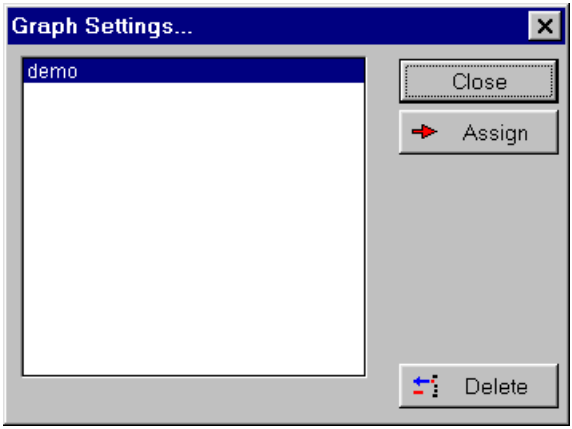
For the Y/t-diagram, the settings may be saved. Select in the main menu **Settings** the item **Graph Settings**, to save or to load your diagram parameters.



Choose in the sub-menu item **Save** and enter a name for the current parameter configuration. The settings will be filed in dia.ini program directory.



Select your desired parameter configuration via the sub-menu item **Load**.



closes the selection window.

assigns the selected settings to the current Y/t-diagram.

deletes the chosen diagram settings.

Arranging Diagrams / Deleting / Copying to the memory clipboard

copy the current diagram to the clipboard

Changes from a diagram partial view to an entire screen view.

Arranges your diagrams in tiles on the screen optimally.

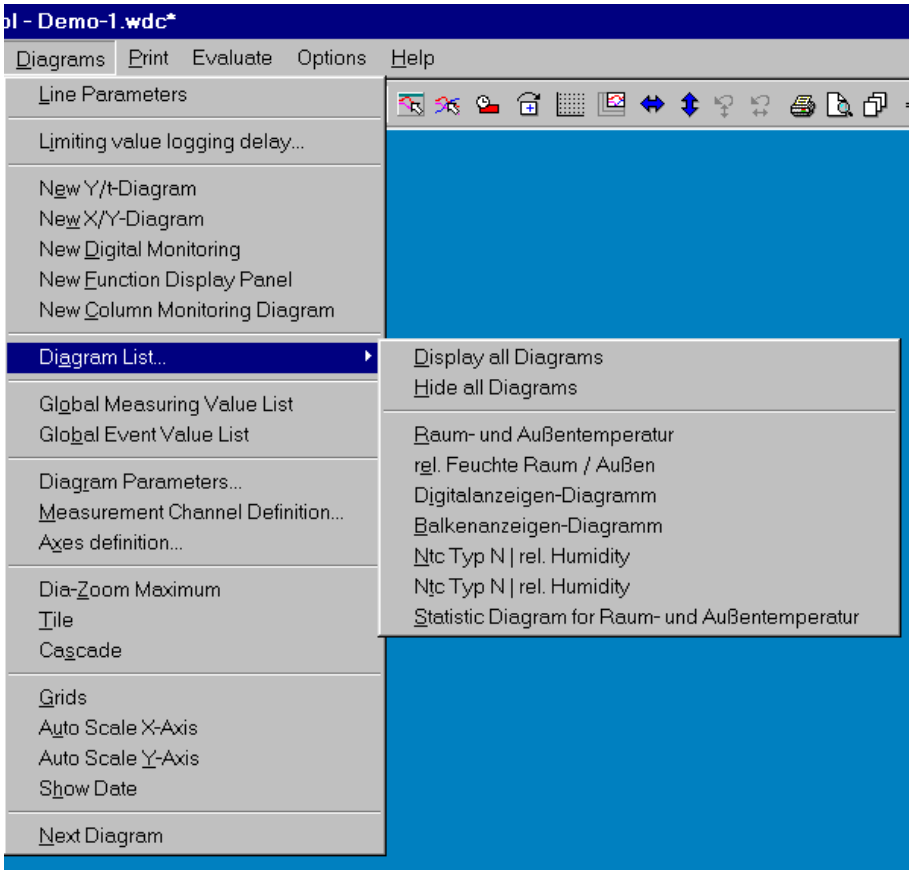
Arranges the diagrams on screen in cascade.

Scrolls from one diagram to the other.

Diagrams display On/Off / scale down / delete

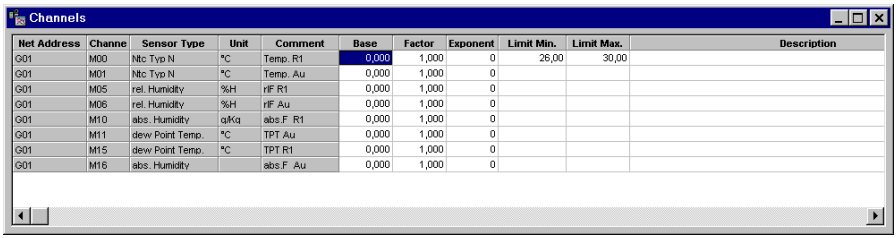
The diagrams may be displayed On/Off, scaled down and deleted in analogy to normal windows functions.

To display a diagram again, select in the main menu **Diagrams** the item **Diagram List**. Here you may either display On/Off all diagrams or just a single diagram on the screen again.



Channel list

You may have the list of channels permanently displayed at your monitor. Choose hereby the command **Channel List** in the main menu **Settings**. The table list shown above with the current connected channels will be displayed. The table list remains active for all setting steps within the program, until it is again turned off.



Net Address	Channe	Sensor Type	Unit	Comment	Base	Factor	Exponent	Limit Min.	Limit Max.	Description
G01	M00	Ntc Typ N	°C	Temp. R1	0,000	1,000	0	26,00	30,00	
G01	M01	Ntc Typ N	°C	Temp. Au	0,000	1,000	0			
G01	M05	rel. Humidity	%H	rlF R1	0,000	1,000	0			
G01	M06	rel. Humidity	%H	rlF Au	0,000	1,000	0			
G01	M10	abs. Humidity	g/Kg	abs.F R1	0,000	1,000	0			
G01	M11	dew Point Temp.	°C	TPT Au	0,000	1,000	0			
G01	M15	dew Point Temp.	°C	TPT R1	0,000	1,000	0			
G01	M16	abs. Humidity		abs.F Au	0,000	1,000	0			

The Fields of the Channels List

Net Address: Network address of each device, same as in the device table
Channel: Measuring channel number of the connected sensor (starting with M..) or formula channel number (starting with F..)
Sensor Type: factory name of the sensor
Unit: physical unit of the sensor
Comments: text consisting of 10 characters programmed in the ALMEMO-plug of the sensor
Base: pre-defined base value of the sensor
Factor: pre-defined factor of the sensors
Exponent: pre-defined exponent of the sensors
Limit Min: lower limit, displayed if programmed in the ALMEMO-plug
Limit Max: upper limit, displayed if programmed in the ALMEMO-plug
Description: Text box for user specifications
Formula: Formula name of the formula channels

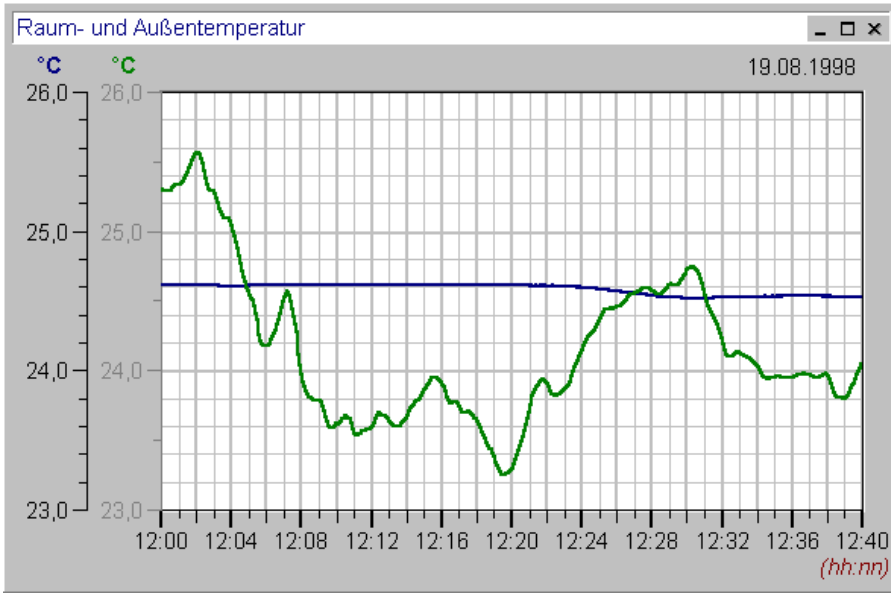
All white highlighted fields in the channel table may be shown with the scroll bar. Some fields may be modified. Possibilities hereto are described in detail in the **Measurement Setup** and **Sensor Programming**.

To modify the **Column Width**, click the column title border, hold the left mouse button pressed and move to the desired width.

The Y/t-Diagram

The Y/t-Diagram in Partial View

Select in the main menu **Diagrams** the item **New Y/t-Diagram** and assign your desired channels. The Y/t-diagram appears in this **Partial View,** if you chart historic data - already recorded and stored data. By clicking and moving the border or corner of the diagram with the mouse, you may modify the diagram size.



To show a **Part** of your measurement and evaluation data in an enlarged form, move the mouse in the diagram, press and hold the left mouse until you have the desired diagram section, then release the mouse. The selected diagram part will be shown in its enlarged view.

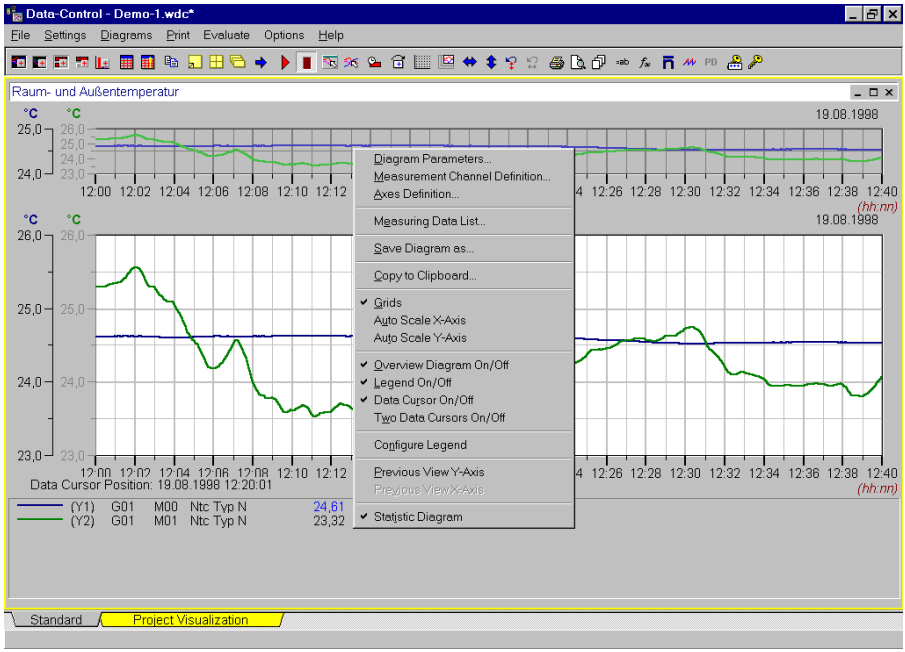
A double click at the **Axes Labels** opens a control box, where you can enter the exact limits of the diagram section in the Y- and X-direction. Using the arrow keys in the toolbar, you may scale back the Y- and the X-axes to its maximum values.

Other **Diagram Parameters** may be activated by double clicking the diagram title with the left mouse button.

creates a new Y/t-Diagram via the tool bar.

Further details are described with the **Entire Screen View** of the diagram in the next pages. For explanations of further functions of the diagrams during the **ONLINE-measurement**, please refer to the corresponding chapters in this manual.

The Y/t-Diagram in Entire Screen View



Press this button in the tool bar for an **Entire Screen View** or choose in main menu **Diagram** the command **Dia-Zoom to Maximum**. Pressing this button again will turn the diagram view back to its original size.

- The **Measurement Data Segment** in the middle shows your desired range of measurement data.
- The **Overview Diagram** shows the complete measurement data. The measurement data segment is high-lightened in the overview diagram. This overview may be switched ON/OFF via local menu.
- The **Legend** below contains detail information to the measurement lines. You may switch the legend ON/OFF via local menu and you may configure the graph.
- To position the **data cursor** please click with the left mouse key your desired area in the measurement data segment. The data cursor may be switch ON/OFF via the local menu. If you choose the option **two data cursors**, you will obtain in the legend evaluation of both values.

- The **Local Menu** related to this diagram may be activated by clicking the right mouse button.
- The **Date** may be switched ON/OFF via the command **Show Date** in main menu **Settings**.

The Measurement Data Segment in Y/t-Diagram

To select and to enlarge a **Measurement Data Segment**, move the mouse in the diagram, press and hold, then move the left mouse button until you have the desired diagram segment. The selected diagram segment will be shown in its enlarged view. At the same time the high-lightened diagram segment in the overview diagram changes accordingly.

Scales back the **X-Axis to maximum** (Autoscale X-Axis)

Scales back the **Y-Axis to maximum** (Autoscale Y-Axis)

Switches the **Grid** ON/OFF. You may also switch the grid ON/OFF via **Local Menu**

Auto-Zoom switches to **fixed Zoom-Mode**

Previous view Y-Axis

Previous view X-Axis

Via the local menu you may retrieve your **last applied settings** of the X- and Y-axes. If you modify the measurement data segment during the measurement process, the program sets for every new measurement data recording the actual segment again. If you want to evaluate, you must hold the diagram using the pause-key.

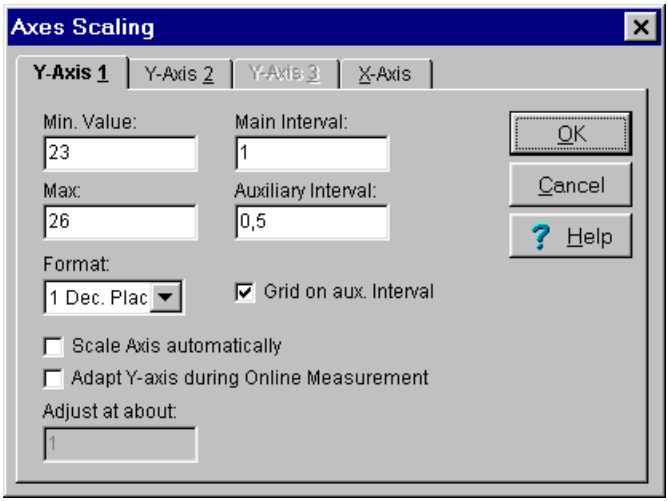
On the toolbar you may set with the button Auto-Zoom a **fixed Zoom-Mode for Y/t-Diagrams**. If this mode is turned on, the display of the local menu is turned off. A double click with the mouse activates an auto-zoom in the following steps

Year	1 h
Month	10 min
Week	1 min
Day	10 s
12 h	1 s
6 h	

By double click with the **left mouse button**, the zoom segment will be scaled down, by double click with the **right mouse button**, the zoom segment will be scaled up.

Scaling the Y-Axis in Y/t-Diagram

The measurement data segment of the Y-Axes may be set exactly as follows: A double click with the left mouse button at the Y- or X-axes labels of the diagram, opens the dialog box **Axes Scaling**.



Select a **Y-Axis** and enter the desired limits manually for your diagram.

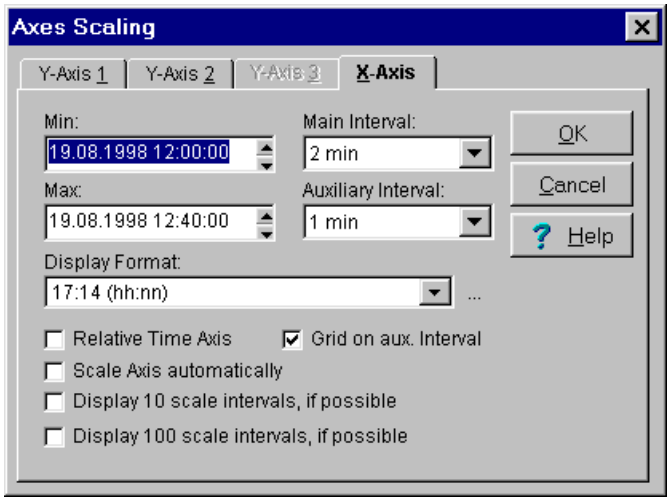
Enter the interval for the graduation of the Y-Axis. The **Main Interval** marks the distance from one value to the next on the Y-Axis. The **Auxiliary Interval** divides the main interval into its corresponding subdivisions. The main intervals are labeled, the auxiliary intervals are not. Activate the **Grids on the auxiliary interval** to create additional grid lines.
For the **Format** of the values on the axes you may choose from 0 to 4 decimal places or you may choose the exponential form.

Activating the option **Axis automatic scaling**, the program calculates the main and auxiliary intervals automatically with respect to the Axis limit. The values cannot be modified by the user.

Activating the **Y-Axis Adjustment during online measurement**, will automatically adjust the axis of the current channel in the diagram at a value set in **Adjust at about**, if the measuring values go out of the previous range.

Scaling the X-Axis in Y/t-Diagram

The measurement data segment of the X-Axis may be set exactly as follows: A double click with the left mouse button at the Y- or X-axes labels of the diagram, opens the dialog box **Axes Scaling.**



Select the **X-Axis** and enter the desired limits for your diagram manually or scroll the corresponding arrow buttons. Choose the interval for the graduation of the X-Axis from the interval boxes. The **Main Interval** marks the distance of one value to the next on the X-axis.

The **Auxiliary Interval** divides the main interval into its corresponding subdivisions. The main intervals are labeled, the auxiliary intervals are not. Activate the **Grids on the auxiliary interval** to create additional grid lines. If needed switch ON the additional options 10^{th}-graduations or 100^{th}-graduations. Main and auxiliary interval are adjustable to the following values:

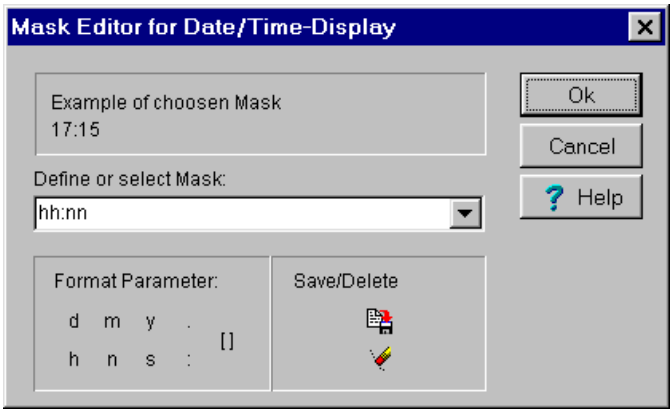
1 s	10 min
2 s	15 min
5 s	20 min
10 s	30 min
15 s	1 h
20 s	2 h
30 s	6 h
1 min	12 h
2 min	1 day
5 min	

If the **relative time axis** is active, the diagram sets the chosen values to 00:00:00 hours. The date is no longer active. For periods greater than 24 hours the program will show the number of days passed and time, written day/time, e.g. 1/00:00:00. In the **measurement data list** the relative data are also listed.

Activating the option **Axis automatic scaling**, the program calculates the main and auxiliary intervals automatically with respect to the Axis limit. The values cannot be modified by the user.

Select one of the predefined **Display Formats** for the axes marking. The button

opens the dialog-box for the individual time format on the X-Axis.



Select the desired **time format** for the X-Axis. The selected format will be shown as example and appears on the diagram. With the **Format Parameters** you may generate your individual format. Choose one from the parameter box by clicking with the left mouse button. The corresponding format appears on the display box.

These symbols are defined as follows:

d	Day
m	Month
y	Year
h	Hour
n	Minute
s	Second
.	(Separator)
:	(Separator)
[ ]	Blank

The format parameters have the following definition:

d	represent the day as a number without zero preceding (1-31).
dd	represent the day as a number with zero preceding (01-31)
ddd	represent the day as abbreviation (Sun-Sat).
dddd	represent the day with its whole name (Sunday-Saturday).
m	represent the month as a number without zero preceding (1-12). If m is directly followed by h or hh the minutes will be displayed instead of the month.
mm	represent the month as a number with zero preceding (01-12). If mm is directly followed by h or hh the minutes will be displayed instead of the month.
mmm	represent the month as abbreviation (Jan-Dec).
mmmm	represent the month with its whole name (January-December).
yy	represent the year in 2 digits (00-99).
yyyy	represent the year in 4 digits (0000-9999).
h	represent the hour without zero preceding (0-23).
hh	represent the hour with zero preceding (00-23).
n	represent the minute without zero preceding (0-59).
nn	represent the minute with zero preceding (00-59).
s	represent the seconds without zero preceding (0-59).
ss	represent the seconds with zero preceding (00-59).

All others are represented in its entry form.

saves the displayed time format

deletes the displayed time format

The Overview Diagram of Y/t-Diagram

The **overview diagram** is only valid for Y/t-diagrams. You may switch the Overview Diagram ON/OFF via **local menu**.

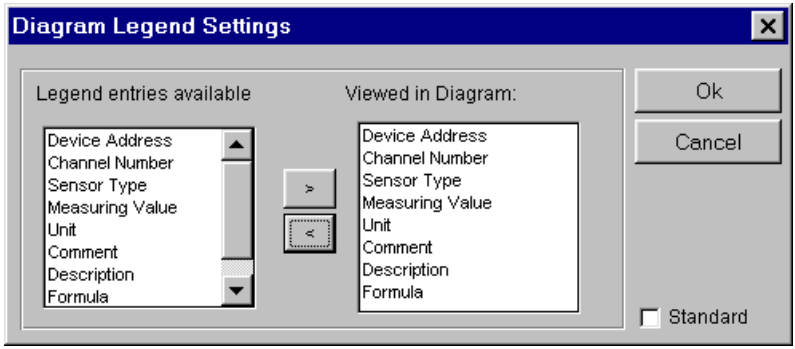
In the Overview Diagram is the entire measurement range displayed. The current selected data section is high-lightened. Click with the left mouse button in the overview diagram and draw a boundary square to choose a different or another data section. The new selected section will be displayed in the measuring data segment.

The Legend of Y/t-Diagram

The **Legend** may be switched ON/OFF via **local menu**.

The legend contains detail information about the measurement lines such as line type, measuring device, channel, measurement values at the measuring cursor and description.

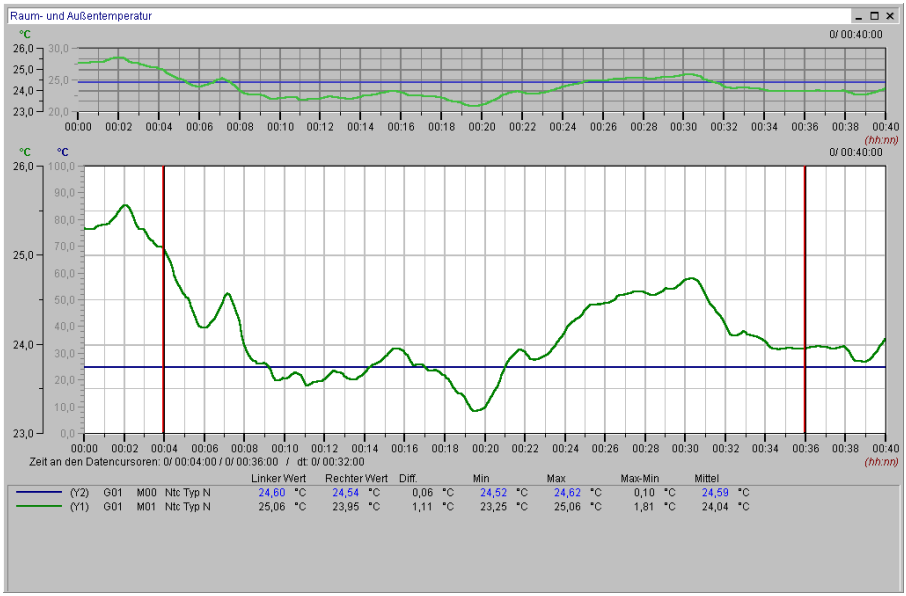
A double click with the left mouse button in the measuring data segment resets the **Data cursor**. The corresponding measurement values of each measurement lines appear in the legend as numbers with the assigned units. The measuring cursor is valid only for Y/t-diagram and disappears in the measuring data segment, if the legend is turned off.



The legend is configurable. Activate with the right mouse button within the diagram the local menu. In the menu item **configure legend,** you may select the information needed. Choose the option standard, if you wish to have your last settings as standard in the future.

The second data cursor of the Y/t-Diagram

The **second data cursor** may be switch ON/OFF via the **local menu**. Instead of one data cursor in the diagram, two data cursors will be displayed.



The legend covers first of all general information about the measurement lines like line type, measuring devices, measurement channels and sensor designations.

Then the measurement values on both data cursor are shown and also the difference between the two measurement values. Furthermore the program calculates the minimal-, maximal- and the mean value of the channels between the two cursors and the difference of the minimal- and maximal values and charts it on the diagram.

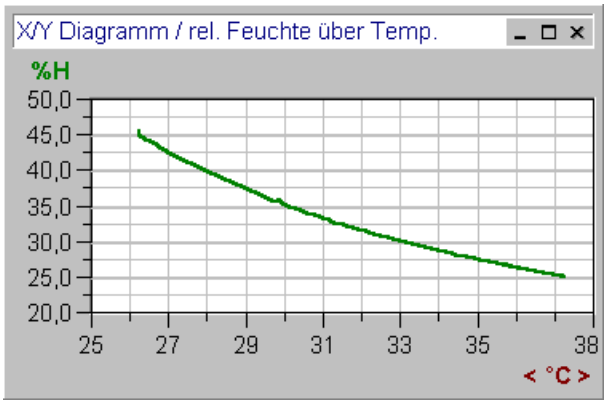
If you wish to **move one of the data cursor**, direct the mouse to the cursor and hold the left mouse button pressed while moving. The corresponding measurement values of each measurement lines will be displayed in the legend as numbers with the corresponding unit.

Note:: The data cursor is available only for the Y/t-diagram and disappears from the measurement data segment, if you switch off the legend or the data cursor via the local menu.

The X/Y-Diagram

The X/Y-Diagram in Partial View

Select in the main menu **Diagrams** the item **New X/Y-Diagram** and assign your desired channels. The X/Y-Diagram appears in this **Partial View**, if you chart historic data - already recorded and stored data. By clicking and moving the border or corner of the diagram with the mouse, you may modify the diagram size.



To show a **Part** of your measurement and evaluation data in an enlarged form, move the mouse in the diagram, press and hold the left mouse until you have the desired diagram section, then release the mouse. The selected diagram part will be shown in its enlarged view.

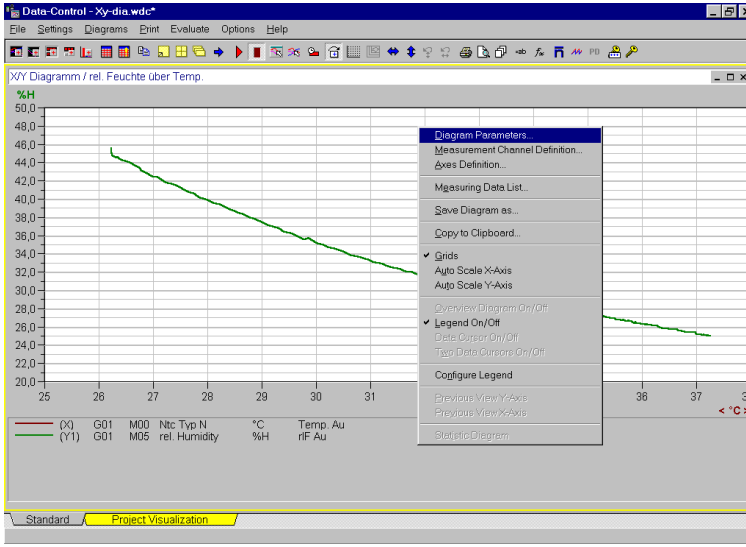
A double click at the **Axes Labels** opens a control box, where you can enter the exact limits of the diagram section in the Y- and X-direction. Using the arrow keys in the toolbar, you may scale back the Y- and the X-axes to its maximum values.

Other **Diagram Parameters** may be activated by double clicking the diagram title with the left mouse button.

creates a new X/Y-Diagram via the tool bar.

Further details are described together with the **Entire Screen View** of the diagram in the next pages. For explanations of further functions of the diagrams during the **ONLINE-measurement**, please refer to the corresponding chapters in this manual.

The X/Y-Diagram in Entire Screen View



Press this button in the tool bar for an **Entire Screen View** or choose in menu **Diagram** the command **Dia-Zoom to Maximum**. Pressing this button again will turn the diagram view back to its original size.

- The **Measurement Data Segment** shows your desired range of measurement data.
- The **Legend** below contains detail information to the measurement lines. You may switch the legend ON/OFF via local menu and you may configure the diagram.
- The **Local Menu** related to this diagram may be activated by clicking the right mouse button.

The Measurement Data Segment in X/Y-Diagram

To select and to enlarge a **Measurement Data Segment**, move the mouse in the diagram, press and hold then move the left mouse button until you have the desired diagram segment. The selected diagram segment will be shown in its enlarged view.

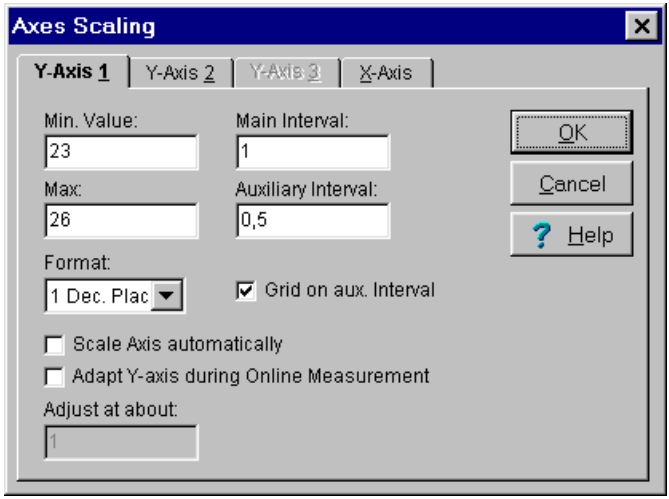
Scales back the **X-Axis to maximum** (Autoscale X-Axis).

Scales back the **Y-Axis to maximum** (Autoscale Y-Axis).

Switches the **Grid** ON/OFF. You may also switch the grid ON/OFF via **Local Menu**.

Scaling the Y-Axis in X/Y-Diagram

The measurement data segment of the Y-Axes may be set exactly as follows: A double click with the left mouse button at the Y- or X-axes labels of the diagram, opens the dialog box **Axes Scaling.**



Select a **Y-Axis** and enter the desired limits manually for your diagram.

Enter the interval for the graduation of the Y-Axis. The **Main Interval** marks the distance from one value to the next on the Y-Axis. The **Auxiliary Interval** divides the main interval into its corresponding subdivisions. The main intervals are labeled, the auxiliary intervals are not. Activate the **Grids on the auxiliary interval** to create additional grid lines.

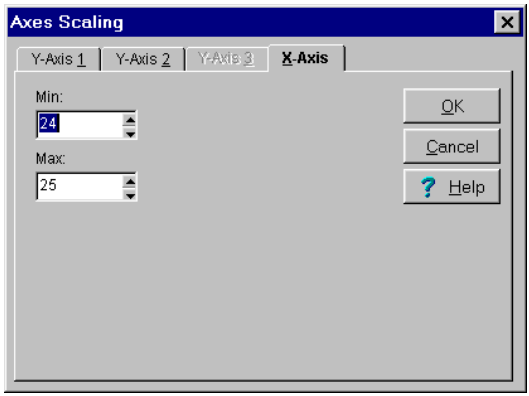
For the **Format** of the values on the axes you may choose from 0 to 4 decimal places or you may choose the exponential form.

Activating the option **Axis automatic scaling**, the program calculates the main and auxiliary intervals automatically with respect to the Axis limit. The values cannot be modified by the user.

Activating the **Adapt Y-Axis during online measurement**, will automatically adjust the axis of the current channel in the diagram at a value set in **Adjust at about**, if the measuring values go out of the previous range.

Scaling the X-Axis in X/Y-Diagram

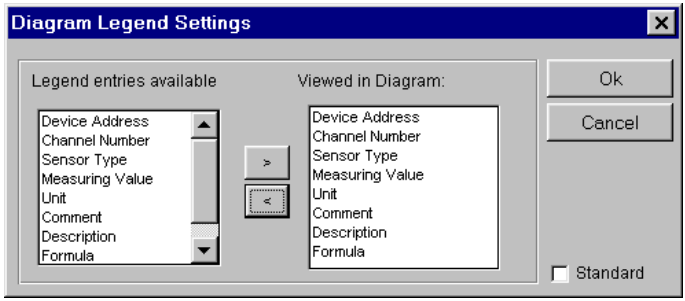
The measurement data segment of the X-Axis may be set exactly as follows: A double click with the left mouse button at the Y- or X-axes labels of the diagram, opens the dialog box **Axes Scaling.**



Select the **X-Axis** and enter the desired limits manually for your diagram. After all modifications are done press OK to confirm and to enter these changes.

The Legend of X/Y-Diagram

The **legend** may be switched ON/OFF via **local menu** and may also be configured. The Legend contains detail information about the measurement lines such as line type, measuring device, channel and description.



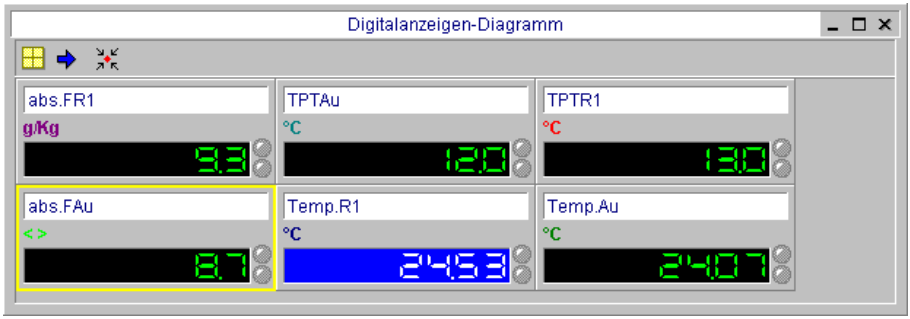
The legend is configurable. Activate with the right mouse button within the diagram the local menu. In the menu item **configure legend,** you may select the information needed. Choose the option standard, if you wish to have your last settings as standard in the future.

The Digital Monitoring Diagram

Diagram Functions

The **Digital Monitoring Diagram** is used for Online-Visualization of measurement values during the measuring process (trend display) . It could also be used to activate historic data, but it however displays arbitrary value.

Select in the main menu **Diagrams** the item **New Digital Monitoring** and assign your desired channels.



creates a **New Digital Monitoring** via the tool bar.

Press this button in the tool bar for an **Entire Screen View** or choose in menu **Diagram** the command **Dia-Zoom to Maximum**. Pressing this button again will turn the diagram view back to its original size.

The functions of the buttons in the tool bar within the diagram area are:

Positions your digital display optimal within the display area.

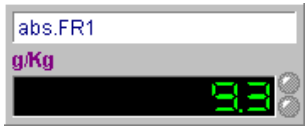
Changes from one digital display to the next display.

Fits your diagram area optimal to the channels to be displayed.

To change the **Settings of the Digital Monitoring Diagrams** just double click the diagram title with the left mouse button. The dialog box with diagram options appears. Here you may change your diagram parameter settings and your measurement channel definition. This function is available via button in the tool bar in the main menu and in the local menu.

The Single Digital Display

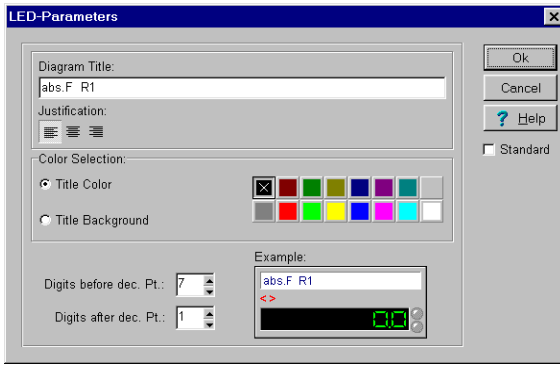
In the **single digital display** the current measurement value is digitally shown.



If the measurement value exceeds the upper limit, the digital display turns to red, if the value is below the lower limit, the display turns to blue. If no exceeding of limits, the display remains green. The upper LED-indicating lamp signalizes a **Sensor Rupture**. The lower LED- indicating lamp signalizes **limit exceeds**. For the exact function of the single digital display in ONLINE-measurement process, please refer to the corresponding chapters in this manual.

Single Digital Display Formatting

To modify the **settings of the digital display**, double click with the left mouse button the title of the digital display. The dialog box LED-Parameters appears. Here, you may modify the title of the digital display, text color, text background color and text justifications. The number of digits before the decimal point is limited to a maximum of 8. The number of displayed digits after the decimal point is restricted to a maximum of 2.



Text left justified

Text centered

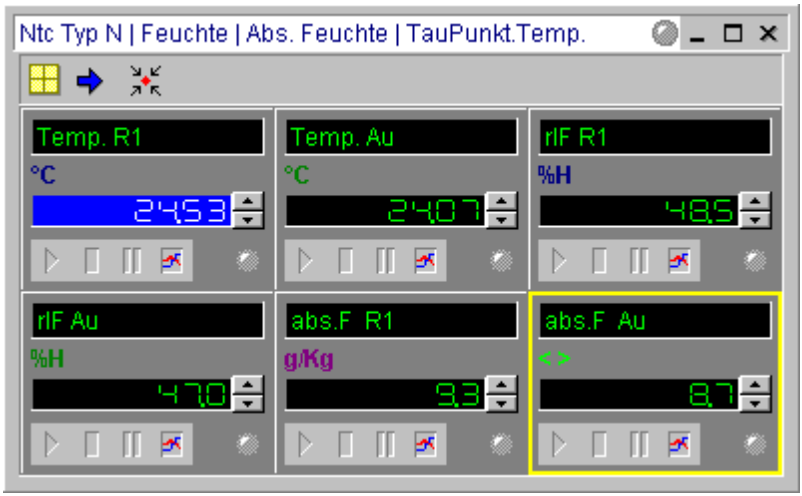
Text right justified

Note: Modification of the **Diagram Title** is valid only for the current measurement and will be overwritten with data stored in the sensor if the program is started again.

The Function Display Panel (Option OP-PANEL/ALARM)

Diagram Functions

The **function display panel** is used for Online-Visualization of measurement values during the measuring process (trend display). It could also be used to activate historic data, but it however displays arbitrary value. Select in the main menu **Diagrams** the menu item **new Function Display Panel** and assign your desired channels.



creates a **new Function Display Panel** via toolbar.

Press this button in the tool bar for the **Entire Screen View** or choose in the menu **Diagrams** the command **Dia-Zoom to Maximum**. Pressing this button again will turn the diagram view back to its original size.

The functions of the buttons in the tool bar within the function display panel are:

Positions your digital display optimal within the display area.

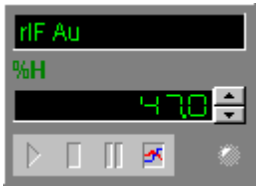
Changes from one digital display to the next display.

Fits your diagram area optimal to the channels to be displayed.

To change **Settings of the Function Display Panel** just double click the diagram title with the left mouse button. The dialog box with diagram options appears. Here you may change your diagram parameter settings and your measurement channel definition. This function is available via button in the tool bar in the main menu and in the local menu.

The Single Function Display

In the single **channel display** the actual measurement value is displayed digitally.

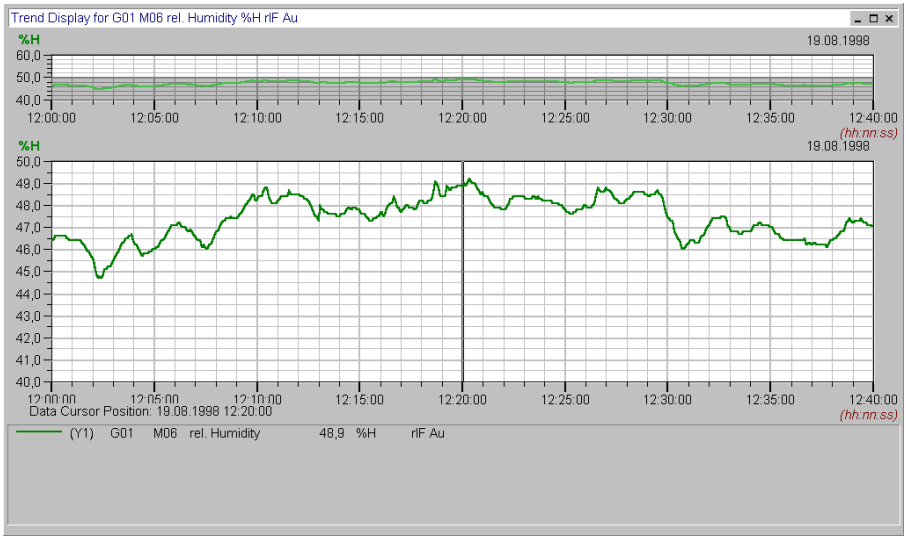


The first three buttons are in ONLINE-measuring process active. The fourth button opens a Y/t – diagram for this channel. About the exact function of the single display in ONLINE-measuring process please refer to the corresponding chapters in this manual..

The LED-display signalizes several information. To display the **limiting values** please hold the arrow buttons pressed.

Trend Display in the Function Display Panel

The trend display in the function display panel is a Y/t-Diagram for each channel.

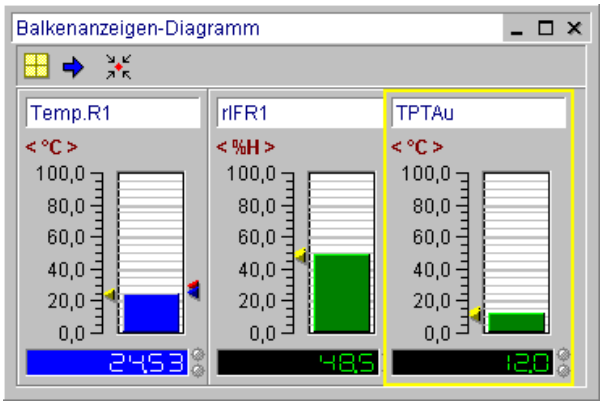


Note: The **Function scope for the trend display-diagram** corresponds exactly to a manually generated Y/t-Diagram. About the function details please refer to the corresponding chapter in this manual.

The Column Monitoring Diagram

Diagram Functions

The **Column Monitoring Diagram** is used for Online-Visualization of measurement values during the measuring process (trend display). It could also be used to activate historic data, but it however displays arbitrary value. Select in the main menu **Diagrams** the item **New Column Monitoring** and assign your desired channels.



creates a New Column Monitoring via the tool bar.

Press this button for an **Entire Screen View** or choose in menu **Diagram** the command **Dia-Zoom to Maximum**. Pressing this button again will turn the diagram view back to its original size.

The buttons in the toolbar within the diagram area are:

Positions your column display optimal within the display area.

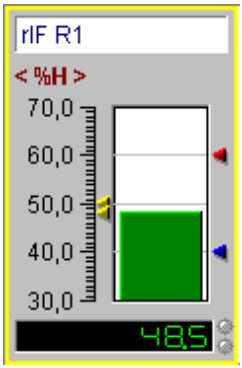
Changes from one column display to the next display.

Fits your diagram area optimal to the channels to be displayed.

To change the **Settings of the Column Monitoring Diagrams** just double click the diagram title with the left mouse button. The dialog box with diagram options appears. Here you may change your diagram parameter settings and your measurement channel definition. This function is available via button in the tool bar in the main menu and in the local menu.

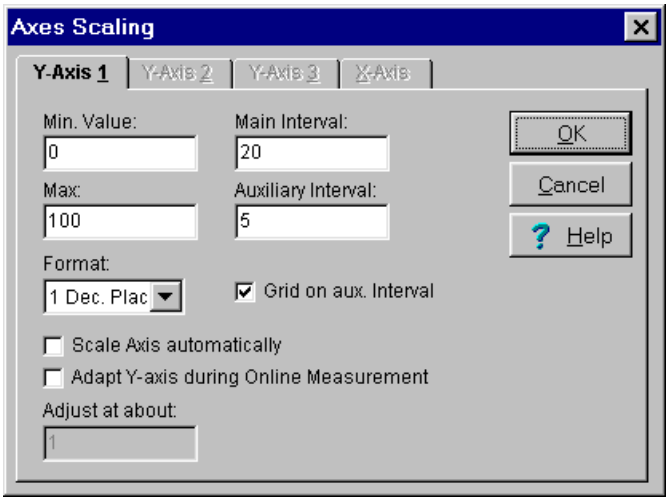
The Single Column Display

In the **single column display** the arrows left of column indicate the highest and the lowest measuring value. The current measuring value is digitally shown. The two arrows right of the column correspond to the upper and lower limits programmed in the sensor.



If the measurement value exceeds the upper limit, the column color turns to red, if the value is below the lower limit, the column turns to blue. If no exceeding of limits, the columns remain green. The upper LED-indicating lamp signalizes a **Sensor Rupture**. The lower LED- indicating lamp signalizes **limit exceed**. About the exact function of each display during the ONLINE-measuring process please refer to the corresponding chapter of this manual.

To set the **display range of the column scale**, double click with the left mouse button on the axes labels. This opens the dialog box Axes Scaling. Enter here your desired diagram limits manually.



Enter the interval for the graduation of the Y-Axis. The **Main Interval** marks the distance from one value to the next on the Y-Axis. The **Auxiliary Interval** divides the main interval into its corresponding subdivisions. The main intervals are labeled, the auxiliary intervals are not. Activate the **Grids on the auxiliary interval** to create additional grid lines.

For the **Format** of the values on the axes you may choose from 0 to 4 decimal places or you may choose the exponential form.

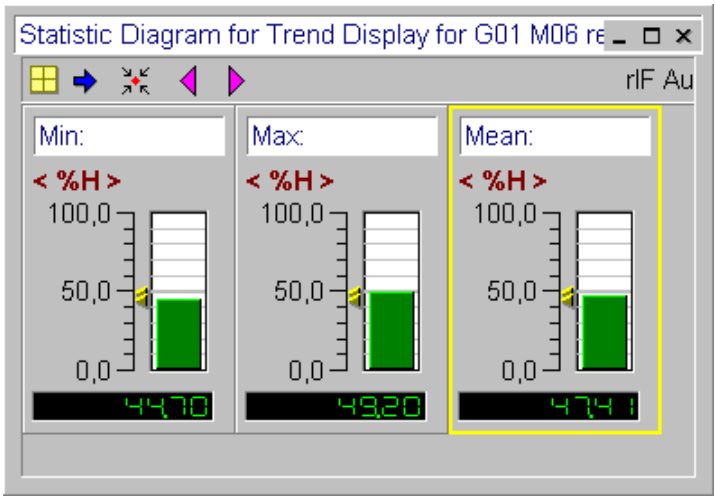
Activating the option **Axis automatic scaling**, the program calculates the main and auxiliary intervals automatically with respect to the Axis limit. The values cannot be modified by the user.

Activating the **Adapt Y-Axis during online measurement**, will automatically adjust the axis of the current channel in the diagram at a value set in **Adjust at about**, if the measuring values go out of the previous range.

The Statistic Diagram

Diagram Functions

The **Statistic Diagram** contains the minimum, maximum and mean value of a measurement line in a Y/t-diagram. **The diagram can only be created from an active Y/t diagram. To do so, click an existing Y/t diagram activate the „local menu“ with the right mouse button** and create your desired statistic diagram.



Press this button in the tool bar for an **Entire Screen View** or choose in menu „Diagram“ the command „Dia-Zoom to Maximum“. Pressing this button again will turn the diagram view back to its original size.

The buttons in the toolbar within the diagram are:

Positions your statistic display optimal within the display area.

Changes from one statistic display to the next display.

Fits your diagram area optimal to the statistic diagram to be displayed.

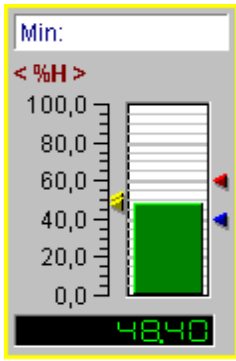
Previous measurement channel of the Y/t-diagram

Next measurement channel of the Y/t-diagram

To change the **Settings of the Statistic Diagram** just double click the diagram title with the left mouse button. The dialog box with diagram options appears. Here you may change your diagram parameter settings and your measurement channel definition. This function is available via button in the tool bar in the main menu and in the local menu.

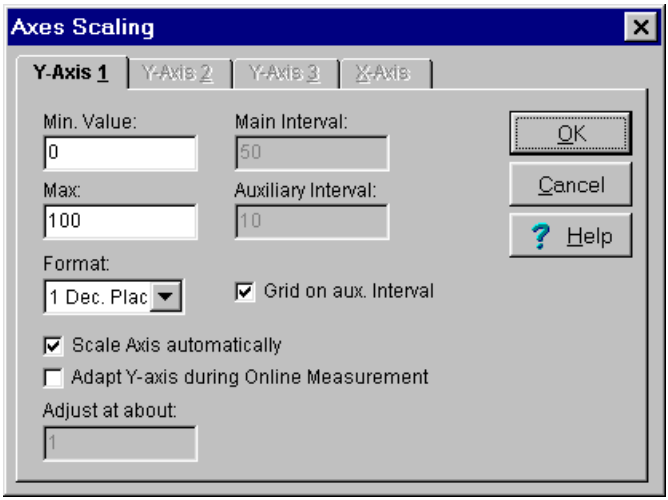
The Single Column Display of the Statistic Diagram

In the **single column display** the arrows left of column indicate the highest and the lowest measuring value. The current measuring value is digitally shown. The two arrows right of the column correspond to the upper and lower limits programmed in the sensor.



If the measurement value exceeds the upper **limit**, the column color turns to red, if the value is below the lower limit, the column turns to blue. If no exceeding of limits, the columns remain green.

To set the display range of the statistic scale, double click with the left mouse button on the axes labels. This opens the dialog box **Axes Scaling**. Enter here your desired diagram limits manually.



Enter the interval for the graduation of the Y-Axis. The **Main Interval** marks the distance from one value to the next on the Y-Axis. The **Auxiliary Interval** divides the main interval into its corresponding subdivisions. The main intervals are labeled, the auxiliary intervals are not. Activate the **Grids on the auxiliary interval** to create additional grid lines.

For the **Format** of the values on the axes you may choose from 0 to 4 decimal places or you may choose the exponential form.

Activating the option **Axis automatic scaling**, the program calculates the main and auxiliary intervals automatically with respect to the Axis limit. The values cannot be modified by the user.

Activating the **Y-Axis Adjustment during online measurement**, will automatically adjust the axis of the current channel in the diagram at a value set in **Adjust at about**, if the measuring values go out of the previous range.

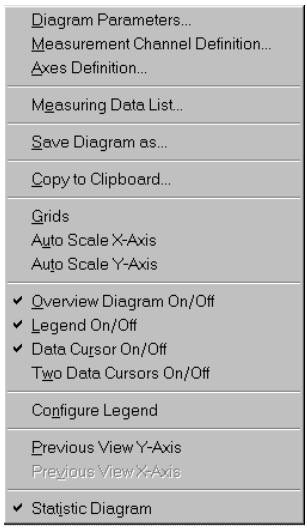
Note: Through a double click at the column in the diagram the column will automatically be scaled to ±10% of the actual measuring value.

The local Menu (Context menu of diagrams)

For every diagram is a **Local Menu** available. The diagram functions may be executed comfortably. Just activate with the **right mouse** button.

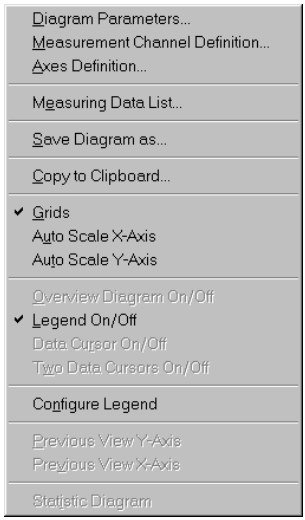
For a **Y/t-Diagram**, the following functions are available in the local menu:

- Measurement Channel Definition
- Axes Definition
- Measuring Data List
- Save Diagram
- Copy current diagram to the clipboard
- Grids ON/OFF
- Auto scaling X-Axis
- Auto scaling Y-Axis
- Overview Diagram ON/OFF
- Legend ON/OFF
- Data Cursor ON/OFF
- Two Data Cursor ON/OFF
- Configure Legend
- Previous view Y-Axis
- Previous view X-Axis
- Statistic Diagram



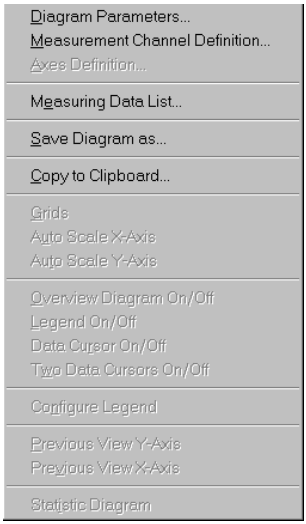
For a **X/Y-Diagram**, only the following high-lightened functions are available:

- Diagram Parameter
- Measurement Channel Definition
- Axes Definition
- Measuring Data List
- Save Diagram
- Copy current diagram to the clipboard
- Grids ON/OFF
- Auto scale X-Axis
- Auto scale Y-Axis
- Legend ON/OFF
- Configure Legend



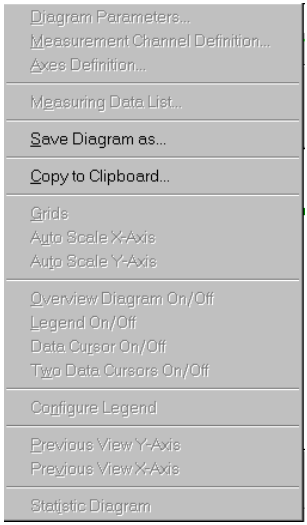
For a **Digital Monitoring Diagram, for a Function Display -Panel or for a Column Monitoring Diagram**, only the following high-lightened functions are available:

- Diagram Parameter
- Measurement Channel Definition
- Measuring Data List
- Save Diagram
- Copy current diagram to the clipboard



For a **Statistic Diagram** only the high-lightened function are available in the local menu.

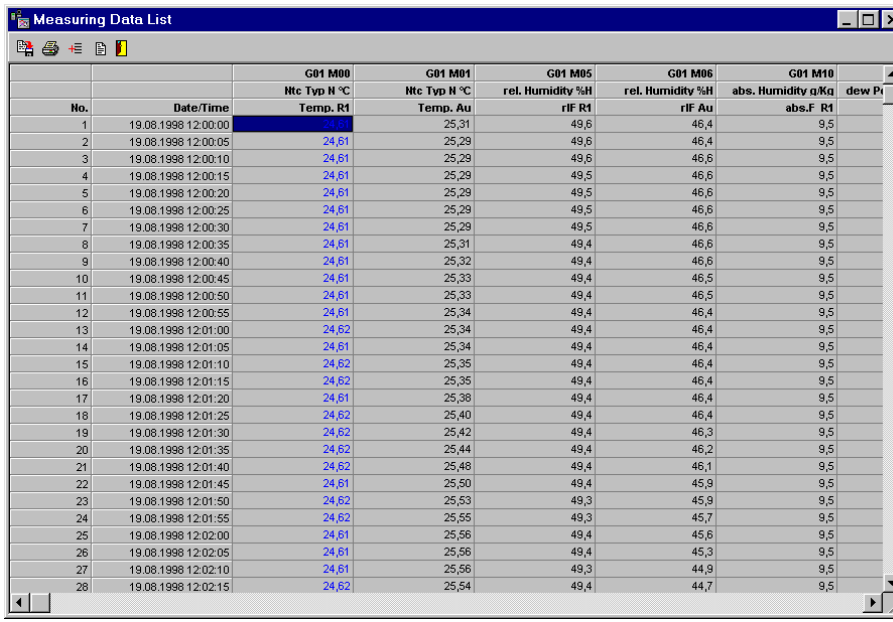
- Save Diagram
- Copy current diagram to the clipboard



The Measuring Data Lists

The Global Measuring Data List

The program shows in the measuring data list all measuring data in a single list. Select in the main menu **Diagrams** the menu item **global measurement value list**, to write down all up to this point recorded measuring data in a single list. The measurement values are arranged according to **absolute time relation** (date and time).



		G01 M00	G01 M01	G01 M05	G01 M06	G01 M10	
		Ntc Typ N °C	Ntc Typ N °C	rel. Humidity %H	rel. Humidity %H	abs. Humidity g/Kg	dew P
No.	Date/Time	Temp. R1	Temp. Au	rlF R1	rlF Au	abs.F R1	
1	19.08.1998 12:00:00	24,61	25,31	49,6	46,4	9,5	
2	19.08.1998 12:00:05	24,61	25,29	49,6	46,4	9,5	
3	19.08.1998 12:00:10	24,61	25,29	49,6	46,6	9,5	
4	19.08.1998 12:00:15	24,61	25,29	49,5	46,6	9,5	
5	19.08.1998 12:00:20	24,61	25,29	49,5	46,6	9,5	
6	19.08.1998 12:00:25	24,61	25,29	49,5	46,6	9,5	
7	19.08.1998 12:00:30	24,61	25,29	49,5	46,6	9,5	
8	19.08.1998 12:00:35	24,61	25,31	49,4	46,6	9,5	
9	19.08.1998 12:00:40	24,61	25,32	49,4	46,6	9,5	
10	19.08.1998 12:00:45	24,61	25,33	49,4	46,5	9,5	
11	19.08.1998 12:00:50	24,61	25,33	49,4	46,5	9,5	
12	19.08.1998 12:00:55	24,61	25,34	49,4	46,4	9,5	
13	19.08.1998 12:01:00	24,62	25,34	49,4	46,4	9,5	
14	19.08.1998 12:01:05	24,61	25,34	49,4	46,4	9,5	
15	19.08.1998 12:01:10	24,62	25,35	49,4	46,4	9,5	
16	19.08.1998 12:01:15	24,62	25,35	49,4	46,4	9,5	
17	19.08.1998 12:01:20	24,61	25,38	49,4	46,4	9,5	
18	19.08.1998 12:01:25	24,62	25,40	49,4	46,4	9,5	
19	19.08.1998 12:01:30	24,62	25,42	49,4	46,3	9,5	
20	19.08.1998 12:01:35	24,62	25,44	49,4	46,2	9,5	
21	19.08.1998 12:01:40	24,62	25,48	49,4	46,1	9,5	
22	19.08.1998 12:01:45	24,61	25,50	49,4	45,9	9,5	
23	19.08.1998 12:01:50	24,62	25,53	49,3	45,9	9,5	
24	19.08.1998 12:01:55	24,62	25,55	49,3	45,7	9,5	
25	19.08.1998 12:02:00	24,61	25,56	49,4	45,6	9,5	
26	19.08.1998 12:02:05	24,61	25,56	49,4	45,3	9,5	
27	19.08.1998 12:02:10	24,61	25,56	49,3	44,9	9,5	
28	19.08.1998 12:02:15	24,62	25,54	49,4	44,7	9,5	

With this button in the tool bar you may likewise activate the **global measurement value list**.

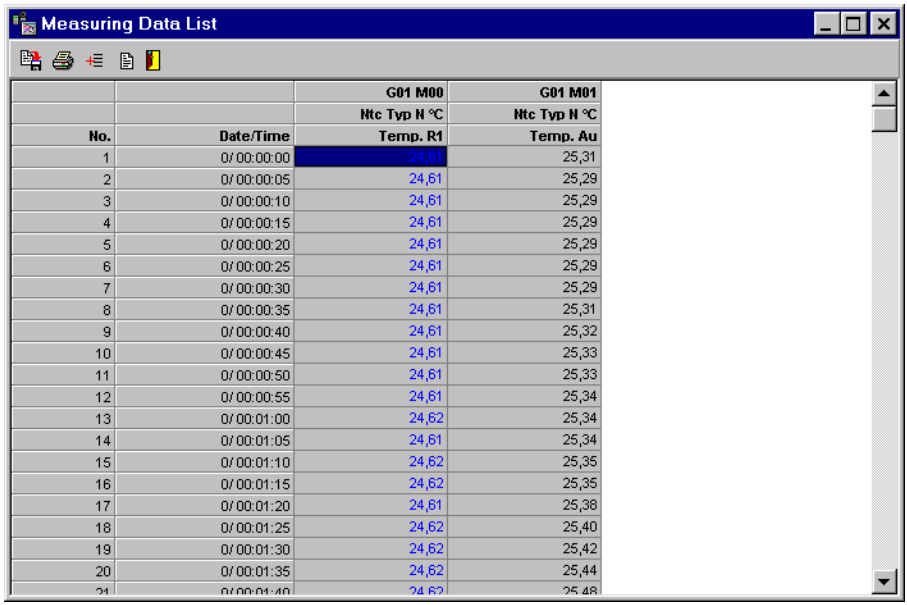
The Local Measuring Data List with Absolute Time Relation

In the local measuring data list, the program shows the measuring data of the actual chosen diagram. Set as standard is the local measuring data list with absolute time relation.

If you activate the measuring data list via the local menus of the diagram (with exception of the statistic diagram), you obtain the **local measuring data list with absolute time relation**. Each of this contains only the measuring values of all channels of the actual diagram with date and time of the measurement.

The Local Measuring Data List with Relative Time Relation

From the Y/t-Diagram you may additionally create a measuring data list with **relative measuring Date/Time**. To do so activate the option relative time axis in the X-axis scale. This list always starts at 00:00 hours and has no date display. This option allows you to display measuring series simultaneously if only the measuring progression is relevant and not the measuring time.



		G01 M00	G01 M01
		Ntc Typ N °C	Ntc Typ N °C
No.	Date/Time	Temp. R1	Temp. Au
1	0/ 00:00:00	24,61	25,31
2	0/ 00:00:05	24,61	25,29
3	0/ 00:00:10	24,61	25,29
4	0/ 00:00:15	24,61	25,29
5	0/ 00:00:20	24,61	25,29
6	0/ 00:00:25	24,61	25,29
7	0/ 00:00:30	24,61	25,29
8	0/ 00:00:35	24,61	25,31
9	0/ 00:00:40	24,61	25,32
10	0/ 00:00:45	24,61	25,33
11	0/ 00:00:50	24,61	25,33
12	0/ 00:00:55	24,61	25,34
13	0/ 00:01:00	24,62	25,34
14	0/ 00:01:05	24,61	25,34
15	0/ 00:01:10	24,62	25,35
16	0/ 00:01:15	24,62	25,35
17	0/ 00:01:20	24,61	25,38
18	0/ 00:01:25	24,62	25,40
19	0/ 00:01:30	24,62	25,42
20	0/ 00:01:35	24,62	25,44
21	0/ 00:01:40	24,62	25,48

Note: This option is valid only for Y/t-Diagrams and not for other diagram types!

Functions of the Measuring Data List

The Buttons in the tool bar of the measuring data list are:

Exports data from the measuring data list in EXCEL- or ASCII-Format

Prints table

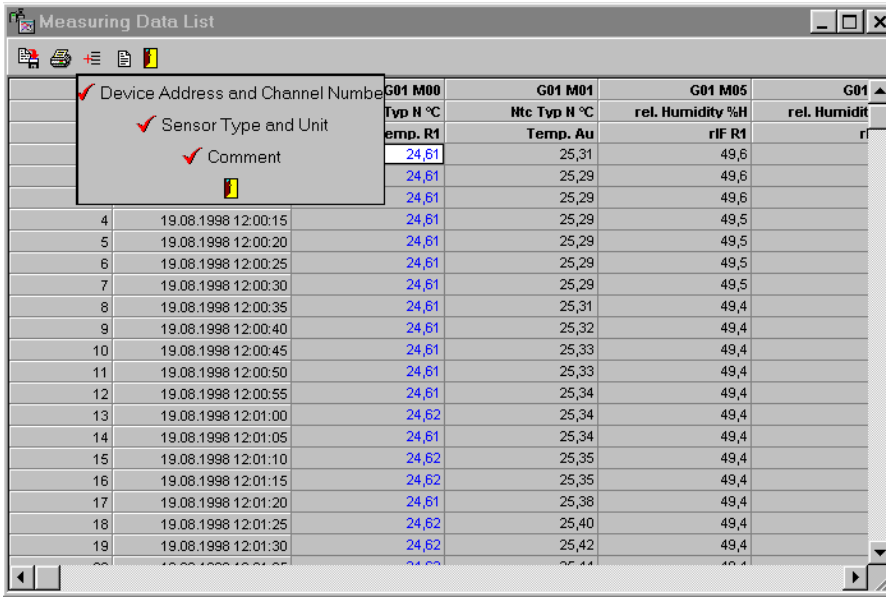
Selects column title

Enters text for output

Exits measuring data list

Editing Column Heading in the Measuring Data List

Press the button **Column Heading** in the tool bar of the **measuring data list** to choose from the displayed column headings. Activate or deactivate the corresponding headings with the left mouse button.

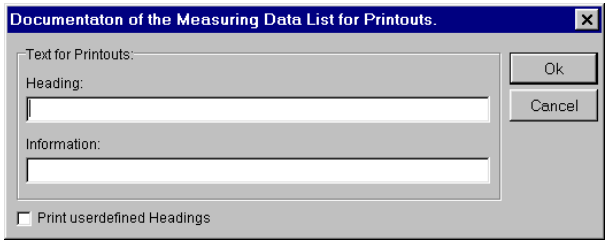


		24,61	25,31	49,6	
		24,61	25,29	49,6	
		24,61	25,29	49,6	
4	19.08.1998 12:00:15	24,61	25,29	49,5	
5	19.08.1998 12:00:20	24,61	25,29	49,5	
6	19.08.1998 12:00:25	24,61	25,29	49,5	
7	19.08.1998 12:00:30	24,61	25,29	49,5	
8	19.08.1998 12:00:35	24,61	25,31	49,4	
9	19.08.1998 12:00:40	24,61	25,32	49,4	
10	19.08.1998 12:00:45	24,61	25,33	49,4	
11	19.08.1998 12:00:50	24,61	25,33	49,4	
12	19.08.1998 12:00:55	24,61	25,34	49,4	
13	19.08.1998 12:01:00	24,62	25,34	49,4	
14	19.08.1998 12:01:05	24,61	25,34	49,4	
15	19.08.1998 12:01:10	24,62	25,35	49,4	
16	19.08.1998 12:01:15	24,62	25,35	49,4	
17	19.08.1998 12:01:20	24,61	25,38	49,4	
18	19.08.1998 12:01:25	24,62	25,40	49,4	
19	19.08.1998 12:01:30	24,62	25,42	49,4	

Note: To modify the displayed **Column Width** in the table, point the mouse at the border of the column and move the column border with the pressed left mouse button to your desired width.

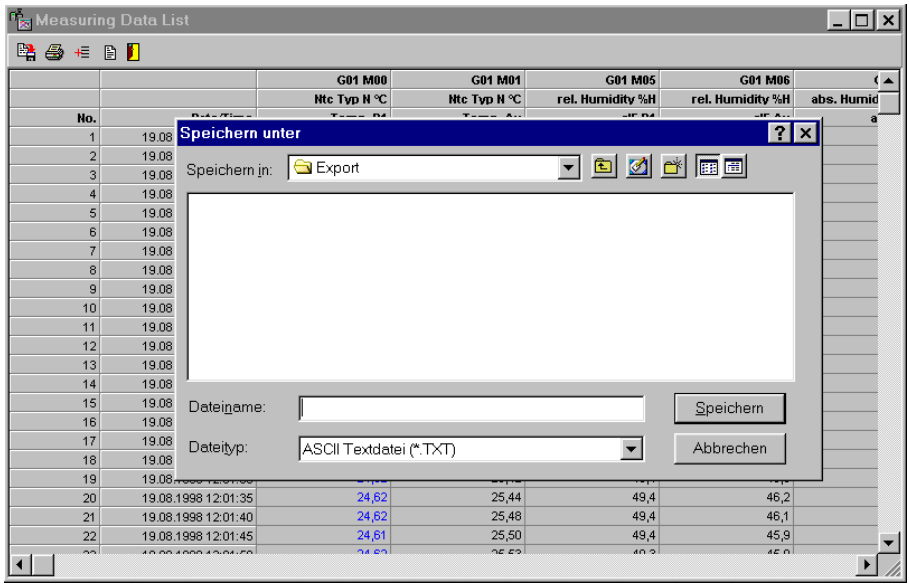
Data Entry for the Documentation of the Measuring Data List

To enter **data for the documentation of the output of the measuring data list,** , press the data entry button. A dialog box appears where you may enter the heading or title of the list and other additional information. If the option user-defined heading is active, this information will then be printed out.



Exporting Data from the Measuring Data List

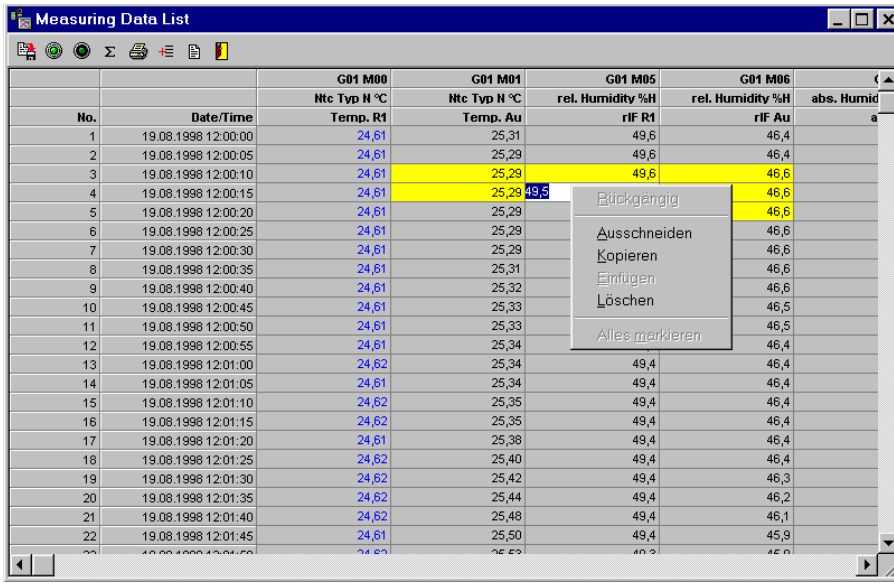
To **export data from the measuring data list**, press the export button and select your desired export format. Enter in the text box the directory and the file name. At present export formats available are EXCEL- and ASCII-Format.



Extended Functions of the Measuring Data List (Option OP-EMWL)

The measuring data list can be optionally delivered with additional functions .

- Measuring value display ON/OFF (row-wise, column-wise, individually)
- Measuring value process manually, individually
- Measuring value recalculate automatically(row-wise, column-wise, individually)



		G01 M00	G01 M01	G01 M05	G01 M06	
		Ntc Typ N °C	Ntc Typ N °C	rel. Humidity %H	rel. Humidity %H	abs. Humid
No.	Date/Time	Temp. R1	Temp. Au	rlF R1	rlF Au	a
1	19.08.1998 12:00:00	24,61	25,31	49,6	46,4	
2	19.08.1998 12:00:05	24,61	25,29	49,6	46,4	
3	19.08.1998 12:00:10	24,61	25,29	49,6	46,6	
4	19.08.1998 12:00:15	24,61	25,29	49,5	46,6	
5	19.08.1998 12:00:20	24,61	25,29		46,6	
6	19.08.1998 12:00:25	24,61	25,29		46,6	
7	19.08.1998 12:00:30	24,61	25,29		46,6	
8	19.08.1998 12:00:35	24,61	25,31		46,6	
9	19.08.1998 12:00:40	24,61	25,32		46,6	
10	19.08.1998 12:00:45	24,61	25,33		46,5	
11	19.08.1998 12:00:50	24,61	25,33		46,5	
12	19.08.1998 12:00:55	24,61	25,34		46,4	
13	19.08.1998 12:01:00	24,62	25,34	49,4	46,4	
14	19.08.1998 12:01:05	24,61	25,34	49,4	46,4	
15	19.08.1998 12:01:10	24,62	25,35	49,4	46,4	
16	19.08.1998 12:01:15	24,62	25,35	49,4	46,4	
17	19.08.1998 12:01:20	24,61	25,38	49,4	46,4	
18	19.08.1998 12:01:25	24,62	25,40	49,4	46,4	
19	19.08.1998 12:01:30	24,62	25,42	49,4	46,3	
20	19.08.1998 12:01:35	24,62	25,44	49,4	46,2	
21	19.08.1998 12:01:40	24,62	25,48	49,4	46,1	
22	19.08.1998 12:01:45	24,61	25,50	49,4	45,9	

The additional functions may be activated via buttons in the tool bar. The functions of these buttons are:

Measuring value display ON

Measuring values display OFF

Measuring value recalculate

Activate/deactivate Measuring values

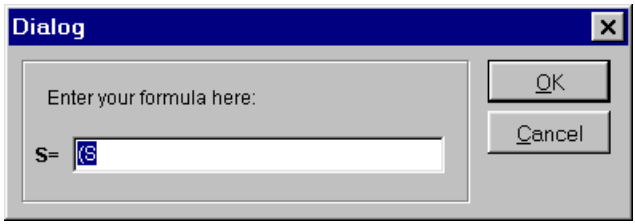
- If you wish to **activate/deactivate** your measurement series **row-wise**, click with the left mouse button the corresponding row in the field number or date. The measuring values of the chosen row will be colored red. Press the corresponding button for deactivating in the tool bar. The measuring values are then turned OFF and are colored yellow. To turn ON the values again which were previously turned OFF, mark the corresponding measuring values and then press the turn ON button.
- If you wish to **activate/deactivate** your measurement series **column-wise**, click with the left mouse button the corresponding column in the column heading. The measuring values of the chosen column will be colored red. Press the corresponding button for deactivating in the tool bar. The measuring values are then turned OFF and are colored yellow. To turn ON the values again which were previously turned OFF, mark the corresponding measuring values and then press the turn ON button
- If you wish to **activate/deactivate single values**, double click with the left mouse button the corresponding value. The measuring value is then turned OFF and colored yellow. Double clicking the measuring value again will turn the value ON..
- To **activate/deactivate the whole table**, click with the left mouse button the upper left area of the table and then press the corresponding buttons.

Manual processing of a single measuring values

- To **modify single values in the measuring data list**, click a value with the left mouse button twice. Then you may directly overwrite the value. You may also activate here a processing menu with the right mouse button.

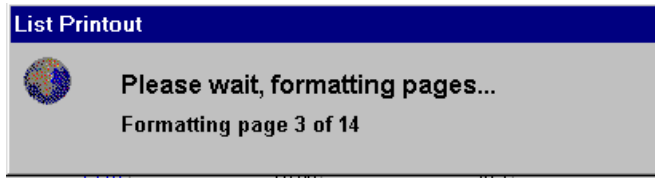
Recalculate measuring values automatically

- To **recalculate data in the measuring data list**, click the corresponding row or column or the single value with the left mouse button once. Then select the button for the recalculation. A dialog box pop-out for the formula entry.
- Enter here your formula. The **actual measuring value is predefined with S** and must be contained in the formula, if you want to modify the value. For the correct formulation and entry of the formula, please refer to the chapter formula entry in this manual.

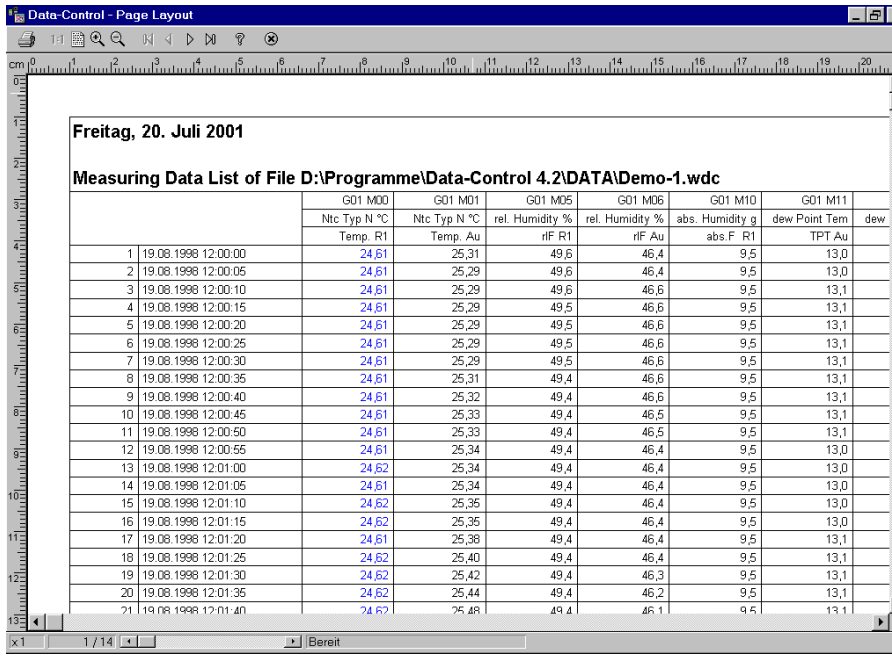


Printing Measuring Data List

Press the button **Print Table** to print the displayed measuring data list as a table. This hint box appears.



Finally an evaluation view opens where you may print your table.



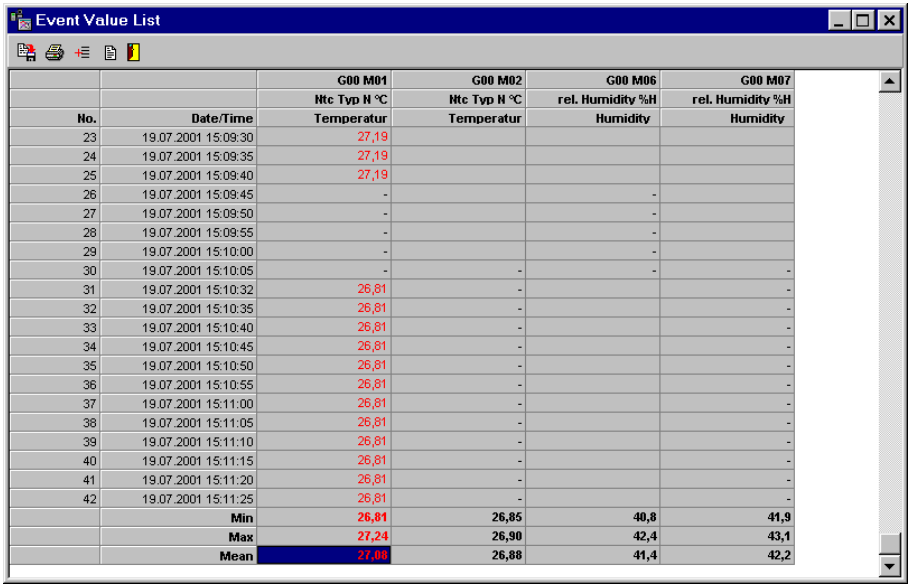
		G01 M00	G01 M01	G01 M05	G01 M06	G01 M10	G01 M11	
		Ntc Typ N °C	Ntc Typ N °C	rel. Humidity %	rel. Humidity %	abs. Humidity g	dew Point Tem	dew
		Temp. R1	Temp. Au	rlF R1	rlF Au	abs.F R1	TPT Au	
1	19.08.1998 12:00:00	24,61	25,31	49,6	46,4	9,5	13,0	
2	19.08.1998 12:00:05	24,61	25,29	49,6	46,4	9,5	13,0	
3	19.08.1998 12:00:10	24,61	25,29	49,6	46,6	9,5	13,1	
4	19.08.1998 12:00:15	24,61	25,29	49,5	46,6	9,5	13,1	
5	19.08.1998 12:00:20	24,61	25,29	49,5	46,6	9,5	13,1	
6	19.08.1998 12:00:25	24,61	25,29	49,5	46,6	9,5	13,1	
7	19.08.1998 12:00:30	24,61	25,29	49,5	46,6	9,5	13,1	
8	19.08.1998 12:00:35	24,61	25,31	49,4	46,6	9,5	13,1	
9	19.08.1998 12:00:40	24,61	25,32	49,4	46,6	9,5	13,1	
10	19.08.1998 12:00:45	24,61	25,33	49,4	46,5	9,5	13,1	
11	19.08.1998 12:00:50	24,61	25,33	49,4	46,5	9,5	13,1	
12	19.08.1998 12:00:55	24,61	25,34	49,4	46,4	9,5	13,0	
13	19.08.1998 12:01:00	24,62	25,34	49,4	46,4	9,5	13,0	
14	19.08.1998 12:01:05	24,61	25,34	49,4	46,4	9,5	13,0	
15	19.08.1998 12:01:10	24,62	25,35	49,4	46,4	9,5	13,0	
16	19.08.1998 12:01:15	24,62	25,35	49,4	46,4	9,5	13,0	
17	19.08.1998 12:01:20	24,61	25,38	49,4	46,4	9,5	13,1	
18	19.08.1998 12:01:25	24,62	25,40	49,4	46,4	9,5	13,1	
19	19.08.1998 12:01:30	24,62	25,42	49,4	46,3	9,5	13,1	
20	19.08.1998 12:01:35	24,62	25,44	49,4	46,2	9,5	13,1	
21	19.08.1998 12:01:40	24,62	25,48	49,4	46,1	9,5	13,1	

The Event List

The global Event list

The program displays in the global event list only the measuring data where an event occurred (limit value violation, sensor rupture). All measuring points with normal values are displayed off., so that you may obtain a quick overview about the time, the event occurred.

Select in the main menu **Diagrams** the item **Global Event List**, to display this overview. The measuring values are sorted according to the **absolute time relation** (date and time).



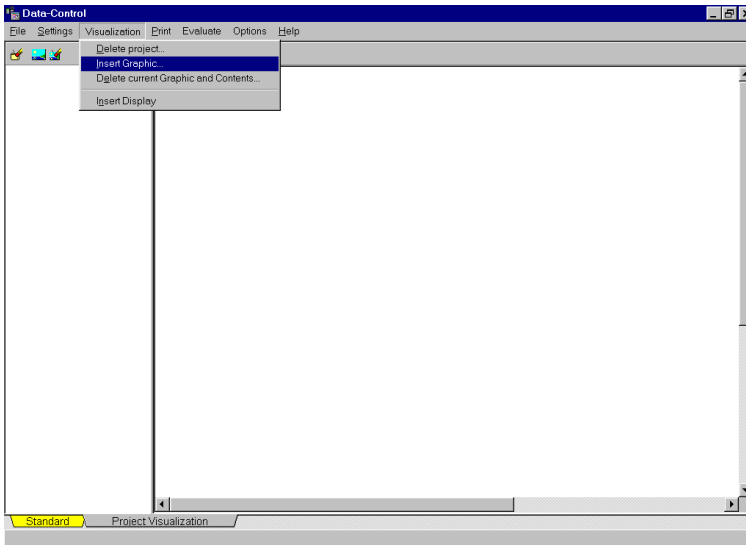
		G00 M01	G00 M02	G00 M06	G00 M07
		Ntc Typ N °C	Ntc Typ N °C	rel. Humidity %H	rel. Humidity %H
No.	Date/Time	Temperatur	Temperatur	Humidity	Humidity
23	19.07.2001 15:09:30	27,19			
24	19.07.2001 15:09:35	27,19			
25	19.07.2001 15:09:40	27,19			
26	19.07.2001 15:09:45	-		-	
27	19.07.2001 15:09:50	-		-	
28	19.07.2001 15:09:55	-		-	
29	19.07.2001 15:10:00	-		-	
30	19.07.2001 15:10:05	-	-	-	-
31	19.07.2001 15:10:32	26,81	-		-
32	19.07.2001 15:10:35	26,81	-		-
33	19.07.2001 15:10:40	26,81	-		-
34	19.07.2001 15:10:45	26,81	-		-
35	19.07.2001 15:10:50	26,81	-		-
36	19.07.2001 15:10:55	26,81	-		-
37	19.07.2001 15:11:00	26,81	-		-
38	19.07.2001 15:11:05	26,81	-		-
39	19.07.2001 15:11:10	26,81	-		-
40	19.07.2001 15:11:15	26,81	-		-
41	19.07.2001 15:11:20	26,81	-		-
42	19.07.2001 15:11:25	26,81	-		-
	Min	26,81	26,85	40,8	41,9
	Max	27,24	26,90	42,4	43,1
	Mean	27,08	26,88	41,4	42,2

with this button in the toolbar, you may as well activate the **global Event List**.

The Project Visualization (Option OP-VISU)

The Project Overview

For the visualization of measuring tasks, the program offers you the possibility to structure your measurement setup with graphic files in bitmap-Format (suffix *.BMP). To use this function go to the register **Project Visualization**. The display switches over and in the menu bar the menu visualization appears. Here you may choose your graphic and the measuring points with digital display to be shown in the project overview.



Delete Project

Insert Graphic

Delete current graphic and contents

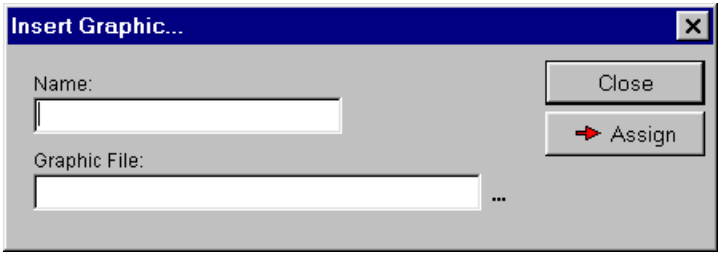
Insert display

Insert Graphic

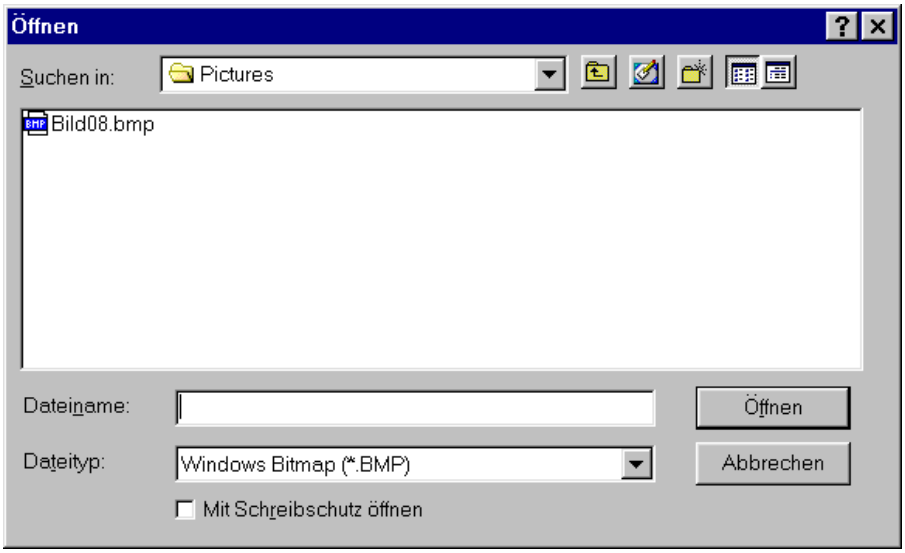
First step is to choose the menu item **Insert graphic** or press the button

Insert Graphic

The following dialog-box appears. Enter in the field **Name** the name under which this equipment is to be administrated. This name appears in the structure tree of the display and cannot be modified anymore.



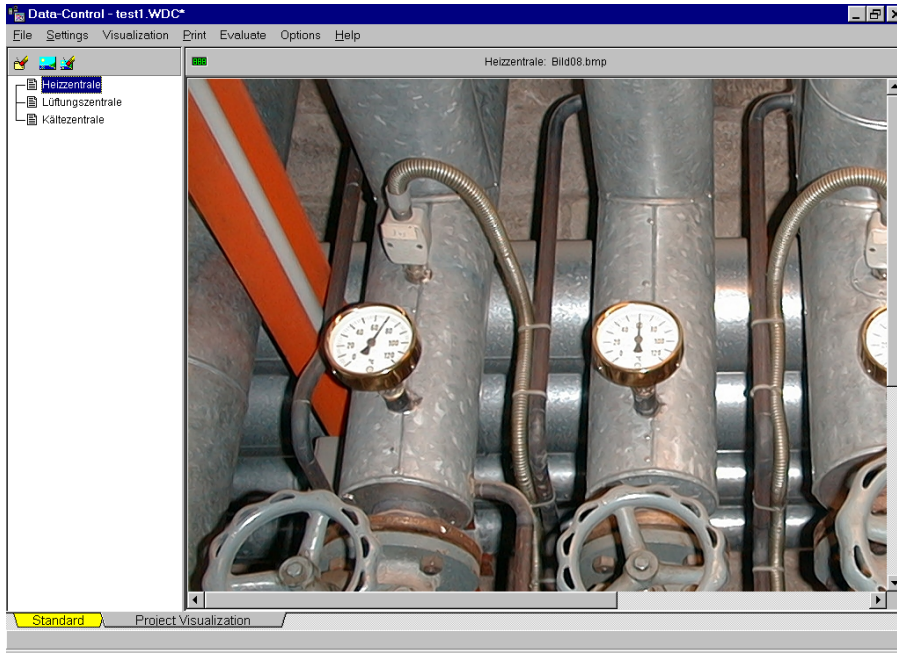
The button opens the following selection box. Here you may choose your graphic file in Windows bitmap-format (*.bmp).



Choose the desired file and assign the graphic an equipment name.

assigns the file an equipment name

The graphic will be shown on the screen. The name of the equipment is shown at the left side in the structure tree.



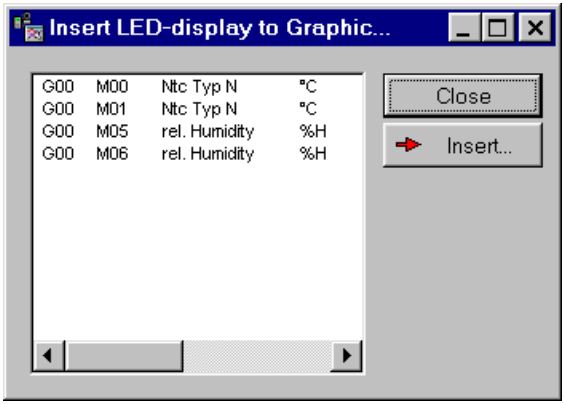
Note: If you delete an equipment in the structure tree, no warning will appear. The equipment will be deleted immediately including graphic and the corresponding digital displays.

Insert display

After choosing the graphic for your equipment, you may now set the digital displays on each measuring point. Select here the button

Insert display

A selection window opens for the channels of the current measurement configuration.

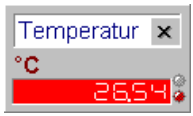


Note: In case you have not opened or created a measurement configuration, this window will appear empty. In this case please open a measuring file or scan the current device and sensor configuration found under the **register standard**.

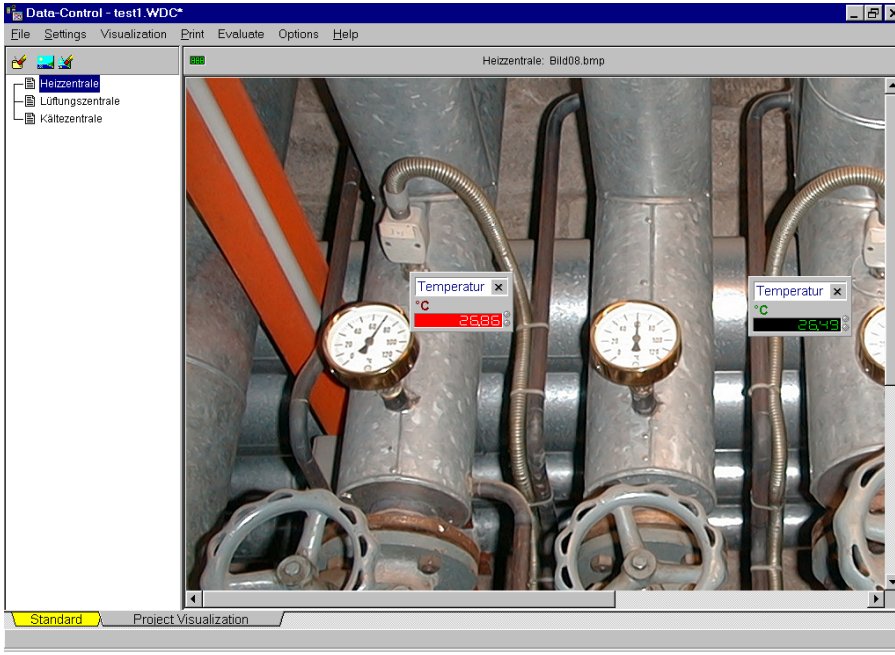
Choose the channel for the digital display.

insert a digital display

Then the digital display will be shown in the graphic of the equipment.



Drag the digital display with the pressed left mouse button at the desired place in the graphic. On online measurements the digital displays are permanently actualized.

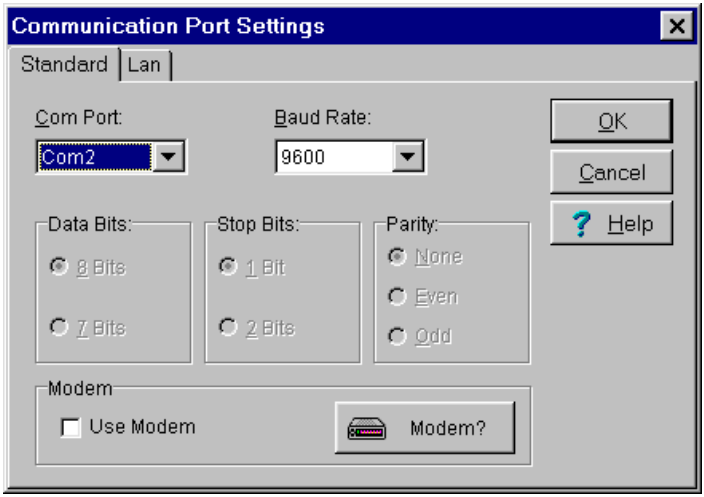


The Data Transfer

Data Transfer with serial interface

For the data transfer between program and measuring devices, you may establish a direct connection via the serial interface RS232.

Select in the main menu **Settings** the command **Communication port** to set your serial RS232-communication port parameters for the connection between computer and devices. Here you may choose between direct communication or communication via modems



The standard settings of the program for direct connection are:

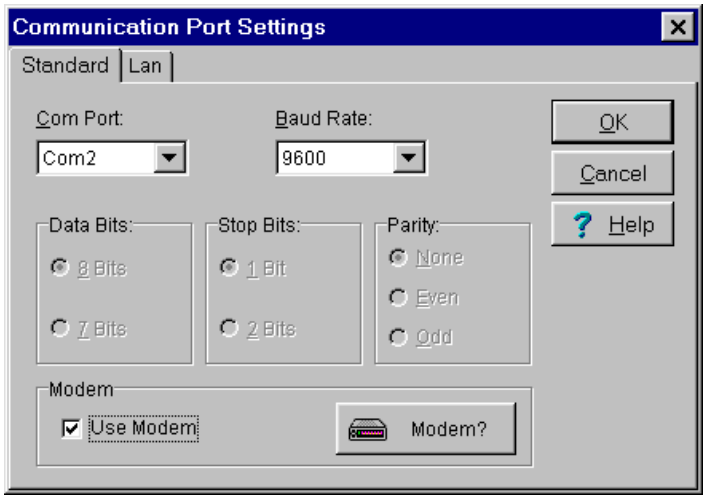
Interface:	**Com2**	
Baud Rate:	**9600 Baud**	
Data Bits:	**8 Bits**	**(not editable)**
Stop Bits:	**1 Bit**	**(not editable)**
Parity:	**None**	**(not editable)**

Note: **The program settings and the settings of the measuring device interface must be exactly the same, otherwise communication is not possible!**

Data Transfer with Modem (Option OP-MODEM)

For the data transfer between program and measuring devices, you may establish a remote connection with a modem, which is to be connected to a serial interface RS232.

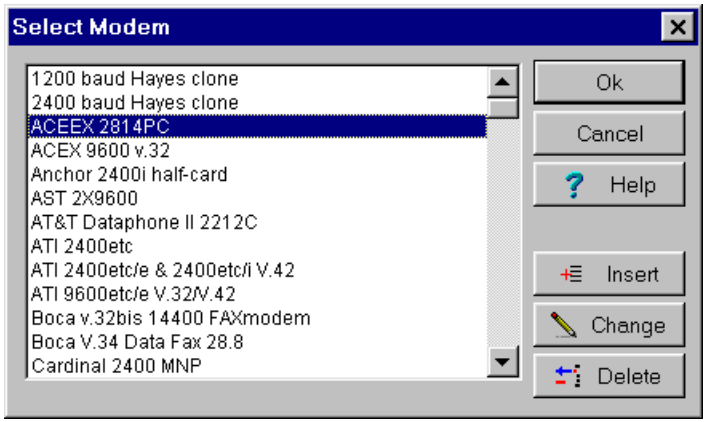
If you want to choose a modem for communication between Computer and measuring devices, please check mark the field **Use modem** and enter the corresponding parameters via the button Modem. The program establishes a connection anytime of an access to the serial interface. The subscriber may be chosen from the program internal **Phone book**. In case no modem is available at the corresponding communication port, the dialing will be discontinued with an error message.

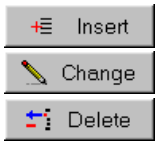


Modem am Computer

For the data transfer between computer and measuring devices a modem may be used. Connect the modem to your computer and select in the main menu **Settings** the command **Modem Settings**, to choose your modem and to define the corresponding data transfer parameters. The **List** contains common modem types. You may however add more modem types anytime.

opens a list of modems to select from.





Adds a new modem

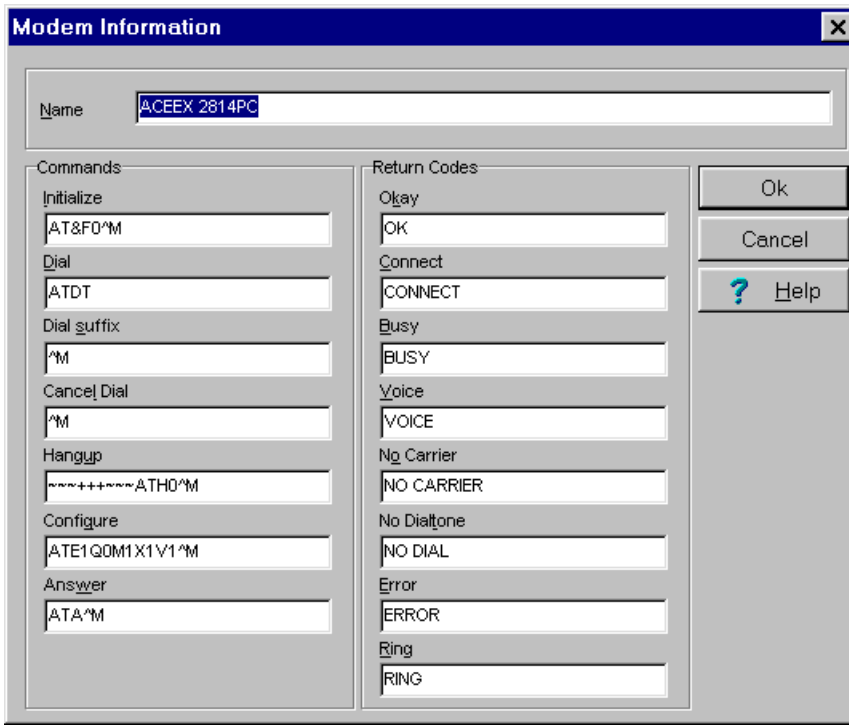
Changes settings of available modems

Deletes selected modem.

Note: In the **Communication Port Settings** the option **Use Modem** must be active to realize data connection using the modem line.

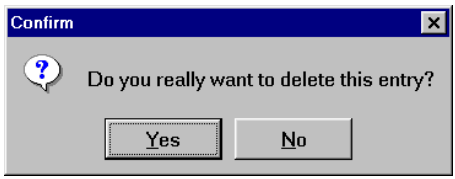
Clicking the button **Change** in the dialog box for selecting modems, the dialog box as shown will be opened. You may modify here your modem settings.

Clicking the button **Insert** will turn all entry fields empty. Enter first a modem name and then press OK to close. The program will set standard values which are compatible to Hayes-modem. Modify the commands if necessary according to your modem manual.



Attention: The command to be entered here for disconnecting your modem must be exactly the same as stated in your modem manual, otherwise it may happen that the program sends the disconnecting command to the modem, but the line is still active after terminating the modem connection. In case this happens, please check if your modem terminates the connection by deactivating the DTR-line. If yes, enter here the command DTR .

Confirm this security check to finally **Delete** a modem type.



Modem at Remote Measuring Device

The modem at the measuring device should be installed as follows – if Hayes compatible:

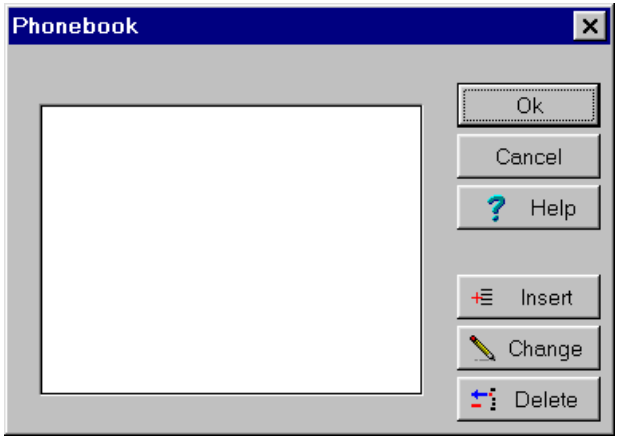
Connect the modem to your computer and start a Terminal-Program; for Example **Hyperterminal** for Windows 95/98/2000/ME or Windows NT. Set up the communication to your modem and send the following commands.

AT&S0=3 + [ENTER]	Modem picks up the receiver after ringing 3 times.
ATX1 + [ENTER]	Sets answering characteristic for modem commands as standard.
ATQ1 + [ENTER]	No reply to modem command. **Attention: from now on, you will receive no feedback from your modem!**
AT&W0 + [ENTER]	Saves the settings, so that these may be used again when the modem is turned on.

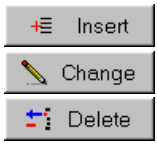
After entering the commands, you may connect your modem to your measuring device.

Phone Book

By clicking the **phone book** in the main menu **Settings**, the dialog box as shown appears. Here you may enter the phone numbers which may be automatically dialed by the program.



For **automatic calling of a subscriber** from the phone book the option **Use Modem** must be activated in the Communication port settings.

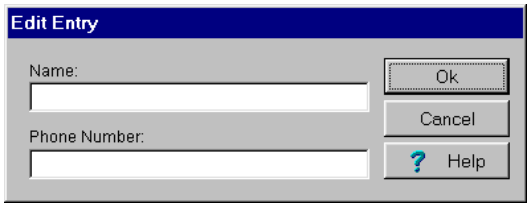


adds name of a subscriber

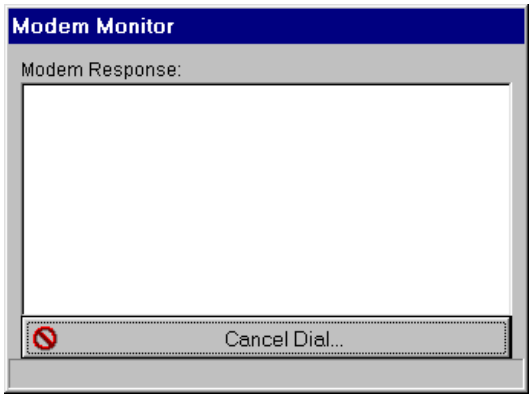
changes the subscriber data

deletes the marked subscriber

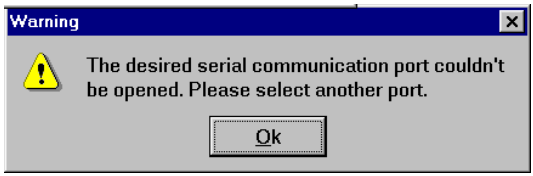
Click the buttons **add or change** to open the edit entry box as shown. You may enter and change here the name and phone number of a subscriber. A warning appears before a subscriber will be finally **deleted**.



After selecting the desired subscriber from the phone book the communication via Modem will be supervised by **Modem-Monitor**.



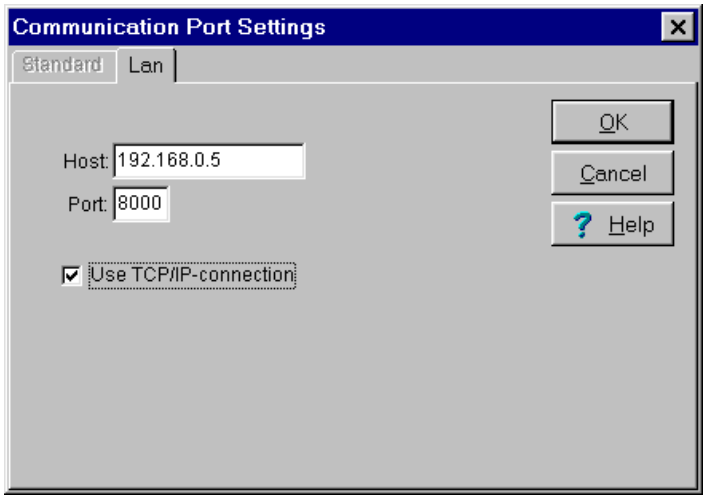
This warning appears if no communication could be set up during the **remaining dial time**.



Data Transfer with Network and TCP/IP (Option OP-TCP/IP)

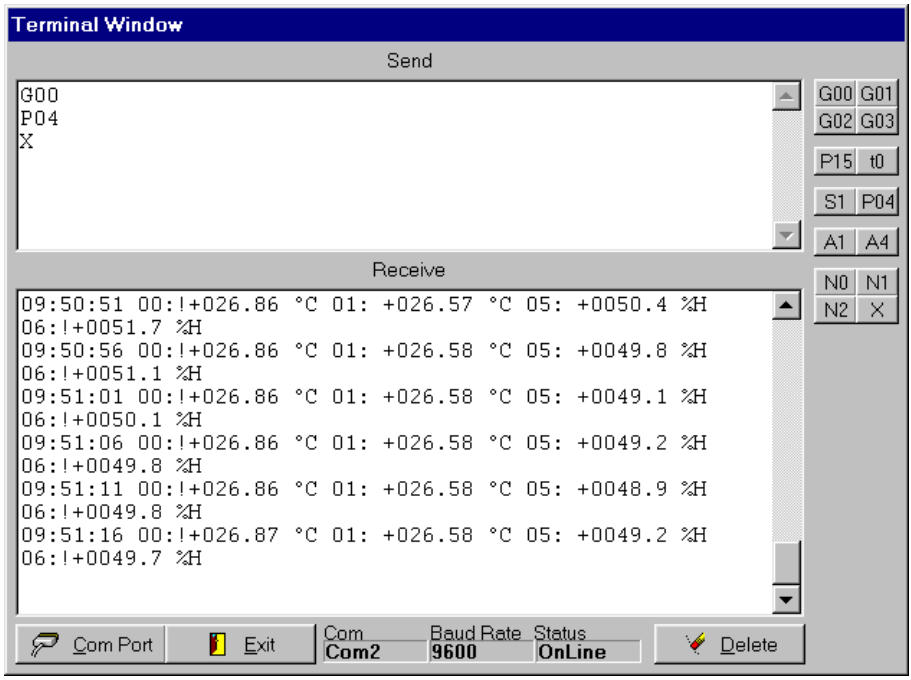
For the data transfer between program and measuring devices, a remote connection may be established using network and the TCP/IP – protocol.

If you want to use a network with the TCP/IP – protocol for the data transfer between your computer and measuring devices, activate the field **LAN** and set the corresponding parameters of the network connection. The program scans the entire network automatically and establishes the connection to the subscribers. If no network access is available, the dialing will be cancelled with an error message.



Terminal Window

Click the entry **Terminal Window** in main menu **Settings** to open the dialog box as shown. At the upper part of the window you may enter commands, which may be sent directly to the measuring devices via your serial communication port, via your modem or via the TPC/IP - protocol. At the lower part of the window the reply commands of the measuring devices will appear. For easy handling the **most common commands** for the communication with your measuring devices are designated to buttons at the right side of the terminal window. If **Use modem** is activated in the communication port settings the phone book appears where you may select your desired subscriber.



opens the dialog box for communication port settings

exits terminal window

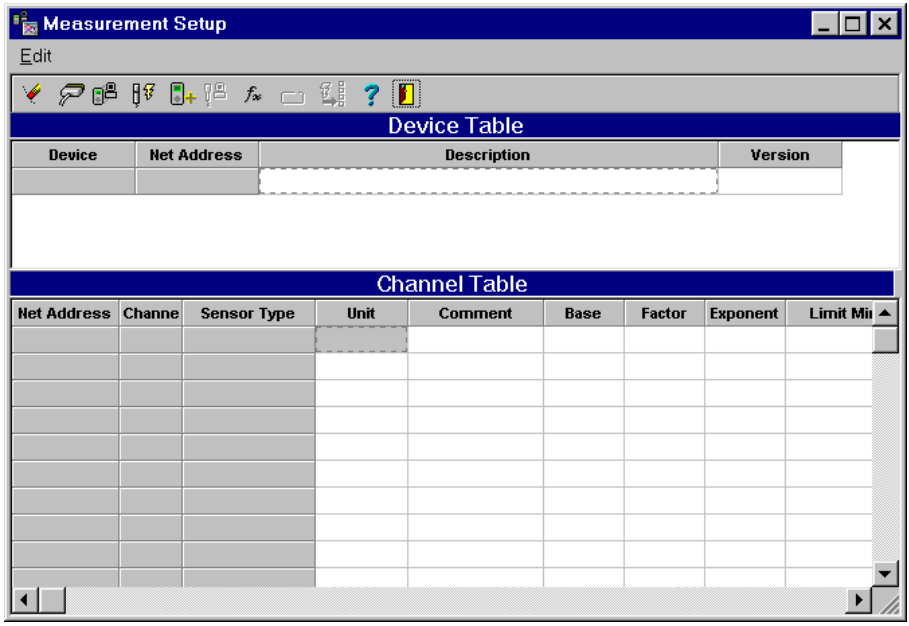
delete contents of terminal windows

The Measurement Configuration

Measurement Setup

A **measurement setup** is made up of a single ALMEMO- or THERM-measuring devices or a network of ALMEMO-measuring devices and its connected sensors and operating functions for the measurement values. All measuring devices are listed in the device table, the corresponding sensors and formulas appear in the channel list.

Select in main menu **Settings** the command **Measurement Setup**, to set a new measurement setup or to edit an existing one. For a new measurement setup, the table below will be displayed together with the related submenu and the corresponding tools.



The Fields of the Device Table

Device:	An ALMEMO type of measuring device – single or in network – or a THERM type of measuring device from manual selection
Net Address:	Network address from the ALMEMO-measuring devices, for THERM-devices to be defined by the user (starting with G..)
Description:	Text field for entering user specific information such as device location etc.
Version:	Version number of the ALMEMO-Measuring Device

The Fields of the Channel Table

Net Address:	Network address of each device, same as in the device table
Channel:	Measuring channel number of the connected sensor (starting with M..) or formula channel number (starting with F..)
Sensor Type:	factory name of the sensor
Unit:	physical unit of the sensor
Comments:	text consisting of 10 characters programmed in the ALMEMO-plug of the sensor
Base:	pre-defined base value of the sensor
Factor:	pre-defined factor of the sensors
Exponent:	pre-defined exponent of the sensors
Limit Min:	lower limit, displayed if programmed in the ALMEMO-plug
Limit Max:	upper limit, displayed if programmed in the ALMEMO-plug
Description:	Text box for user specifications
Formula:	Formula name of the formula channels
Decimal places:	Number of decimal places

All white highlighted fields in the channel table may be shown with the scroll bar. The fields **Unit, Limit Min, Limit Max and Description** may be activated and edited by double clicking with the left mouse button. Modifications here however are only relevant for this measurement file and will not be transferred in the ALMEMO-plug. The fields **Comments, Base, Factor and Exponent** are programmed permanently for the ALMEMO-plug and cannot be change in the channel table. For permanent programming of the plug setting use the program part **Sensor Programming**.

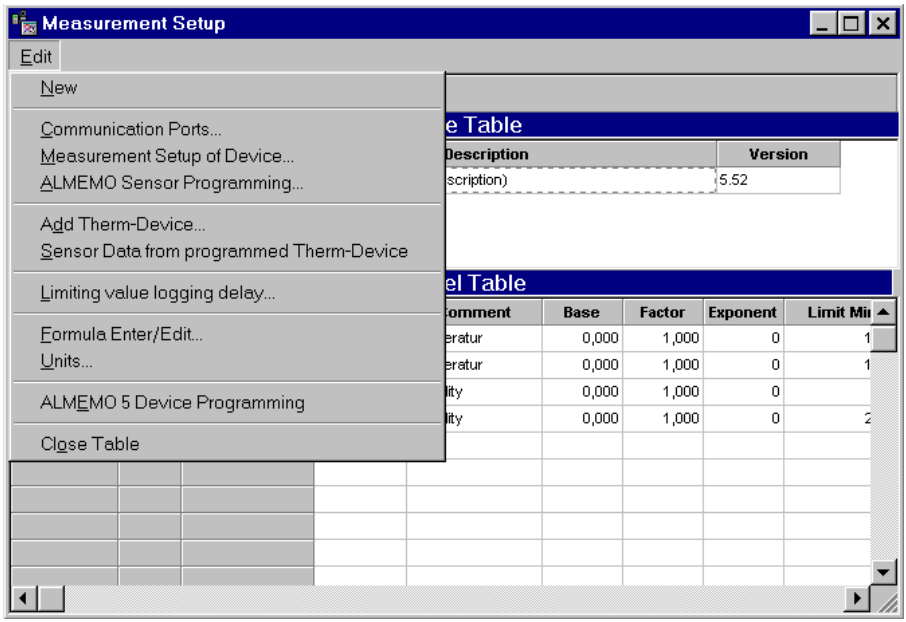
To take over measuring values from measuring devices of other manufacturers, the sensor type "ext. Digital" is provided. For this sensor type and for your defined formula, you may enter the number of **Decimal Places** in the channel table. The Software uses this decimal places for the formatted display of the measuring values.

To modify the **Column Width**, click the column title border, hold the left mouse button pressed and move to the desired width.

Editing Measurement Setup

Select in the **measurement setup** submenu the command **Edit**. This dialog box appears with the following functions:

- Create new measurement setup
- Communication Ports
- Read measurement setup from ALMEMO-
- device/network
- Program ALMEMO-Sensor
- Add THERM-device
- Read sensor data from programmed THERM-device
- Logging delay for limiting values
- Enter / Edit Formula
- Select / Edit Units
- ALMEMO 5 device programming
- Close Table and Exit



The functions may be activated comfortably via **Toolbar**. The buttons in detail:

Create a new measurement setup

Set serial port for communication

Read measurement setup from ALMEMO-device / network

Program ALMEMO-sensor

Add THERM-device

Read sensor data from programmed THERM-device

Enter / edit Formula (not available in light version)

Program ALMEMO 5-devices

Assign alarm to relay

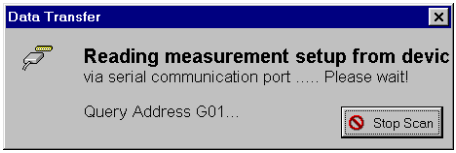
Exit measurement setup table

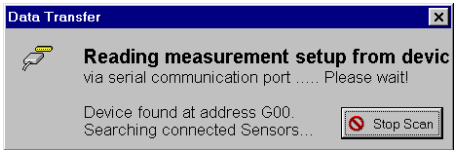
Activate help for measurement setup

The function "Delaying of the limit value protocol" is not available as button. The function "Assigning of alarm to relay" is not contained in the menu but is available as button.

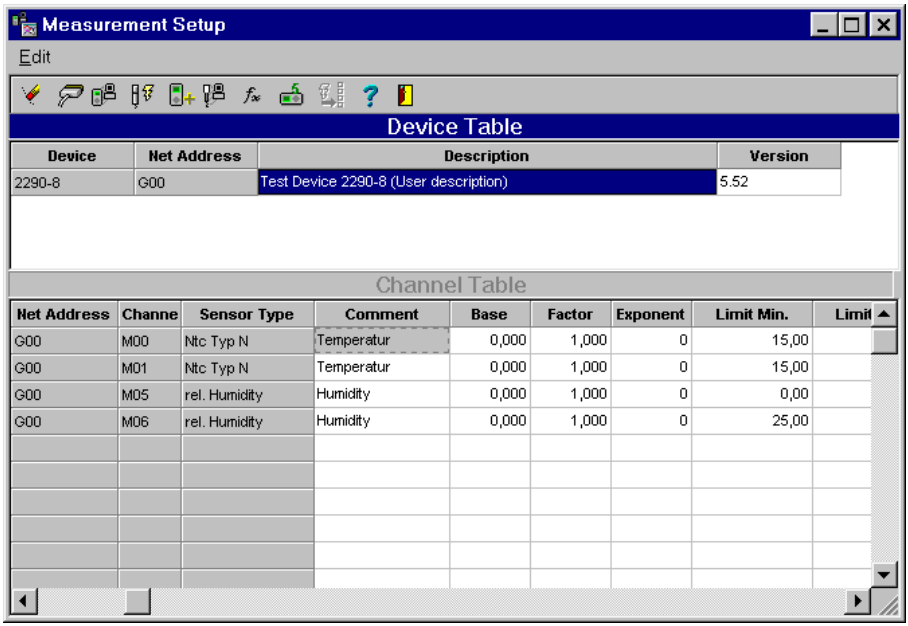
Reading Measurement Setup from ALMEMO-Device / Network

After setting together your ALMEMO-device or network consisting of several devices and after having them connected via serial port to your computer, select in the main menu **Settings** the submenu **Measurement Setup** and then in the menu **Edit** the command **Measurement Setup from ALMEMO-Device / Network** for scanning or click the corresponding button in the toolbar.





The program finds, after proper communication setup, all ALMEMO-devices and sensors automatically and enters these in the device and channel table.



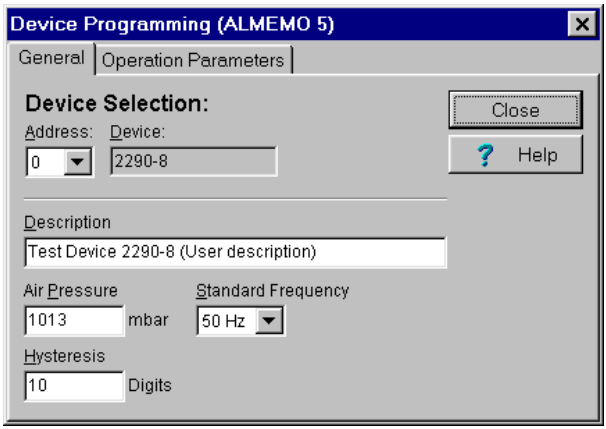
Note: In case no data appear in the tables despite proper device connection, please check the **BAUD-Rate of your measuring device**. This should correspond to the program BAUD-Rate, so that communication can take place.

stops scanning. The hint shown below will appear

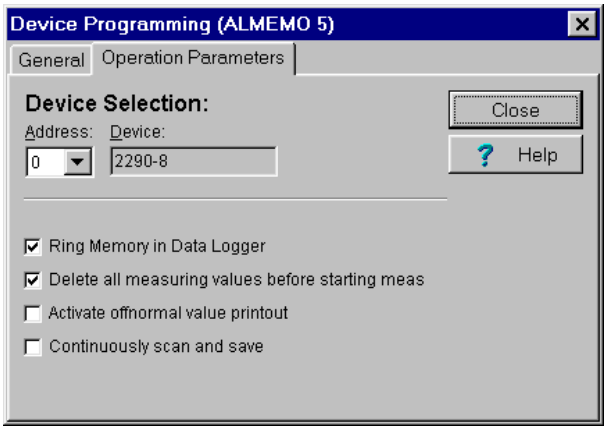
ALMEMO 5-Device Programming

The device programming enables you to program or reprogram ALMEMO 5-measuring devices. The ALMEMO 5-measuring devices and the ALMEMO 5-network must be connected. Select in the main menu **settings** the menu item **measurement setup** and here the menu item **ALMEMO 5-device programming**, to modify the settings of the connected ALMEMO 5-devices.

Under the register **general** you may set the basic settings of the working conditions of the measuring devices (air pressure, net frequency, hysteresis).

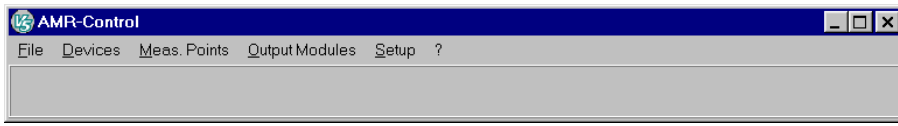


Under the register **operation parameters** you may chose the basic settings for the measurement operation. (Use of ring memory in data logger, delete all measuring values before starting to measure, activate offnormal value printout, scan and save continuously).



saves the settings for future measuring operation.

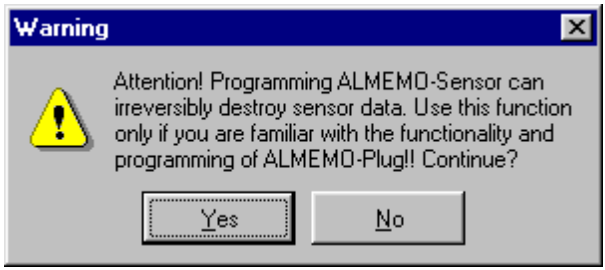
For the setting and programming of additional device specific parameters, which are not supported by the software Data-Control, the **additional program AMR-Control V5** is provided. To activate this program, select in the main menu the item **Settings** and there the item **AMR-Control V5**. The following menu bar appears:



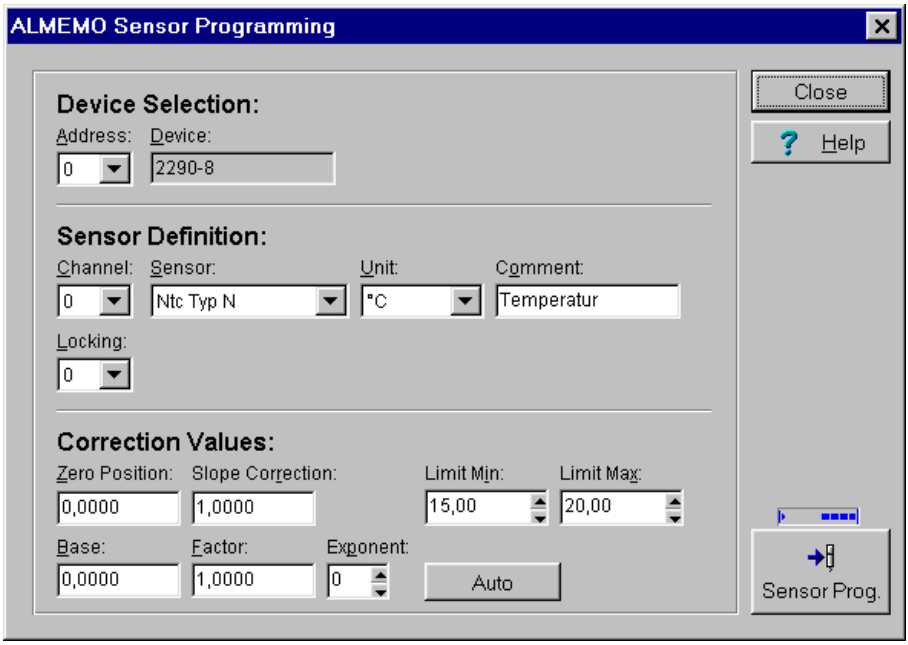
Programming ALMEMO-Sensors

This function allows you to program or to reprogram your ALMEMO-Sensor. Your ALMEMO-measuring device or network and the sensors which are to be programmed, must be connected. Select in the main menu **Settings** the submenu **Measurement Setup** and then the command **ALMEMO-Sensor programming**, to modify your sensor configuration.

Please use this function only, if you are familiar with the ALMEMO-Plug operations and programming. **Incorrect data entry may irreparably damage the sensor**. As warning this hint box appears.



After confirming the ALMEMO-Sensor Programming, this dialog box appears for entering parameters.



In the **Select Device** choose the corresponding measuring device by selecting an address.

In the **Sensor Definition** you may modify your sensor information such as channel, sensor, unit, comments and locking level. The entry boxes always display the currently programmed sensor information in the plug.

The **Correction Values** of the sensor such as zero position, slope correction, lower limit, upper limit, base, factor and exponent may likewise be modified. The entry boxes always display the currently programmed correction values of the plug of the corresponding sensor.

Sensor Definition for ALMEMO-Sensors

Enter here your sensor data which is to be displayed in the channel table. These may be modified in the channel table depending however on the set locking level.

Channel:	measurement channel number of the connected sensors (starting with M..)
Sensor::	factory name of the sensor
Unit:	physical unit of the sensor
Comment:	10 characters text from ALMEMO-plug of the sensor
Locking:	Locking of entry fields to protect against unintended changes

Locking

To protect your programmed data in the sensor plug against data loss or change, which may be due to incorrect device handling or operations, enter for each sensor a locking level. This locking level protects single functions against reprogramming.

Lock Level	Locked Functions
0	None
1	Sensor Name
2	Sensor, zero position and slope correction
3	Sensor and unit
4	+ zero position and slope correction
5	+ base, factor and exponent
7	+ limits min and max

Note: **Standard sensors** have the lock level 5. This means sensor, unit, scaling (zero position, slope correction) and correction values are protected.
For these sensors, modifying the values in the fields

Zero position/ slope correction
base / factor / exponent
Lock level

should be reserved only for authorized specialists. Failure will influence measurement accuracy.

Correction Values for ALMEMO-Sensors

In this part of sensor programming, enter here the calibration values for your sensors. This data will also be displayed in the channel table.

Base:	Base value of the sensor
Factor:	Factor of the sensor
Exponent:	Exponent of the sensor
Limit Min:	Lower Limit
Limit Max:	Upper limit

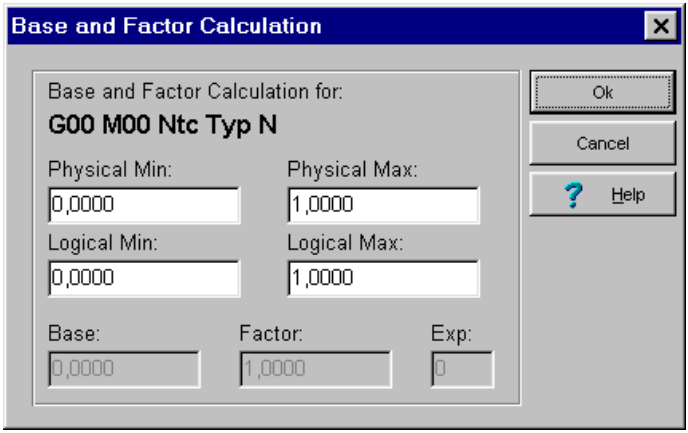
With the correction values zero position and slope correction you may calibrate your sensor using the following formula:

Corrected measurement value = (actually measured value – zero position) x slope correction

If no scaling with zero position and slope correction is necessary, you may calibrate your sensors by yourself using the functions base and factor.

Automatic Calculation of Correction Values for ALMEMO-Sensors

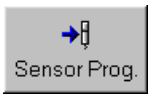
The function „Auto“ calculates automatically the values base, factor and exponent for new sensors. The following dialog box appears:



Enter here the physical and logical limits. The Base, factor and the exponent will be calculated automatically.

Example:
You have connected a sensor to your measuring device and your sensor emits a signal, which ranges from 0 to 10 V. This signal represents the temperature range from -40 to +100 °C. Enter the physical lower and upper limit 0 and 10, and the respective logical lower and upper limit -40 and +100. The Program will calculate automatically a base of -2.86, a factor of 1,4 and sets the corresponding exponent. In the diagrams you will obtain measurement values displayed in °C.

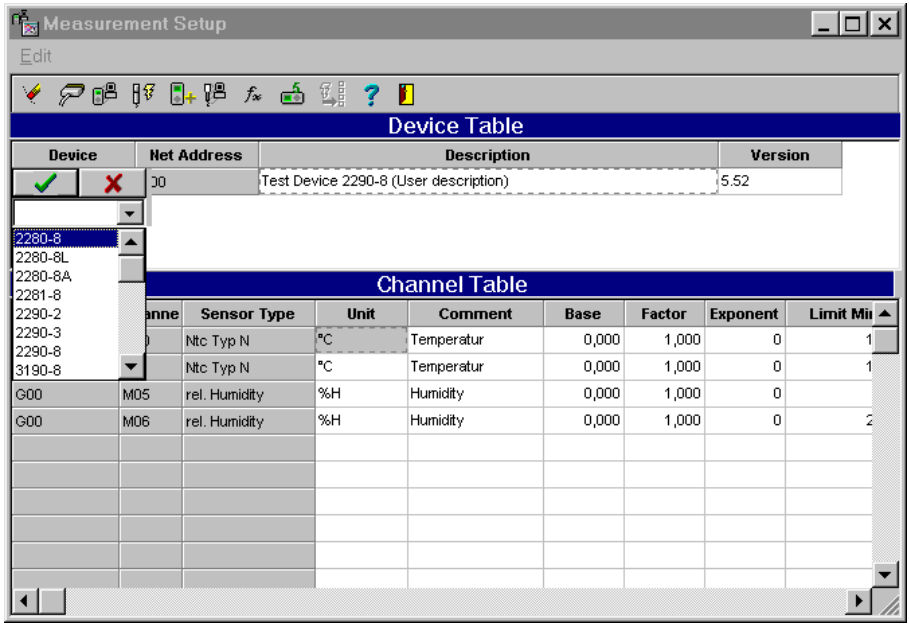
Transferring Data in the ALMEMO Plug



After all modifications for sensor programming are done, press this button to transfer the values in the ALMEMO-Sensor plug.

Adding THERM-Devices

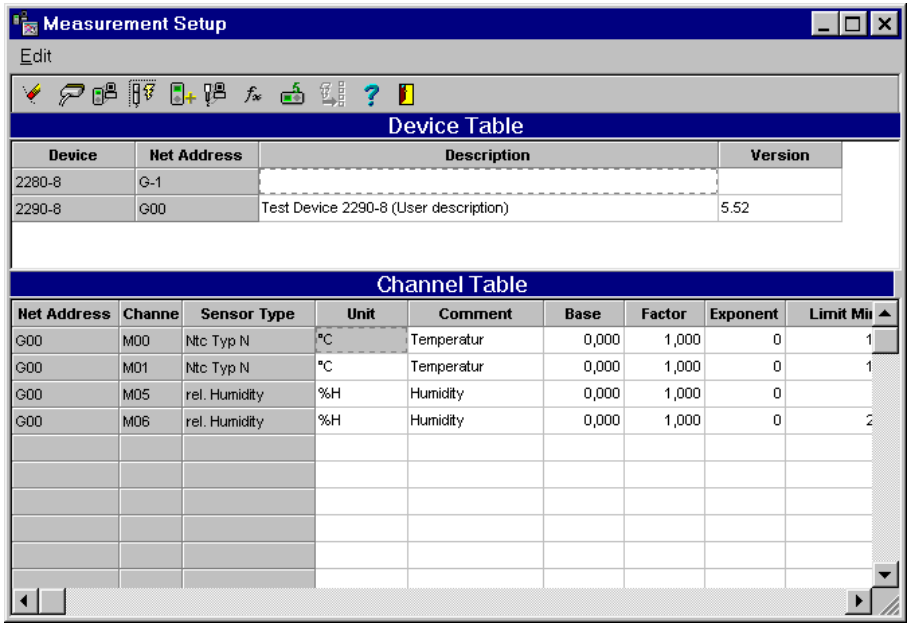
THERM-Devices are always to be entered in the table manually. To do so, select in the main menu **Settings** the submenu **Measurement Setup** and then the command **Add THERM-Device** or the corresponding button in the toolbar. A selection box appears where all available types of THERM-Devices are listed.



confirms the selected type of device.

cancels command.

After selecting the type of the THERM-device, this will appear in the device table.



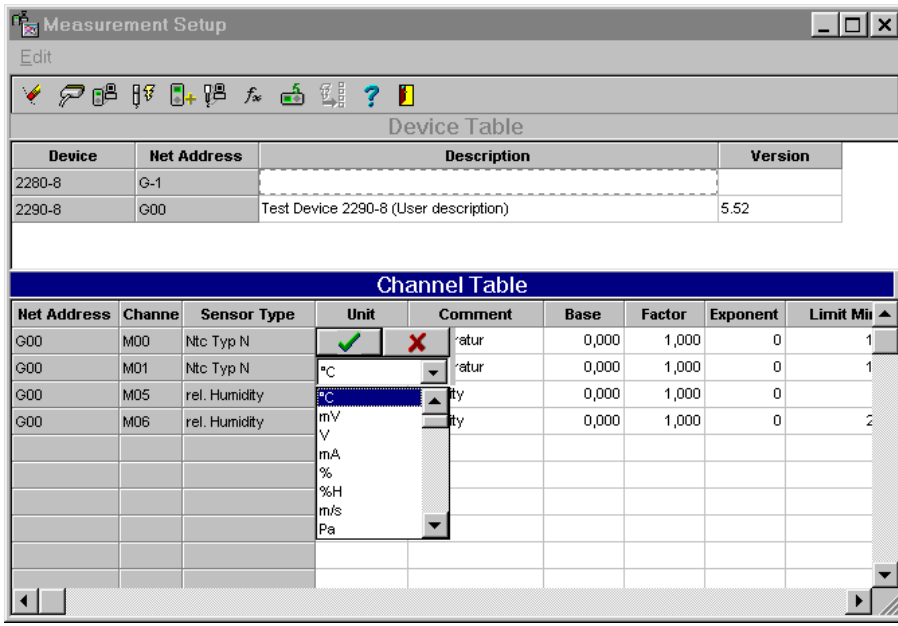
Note: The field net address disappears. THERM-devices are single devices and cannot be combined with ALMEMO-devices / network in one measurement setup.

Reading Sensor Data from programmed THERM-Device

Select in the main menu **Settings** the submenu **Measurement Setup** and then the command **Sensor data from programmed THERM-Device** to read the configuration data in the THERM-device and to enter in the channel table. THERM-devices have no limiting values and no text programmed in the plug.

Selecting / Editing Units

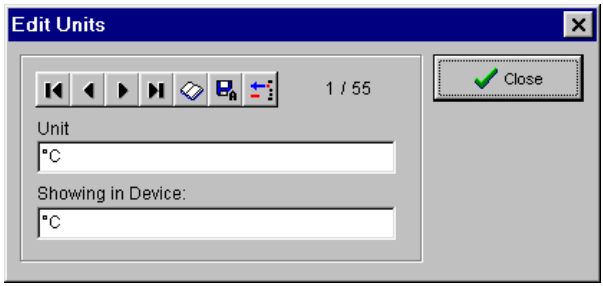
In the channel table of the measurement setup, you may **select units** for your sensor or formula. Clicking the corresponding box in the channel table, a selection box appears with the available units.



confirms the selected unit.

cancels command.

Select the command **Edit Unit** in the submenu measurement setup, to edit your physical unit.



Use the listed buttons below for editing. The number of the current unit data record and the total number of units are displayed in the dialog box.

go to first data record

go to previous data record

go to next data record

go to end of data record

create a new data record

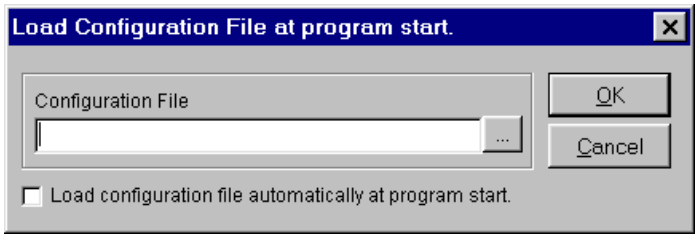
save the current data record

delete the current data record

Measuring with Configuration

The program makes it possible to do measurement with the help of a predefined configuration. Choose the **Directory...\ CONFIG for Configuration Data**. Your configuration data are normally saved in this directory. You may use this for future measurements. The file name extension „wdc“ is permanent and is added automatically. This function loads devices and channels, file information and diagrams from the selected file. Measurement data will not be loaded.

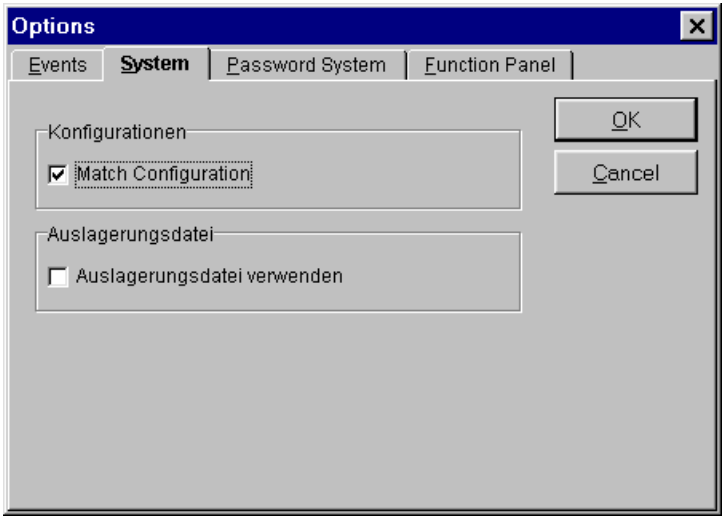
Select in the main menu **File** the item **Load automatically configuration**, to load a configuration file at the program start. A dialog box opens where you may choose the corresponding file.



Automatic configuration matching

When you start a measurement, the program matches configuration between program and measuring devices automatically. This function is designed to do measuring tasks with slightly varying sensor configuration with the help of just one standard configuration.

Choose in the main menu **Options** the item **System Settings** to turn this function On/Off. Checkmark the option **Match configuration** to turn automatic matching ON. If this option is activated, the software recognizes automatically at the start of the online measurement new, modified or non-existing sensors. Then it starts measurement. If this option is deactivated, the online measurement cannot be started if a configuration file is loaded which deviates from the device or sensor configuration.

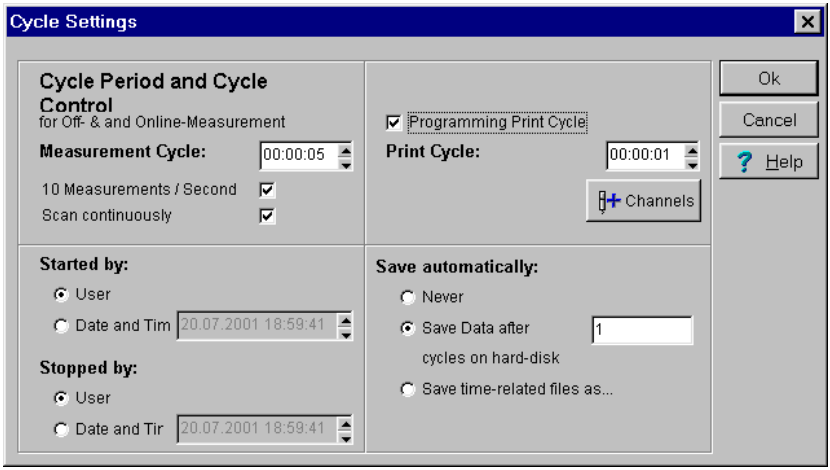


Note: This menu is only active, if you are registered as master user with the corresponding password (Option OP-Panel/Alarm).

The Functions during Measuring Operation

Cycle Period and Cycle Control

Select in the main menu **Settings** the item **Cycle Control** to define the conditions of the measuring operation. Here you may set the cycle period and the starting conditions for your measuring operation.



The **cycle period** of your measurement values should be in hours/minutes/seconds. A cycle period of 5 seconds is set as standard.

Note: You cannot choose any short cycle period. The minimum cycle period depends on a lot of factors such as computer speed, access time to the hard disk, number of measuring channels and number and complexity of the formula. If your desired cycle period is shorter as the technical possible one, the program uses the shortest technical possible cycle period.

If you click **10 Measurement/Sec** the program will initialize the measuring device, so that only 3 comparison measurement per channel instead of 8 will be carried out before the internal saving of the measuring values. Thus the measuring device can make a query in 10 channels per second.

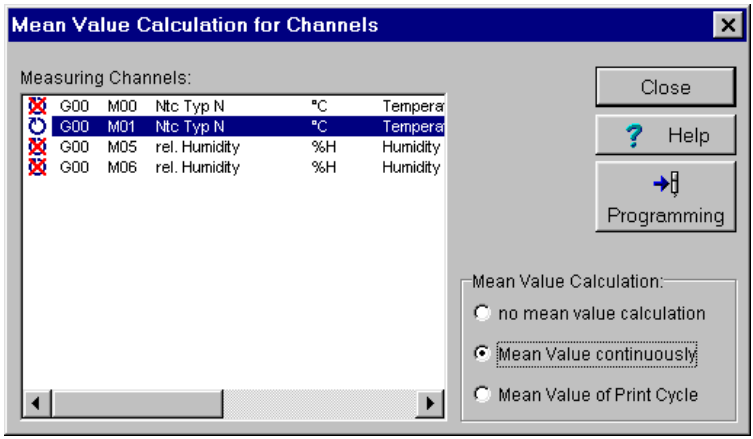
By activating the option **scan continuously** the measuring device programs in a way that all connected sensors are permanently scanned one after the other. This accelerates the data

capture in the software because in the measurement device permanent actual data exist and the channels during query will not first be measured by the software.

In the entry fields **start** and **stop**, you may choose between user and time as operator for the measurement.

Die Option **program print cycle** is a function for the offline-measurement operation. If you activate this option the measuring device will save the data in print cycle.
Example Measuring time: 5 sec
Print Cycle: 1 Min
Measurement every 5 sec., measurement values will be saved every minute.

opens a dialog box where you may chose for the offline measuring process the **type of mean value calculation** for the individual channels. The functions are carried out in each measuring device and are available for scanning through the software.



Mark a channel with the left mouse button and select one of the three **Options**:

- No mean value calculation
- Mean value calculation continuously
- Mean value calculation of print cycle

The channels are correspondingly marked on the side.

- No mean value calculation is symbolized through circle with slash.
- Mean value calculation continuously is symbolized through a circle with arrowhead.
- Mean value calculation through print cycle is symbolized through a semicircle with arrowhead.

transfers the settings for the channels to the sensor plug.

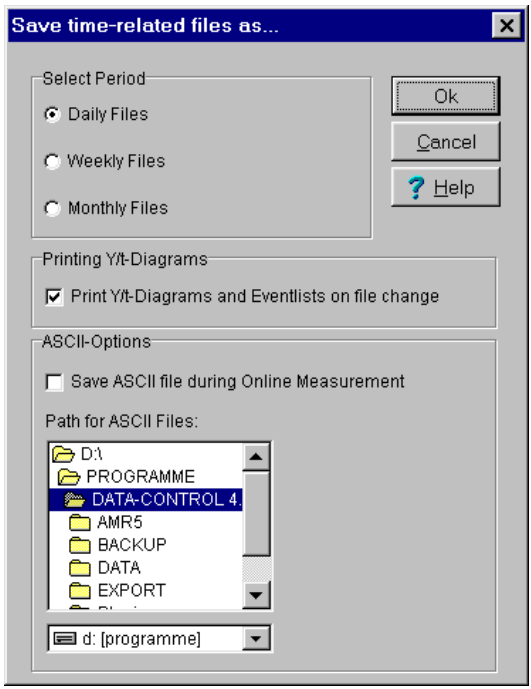
After confirmation the settings will be transferred to the devices.

For **automatic saving** you may choose from the options:

- never save
- save data after x cycles and
- save data related to time.

Saving Time Related Files (Option OP-TWMD)

Select in the dialog box **cycle control** the option **Save time-related Files as** , to save your data into several consecutive files automatically during measurement.



To define the saving period you may choose between

- Daily files
- Weekly files or
- Monthly files

Your data will be saved automatically after one measuring cycle.

The format of the file names are as follows:

Daily Files: YY_MM_DD.WDC
(YY = Year, MM = Month, DD = Day)

Weekly Files: YY_WW_w.WDC
(YY = Year, WW = Week, w = week identification)

The following are to be considered in weekly files:
According to the rules for the calculation of the calendar weeks, week 1 may already start in the preceding year, i.e. a file may have the name 98_01_w.wdc, but the saved file may contain data from 12/31/1997.
In few cases a year may have 53 weeks. The program considers this.
A calendar week starts according to the rule always on Monday and ends on Sunday. This is set as standard in the program and can not be modified.

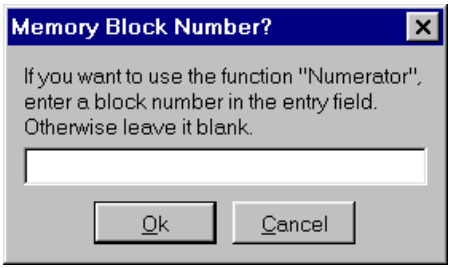
Monthly Files: YY_MM_m.WDC
(YY= Year, MM = Month, m = month identification)

Via the option **Auto-Print** you may set the program to print out automatically all recorded alarms in the event protocol and all Y/t-diagrams at file change. This option is only active as master user.

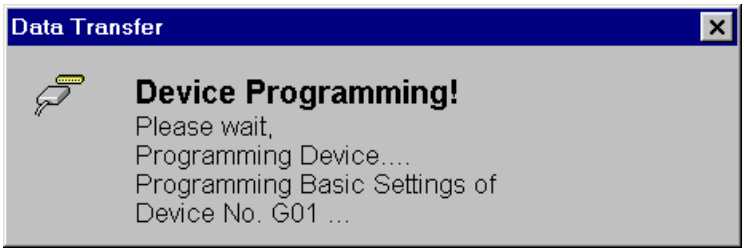
Via the option Save **ASCII-Files** during Online Measurement you may generate an ASCII-Export file in addition to the time related file name with the same format, ending with *.TXT. In the selection box you may determine the path to save your ASCII-File.

Programming of Device(s)

Activating this function, prepares the connected devices for **offline measurement**. Select in the main menu **Settings** the item **Device Programming**. The program initializes the measuring device or network by transferring the start and stop time and the cycle period from the cycle control. The hint box on the left appears.



After confirming the above command the basic settings followed by the user settings will be transferred to the measuring device.



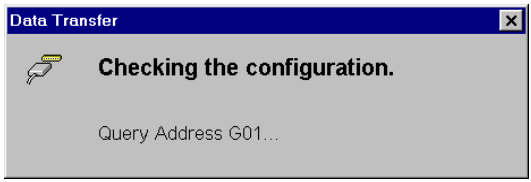
Starting / Stopping the Measurement

Select in the main menu **Settings** the item **start measuring** or click the corresponding button in the toolbar to activate this function. The program starts measuring in the ONLINE-mode based on the pre-defined values. The connected devices will be initialized and the defined measurement data will be read and displayed, if the absolute minimum of cycle period is not violated. Activating the function **stop measuring** or corresponding button in the toolbar, the program stops the measuring process.

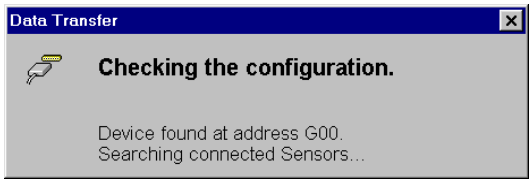
start measuring

stop measuring

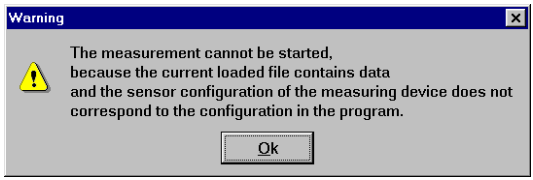
Note: Start and Stop of the OFFLINE-measurement operation are set in the cycle period control. If you have chosen „User“, you have to start and stop the measurement on the measuring device manually. If the start and stop time are set, these will be used by the measuring device. If the start time has expired the measuring device immediately starts measuring. The expired stop time will be ignored. In this case, you should stop the measuring process on the measuring device manually. After starting the measurement, this hint box appears.



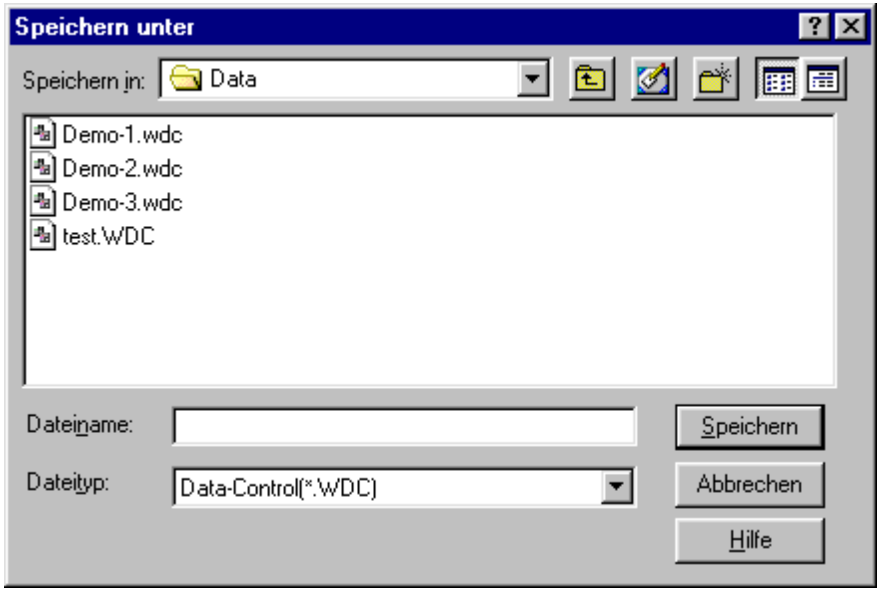
If all devices are connected properly, the following notice will be displayed.



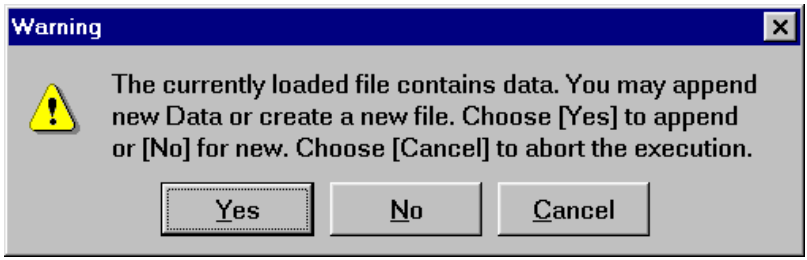
If not, this warning will appear. Please check your measurement setup.



Finally, you will be asked to assign a name to your new measurement file, to enable the saving of your measurement data.



If you have opened a file which contains the correct measurement setup you may attached the data to the prevailing measurement values or create a new file. You will receive the warning shown on the box.



The measurement starts. After your measurement, you may stop the operation by activating the corresponding functions in menu **Settings** or the buttons in the toolbar.

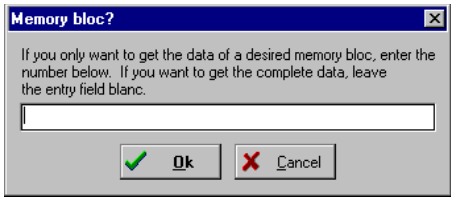
Note: To display your measurement data, select a diagram and set the respective parameters.

Reading Device Memory

After measuring, activate the function **Read Device Memory** to automatically read the measurement data in your connected devices or network and to transfer the data into your program. To do so activate in the main menu **Settings** the item **Read device memory**.

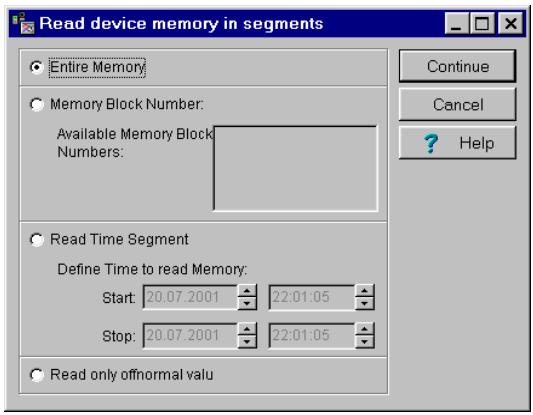
ALMEMO-Standard Measuring Devices

If you have connected an **ALMEMO-standard measuring device,** this dialog box will appear. You may enter here **the memory block number**. This Number is used to measure different measuring data such as air humidity, air temperature and air velocity one after the other and is used to organize these in the memory. The assigning of the block number is a device specific function not a program function. In case you know the device memory block number of your measuring devices, you may directly correspond here to your desired segment.



ALMEMO-5 Measuring Devices

If an **ALMEMO 5-measuring device** is connected and this is entered as an ALMEMO-5-measuring device in the loaded configuration the displayed dialog box will appear.



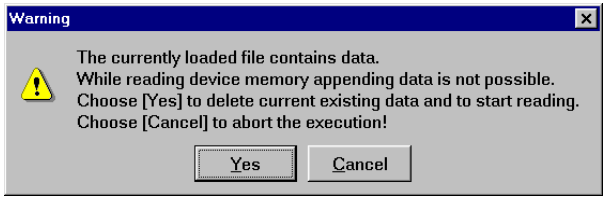
In the dialog box you may chose between the options

- Entire memory
- Memory block number
- Read time segment
- Read only offnormal values

Select the option **entire memory**, to completely read the measurement data once. The **memory block number** is a device specific function and it does not take place in the program. If the memory block number of your measuring device is known you may directly address here your desired data segment and read. Use the option **read time segment**, if the exact measurement period of your measurement is known. Use the option **read only offnormal values**, if you want to use offnormal values only.

starts the data transfer from the measuring devices and from the network.

This warning appears, if there are still measurement data in the program. The data from the device memory can only be read in a new empty measurement file.



Because data transfer may take some time depending on the data size, this notice will be displayed during device reading.

Note: To display your measurement data, select a diagram and set the respective parameters.

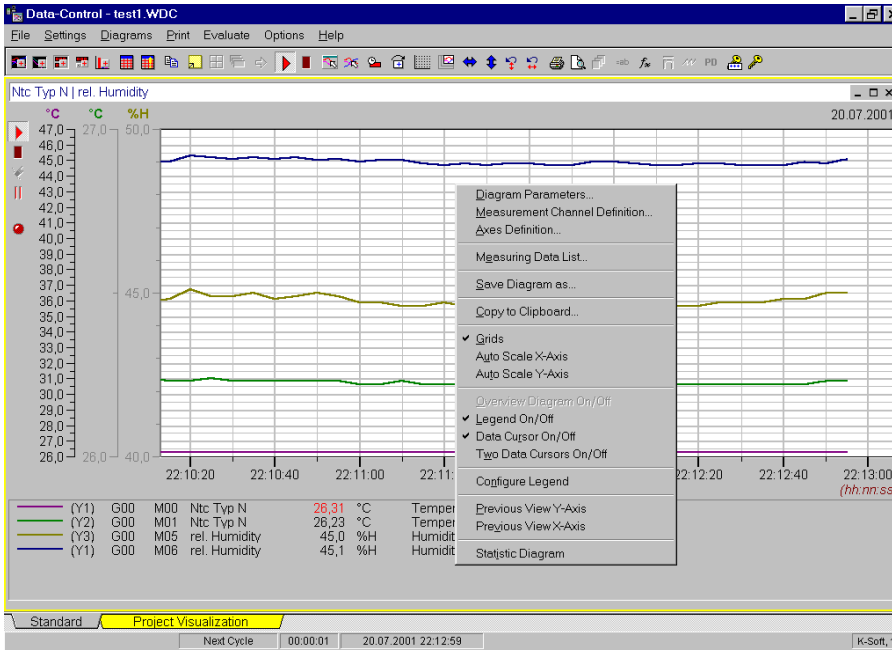
Deleting Device Memory

If your measuring device is equipped with memory function, you may use this function for deleting. To do so select in the main menu **Settings** the item **Delete Device Memory**. Your measurement configurations remains unchanged.

No hint box will be displayed !

The Functions of the Y/t-Diagram during Measurement Operation (Trend Display)

If you use the Y/t-diagram during the measuring process for trend display and online-visualization **function buttons** and **symbols** will appear on the left border of the diagram (option OP-DIAZ). For the diagram settings please refer to the chapter diagram.



With this button you may again start a locally stopped or hold diagram. The button **start measuring** is valid only locally. The button is not valid for the higher global function in the tool bar (option OP-DIAZ).

With this button you may **stop the measurement in the diagram** (Stop button). While the diagram is being stopped no data will be recorded for the channels assigned to the diagram. This is valid too, if you have assigned the channels to other diagrams. Press start button again for further data recording (option OP-DIAZ).

Press this button to **delete the recorded data of the channels** in a hold **diagram**. The button is only active, if the diagram is being hold (option OP-DIAZ).

If you press this button, **updating of the data in a diagram will be discontinued**. (break button). This enables you to do zooming or evaluation within the diagram. To update data, press the start button again. The diagram displayed looks like as if the break button has never been pressed (option OP-DIAZ).

If this symbol appears a **sensor rupture** occurred in at least one channel of the diagram. The Symbol is red if sensor rupture currently happened and yellow, if sensor rupture happened in the past.

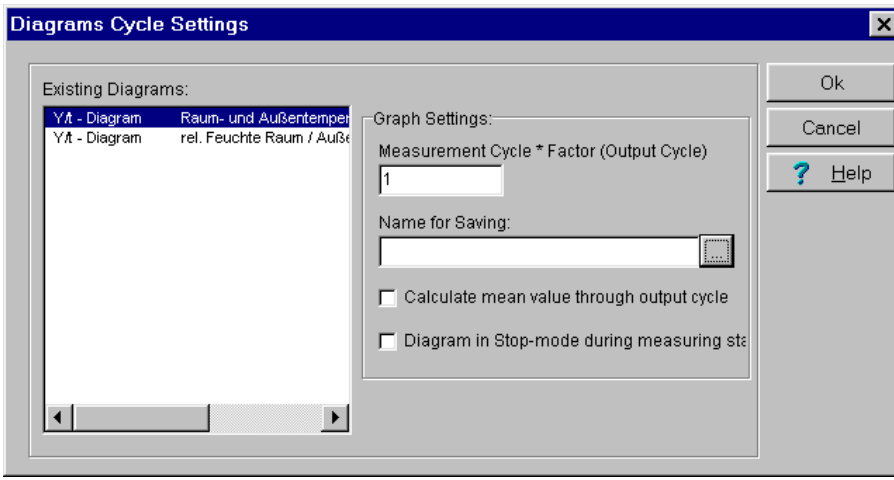
If this symbol appears, **limits are exceeded** in any of the channel of the diagram. The symbol turns red if the limit is currently exceeded and yellow, if the limit violations happened in the past.

Note: During measuring process the Y/t-diagram does not have diagram overview and data cursor.

Diagram Cycle Settings (Option OP-DIAZ)

This function offers the possibility to create smaller and easier to handle files from Y/t-diagrams with large measurement setups during measurement. This makes evaluation easier. Select in the main menu **Settings** the command **Diagram Cycle Settings**. Here you may enter the diagram related cycle period as multiple of the measuring cycle period. Pre-defined value is 1, e.g. the diagram displays in the main cycle time. If you change this value, the data of the channel will be saved according to your chosen **factor multiplied by the measuring cycle period.**

Example: Measuring cycle time = 5s
Diagram-related cycle time with
Factor 1 = 5s
Factor 2 = 10s
Factor 5 = 25s
Factor 12 = 60s
etc.



Assign a name for saving a single file or click the button beside the field **Name for Saving** to activate the dialog box for saving. In case a name has been assigned to a diagram, a single file will be saved which contains only the data and configuration to this diagram, beside the main file with all data and configurations.

By check marking the box **Mean Value via Diagram Cycle Time,** the program calculates the mean value within the diagram cycle time and enters this value according to the corresponding diagram-related cycle time.

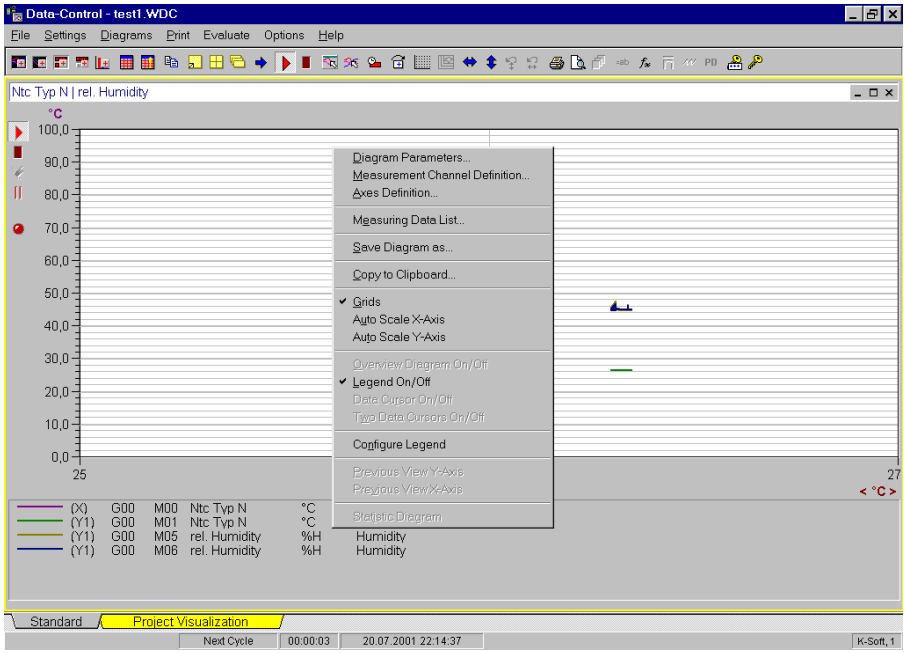
If you activate the option **diagram in stop-mode during measuring** the diagram does not start automatically, when the online measurement had been started. You may activate the diagram manually anytime later via the start button.

Attention:
The program allows the multiple assignment of measurement channels to the diagrams. When using this function please note that no multiple assignment is made because the diagram cycle settings do not consider this.

Example::
You have assigned the measurement channel "G00M00 NiCr-Ni(k) °C" to the diagrams 1 and 5. For diagram 1 the cycle time factor is set to 6. This results to 30s diagram cycle time by a main cycle time of 5s. In diagram 5 you may now set the factor to 120 which means a diagram cycle time of 10 Minutes. Because diagram 5 follows the diagram 1 and the saving of diagram follows successively - increasing - according to the definition of the diagram-related cycle settings, the program sets a cycle time of 10 Minutes for the measurement channel "G00M00 NiCr-Ni(k) °C". This is in contrary to the data of diagram 1, so that this channel will be actualized in another period as other existing channels assigned to this diagram.

The Functions of the X/Y-Diagram during Measurement Operation (Trend Display)

If you use the X/Y -diagram during the measuring process for trend display and online-visualization **function buttons** (option OP-DIAZ) and **symbols**. will appear on the left border of the. For the diagram settings please refer to the chapter diagram.



With this button you may again start a locally stopped or hold diagram. The button **start measuring** is valid only locally. The button is not valid for the higher global function **start measuring** in the tool bar (option OP-DIAZ).

With this button you may **stop the measurement in the diagram** (Stop button). While the diagram is being stopped no data will be recorded for the channels assigned to the diagram. This is valid too, if you have assigned the channels to other diagrams. Press start button again for further data recording (option OP-DIAZ).

Press this button to **delete the recorded data of the channels** in a hold **diagram**. The button is only active, if the diagram is being hold (option OP-DIAZ).

If you press this button, **updating of the data in a diagram will be discontinued** . (break button). This enables you to do zooming or evaluation within the diagram. To update data, press the start button again. The diagram displayed looks like as if the break button has never been pressed (option OP-DIAZ).

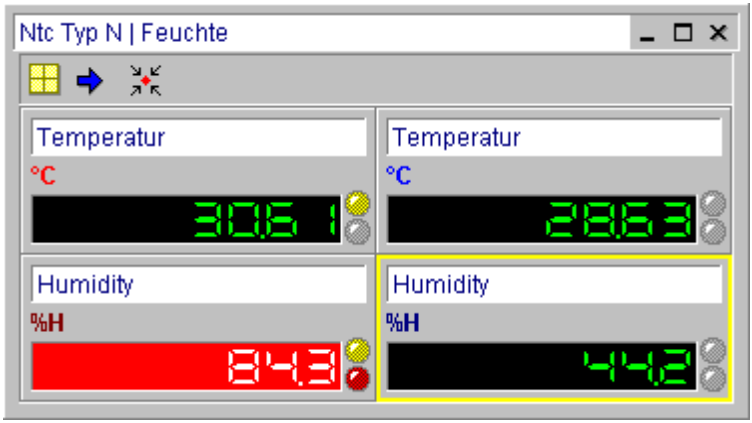
If this symbol appears a **sensor rupture** occurred in at least one channel of the diagram. The symbol is red if sensor rupture currently happened and yellow, if sensor rupture happened in the past.

If this symbol appears, **limits are exceeded** in at least one channel of the diagram. The symbol turns red if the limit is currently exceeded and yellow, if the limit violations happened in the past.

The Functions of the Digital Monitoring Diagram during Measurement Operation (Trend Display)

In the following the functions of the digital monitoring diagram during the **measurement process** (trend display) are described. For the diagram settings please refer to the chapter diagram.

To create a digital monitoring diagram select in the main menu **diagrams** the menu item **new digital display** or the corresponding button in the tool bar. . Designate your desired channels and start the measuring process. The diagram could also be created during the measuring process.



In the single display of the channel is the **actual value** digitally displayed If the measuring value exceeds the **upper limiting value** the digital display will turn to red and if the value remains below the **lower limiting value** the digital display will turn to blue. If there is no limiting value violation the digital display is green. If a **general error** exist like no connection to sensor, this will be displayed with **E.rr**.

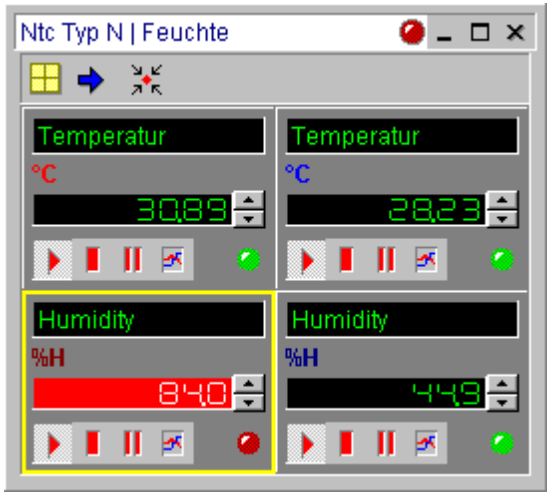
The upper LED-display signalizes a **sensor rupture**. It lightens red if a sensor rupture exist and yellow if the sensor rupture occurred in the past.

The lower LED-display signalizes a **limiting value violation**. It lightens red if a limiting value violation exist and yellow if the limiting value violation occurred in the past.

The Functions of the Function Display Panel during Measurement Operation (Trend Display, Option OP-PANEL/ALARM)

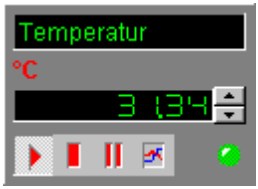
In the following the functions of the function display panel **during the measurement process** for the trend display are described (option OP-PANEL/ALARM). At the lower edge of the channel **function buttons and symbols** appear. For the diagram settings please refer to the chapter diagram.

To create a function display panel select in the main menu **diagrams** the menu item **new function display panel** or the corresponding button in the tool bar. Designate your desired channels and start the measuring process. The diagram could also be created during the measuring process.

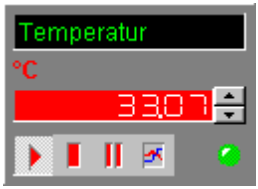


The LED-display at the diagram heading lightens green if all channels are in the measuring process. It is white if the data recording for any channel is disrupted (stop button). It twinkles yellow if by pressing the break button the actualization of any display is discontinued. It twinkles red if an actual **limiting value violation** exist without acknowledgement.

In the single display of the channel is the **actual value** I digitally displayed. If the measuring value exceeds the **upper limiting value** the digital display will turn to red. If the value remains below the **lower limiting value** the digital display will turn to blue. If there is no limiting value violation the digital display is green. If a **general error** exist like no connection to sensor, this will be displayed with **E.rr**.



To display the **limiting values** hold the arrow button pressed.



The LED-display lightens green during the measuring process. It is white if the data recording for any channel is disrupted (stop button). It twinkles yellow if by pressing the break button the actualization of any display is discontinued. It twinkles red if an actual **limiting value violation values** exist without acknowledgement.

With this button you may again start a locally stopped or hold channel display. The button **start measuring** is valid only locally. The button is not valid for the higher global function **start measuring** in the tool bar.

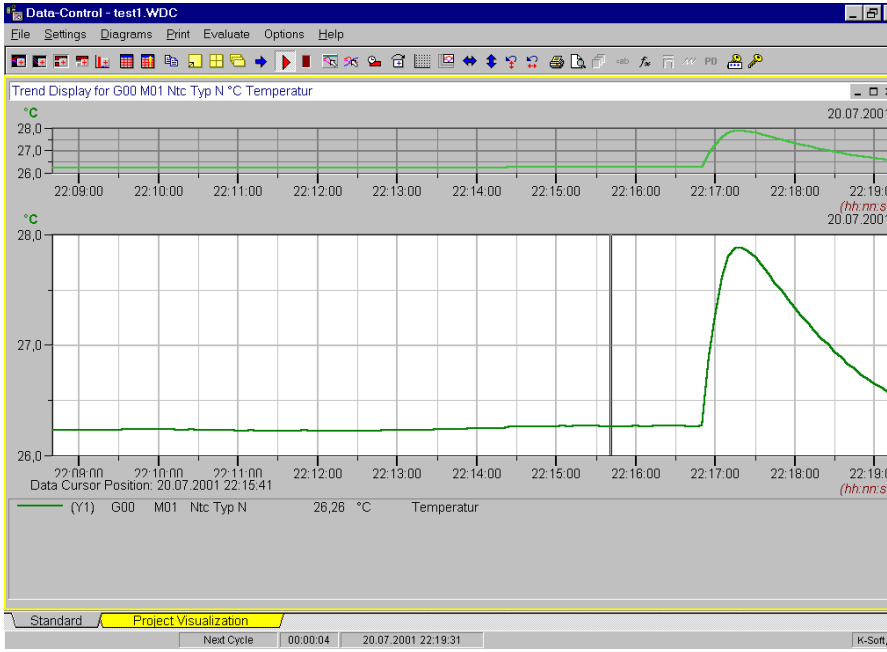
With this button you may **stop the measurement of the channel in the display** (Stop button). The LED will be white. While the channel display is being stopped no more data will be recorded for this channel. This is valid too, if you have assigned this channel to other diagrams. Press start button again for further data recording.

If you press this button, **updating of the data in the channel display will be discontinued** (break button). To update data, press the start button again. The diagram displayed looks like as if the break button has never been pressed.

If you press this button, you receive the **Y/t-diagram for trend display** for each channel.

The Trend Display in the Function Display Panel

The trend display in the function display panel is a Y/t-diagram for each channel in the channel display.

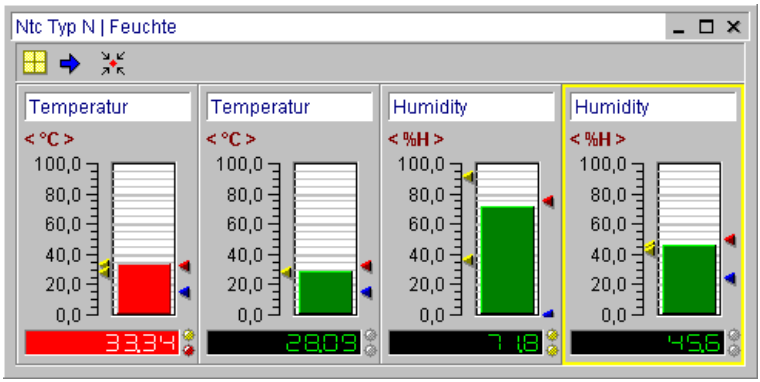


Note: The **function scope of the trend display diagram** corresponds exactly to a manually created Y/t-diagram. For the function detail of the Y/t-diagram please refer to the corresponding chapter in this manual.

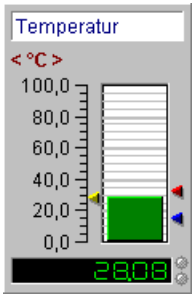
The Functions of the Column Monitoring Diagram during Measurement Operation (Trend Display)

In the following the functions of the column monitoring diagram **during the measuring process** (trend display) are described. For the diagram settings please refer to chapter diagram.

To create a column monitoring diagram select in the main menu the item **diagrams** and then the menu item **new column monitoring diagram** or the corresponding button in the tool bar. Designate your desired channels and start the measuring process. The diagram could also be created during the measuring process.

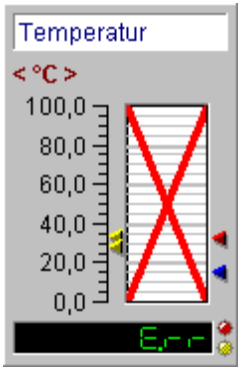


In the single display of the channel the **actual measuring value**. is displayed as column and digitally. Arrow left of the column shows the prevailing **highest and lowest measuring values**. . The two arrows right of the column correspond to the set **upper and lower limiting values**.



If the measuring value exceeds the **upper limiting value** the column color turn into red and if the value remains below the **lower limiting value** the column color is blue. If there is no limiting value violation the column color is green.

If a **general error** exist like no connection to the sensor, an **E.rr** will be shown in the display and the column is crossed out.



The upper LED-display signalizes a **sensor rupture**. It lightens red if an actual sensor rupture occurred and yellow if the sensor rupture occurred in the past.

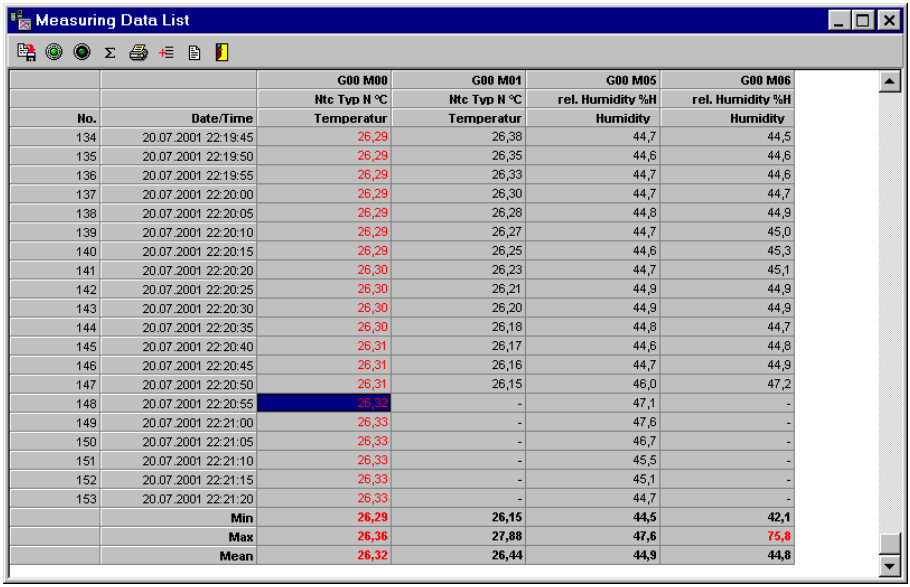
The lower LED-display signalizes a **limiting value violation**. It lightens red if an actual limiting value violation exist and yellow if the limiting value violation occurred in the past.

Note: Through a double click at the column in the display, the column will automatically be scaled to ±10% of the actual measuring value. Activate the option adapt Y-axis during ONLINE-measurement in the menu item Axes Scaling to adjust the axes automatically to the new measurement values.

The Functions of the Measurement Data List during Measurement Operation (Trend Display)

In the following the functions of the measurement data list **during the measuring process** (trend display) are described. For the settings of the measurement data list please refer to chapter measurement data list.

In all measurement data lists, the actual **measuring values are inserted online at the end of the table**. The program determines automatically per channel the highest and lowest value and the average value of all measuring values.



		G00 M00	G00 M01	G00 M05	G00 M06
		Ntc Typ N °C	Ntc Typ N °C	rel. Humidity %H	rel. Humidity %H
No.	Date/Time	Temperatur	Temperatur	Humidity	Humidity
134	20.07.2001 22:19:45	26,29	26,38	44,7	44,5
135	20.07.2001 22:19:50	26,29	26,35	44,6	44,6
136	20.07.2001 22:19:55	26,29	26,33	44,7	44,6
137	20.07.2001 22:20:00	26,29	26,30	44,7	44,7
138	20.07.2001 22:20:05	26,29	26,28	44,8	44,9
139	20.07.2001 22:20:10	26,29	26,27	44,7	45,0
140	20.07.2001 22:20:15	26,29	26,25	44,6	45,3
141	20.07.2001 22:20:20	26,30	26,23	44,7	45,1
142	20.07.2001 22:20:25	26,30	26,21	44,9	44,9
143	20.07.2001 22:20:30	26,30	26,20	44,9	44,9
144	20.07.2001 22:20:35	26,30	26,18	44,8	44,7
145	20.07.2001 22:20:40	26,31	26,17	44,6	44,8
146	20.07.2001 22:20:45	26,31	26,16	44,7	44,9
147	20.07.2001 22:20:50	26,31	26,15	46,0	47,2
148	20.07.2001 22:20:55	26,32	-	47,1	-
149	20.07.2001 22:21:00	26,33	-	47,6	-
150	20.07.2001 22:21:05	26,33	-	46,7	-
151	20.07.2001 22:21:10	26,33	-	45,5	-
152	20.07.2001 22:21:15	26,33	-	45,1	-
153	20.07.2001 22:21:20	26,33	-	44,7	-
	Min	**26,29**	**26,15**	**44,5**	**42,1**
	Max	**26,36**	**27,88**	**47,6**	**75,8**
	Mean	**26,32**	**26,44**	**44,9**	**44,8**

If the measuring value exceeds the **upper limiting value** list the text color will turn into red, if the value remain remains below the **lower limiting value** the text color is blue. If there is no limiting value violation the measuring values are black. If a **sensor rupture** occurred the program enters a dash in the measurement data list.

The automatic Measuring Operation

The automatic Offline - Measurement

In the automatic offline-mode, the measuring operation runs in the measuring device or network internally without connection to the computer.

The automatic offline measurement operates in two parts. Part 1 is device programming. Part 2 is reading of the measurement data from the device memory for further data processing with AMR Data Control 4.3.X. During measurement, the measuring devices are not connected to the computer and program. For offline measurement proceed as follows.

Part 1: Device Programming

- Connect your sensors to your measuring device and connect your device via serial port RS 232 to your computer.
- Start the program AMR Data Control 4.3.X to do all settings necessary for your measuring device and to finally do your measurement data evaluation.
- Set the communication port of your measuring device and the program of exactly the same value.
- Read the setup of your measuring device or network and add evaluation functions and diagrams in program.
- Save your measurement configuration in the configuration directory.
- Set your cycle period, start and stop measuring time, and transfer these data into your device.
- Exit the program and assemble your measuring devices at the location you want. You may use your computer during measurement for other purposes.
- Start your measuring process on your device in case you have chosen „Started by user“.

Part 2: Reading Device Memory

- After measuring, start your AMR Data-Control 4.3.X again and open either your configuration file or read your measurement setup again.
- Read your device memory.
- Save your measurement data in the measurement data directory.

After finishing your offline measurement, you may evaluate and represent your measurement values in diagrams and lists using AMR Data-Control 4.3.X.

Die automatic Online - Measurement

Unlike in automatic offline measurement, the measuring devices are connected during the entire measurement period to your computer and program AMR Data-Control 4.3.X. For automatic online measurement, proceed as follows:

- Connect your sensors to your measuring device and connect your device via serial port RS232 to your computer
- Start the program AMR Data Control 4.3.X to do all settings necessary for your measuring device and to finally do your measurement data evaluation.
- Set the communication port of your measuring device and the program of exactly the same value.
- Read the setup of your measuring device or network and add evaluation functions and diagrams in program.
- Save your measurement configuration in the configuration directory.
- Set your cycle period, start and stop measuring time.
- Start measuring via menu or button in the toolbar.
- Select a file name for saving your measurement data in the measurement data directory.

During online measurement, the measurement data are displayed simultaneously in your diagrams and are being continuously actualized. Formulas are also online calculated.

Note: For ONLINE-measurement with THERM-devices please enter first the corresponding THERM-device into the device table manually. Finally, read the eventually programmed sensor data via button in the toolbar or the corresponding function in the menu.

The Execution Control

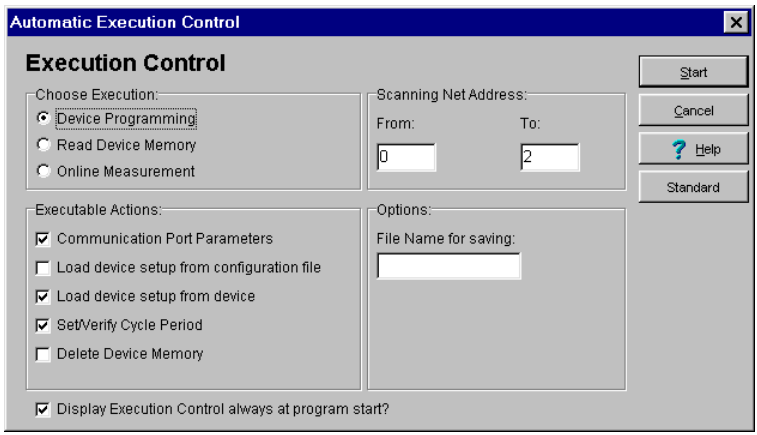
Application Fields

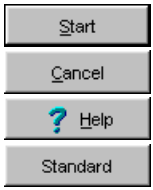
The execution control function enables you to execute your off- and online measurement with ALMEMO measuring devices automatically. To do so select in the main menu **Settings** the item **Automatic Execution Control**. The executions **Device Programming** and **Read Device Memory** automates both parts of the offline measurement. The execution **Online Measurement** automates the measurement online. THERM devices are manually controlled.

For each execution, you may activate each executable action by clicking with the mouse button. If you are working with an ALMEMO-Network, enter your desired net address section for measuring. Select a file name for the automatic saving of your measurement data. In the unsupervised execution control, you decide whether every action has to be confirmed or not. The button Standard sets for every action to be activated the pre-defined standard values.

Offline Measurement Part 1: Device Programming

Select **Device Programming** to prepare the offline measurement the execution. The standard executions are shown in the dialog box.





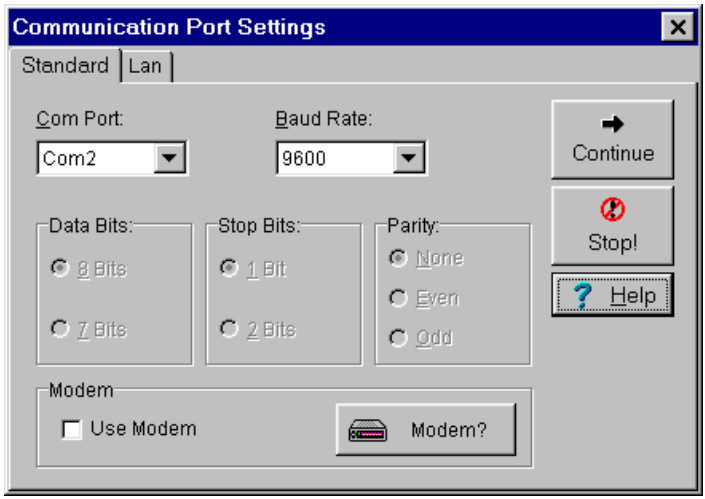
starts the selected execution

cancels the execution

opens online help for execution control

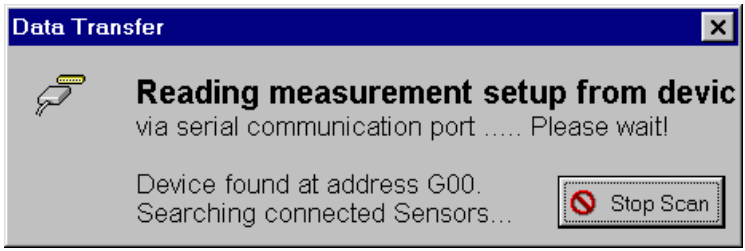
sets the standard values for the executable actions

After the program start, you will be asked to set the **Communication Port Parameter**. Select **Continue**, to proceed to the automatic execution, or **Stop** to cancel.



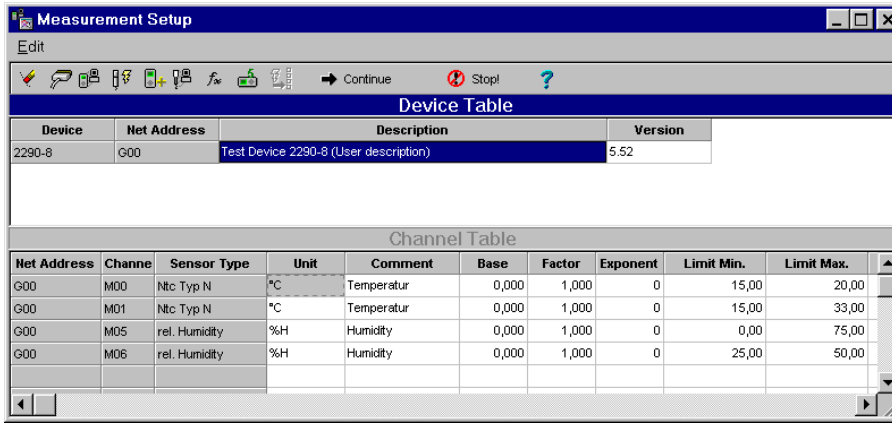
If you have check marked the option **Use modem**, the program opens the dialog box **phone book**, where you may select your desired subscriber.

After pressing **Continue**, the program starts scanning the **Measurement Setup** from the measuring device.

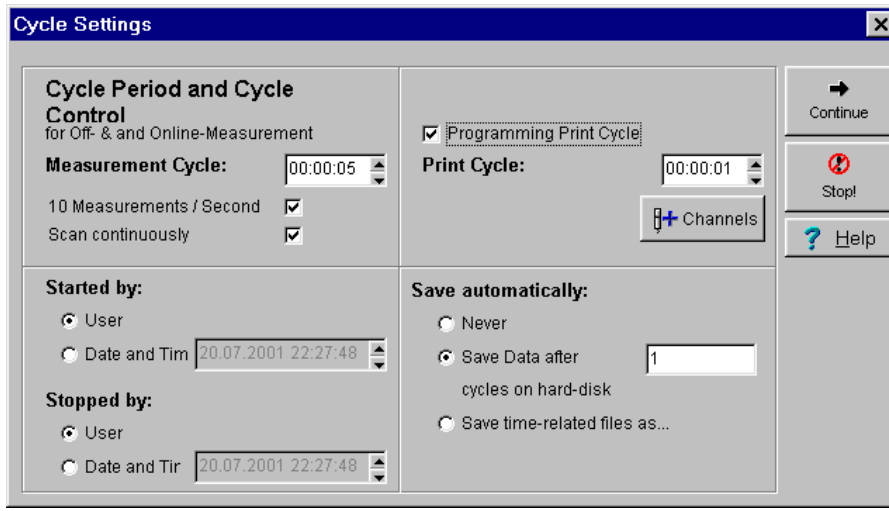


Note: If you have chosen in the execution control the action „ Load Device Setup from Data File“, a selection box containing the saved measurement setup file for loading will appear before data transfer begins.

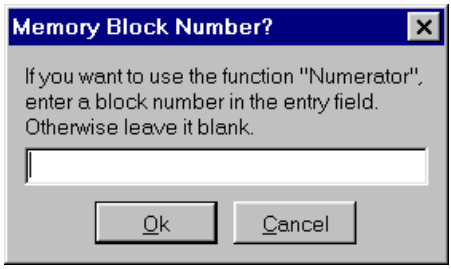
The program finally displays the scanned measurement setup in the channel table. Select **Continue**, to proceed to the automatic execution, or **Stop** to cancel.



The next step is to set your cycle period and your start and stop time. Select **Continue**, to proceed to the automatic execution, or **Stop** to cancel.



In case you know the **Device Memory Block Number** of your measuring devices, you may directly correspond here to your desired segment.

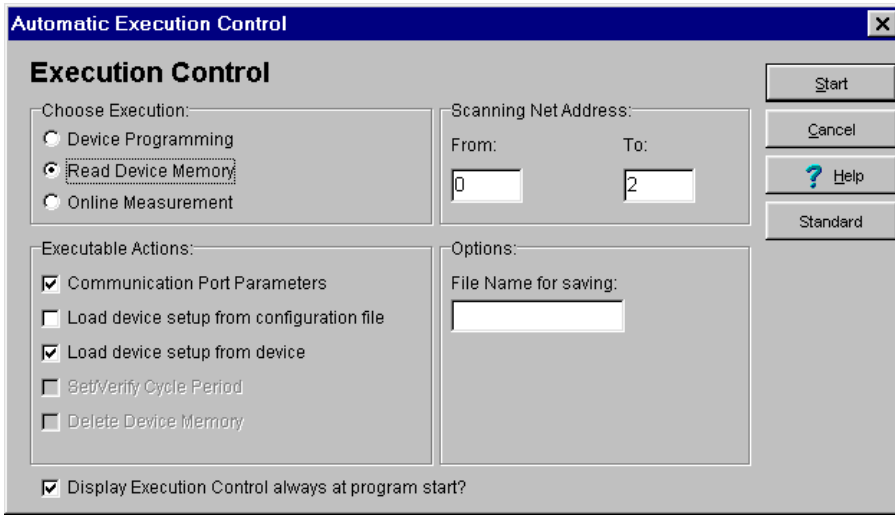


The program transfers now the defined parameters to the measuring devices. The hint box on the left appears.

Note: You may now detach your measuring device from your computer and assemble in your desired location. Start your measurement operation on your measuring device, if you have chosen the function „Started by User“ in the cycle period control. Otherwise the measuring devices do the measuring using the time settings from the cycle period control.

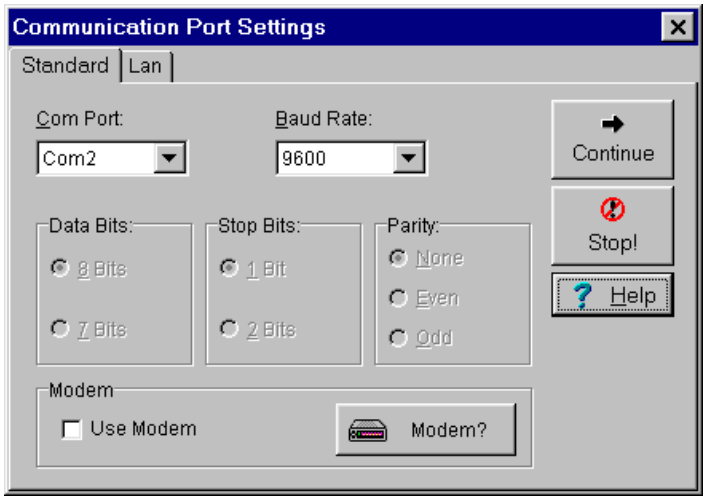
Offline Measurement Part 2: Read Device Memory

Select after finishing your offline measurement the execution **Read Device Memory**. The Standard executable actions are shown on the left dialog box.



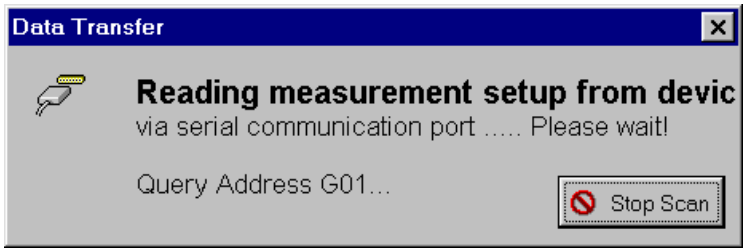
Start	starts the selected execution
Cancel	cancels the execution
Help	opens online help for execution control
Standard	sets the standard values for the executable actions

After the program start, you will be asked to set the **Communication Port Parameter**. Select **Continue**, to proceed to the automatic execution, or **Stop** to cancel.



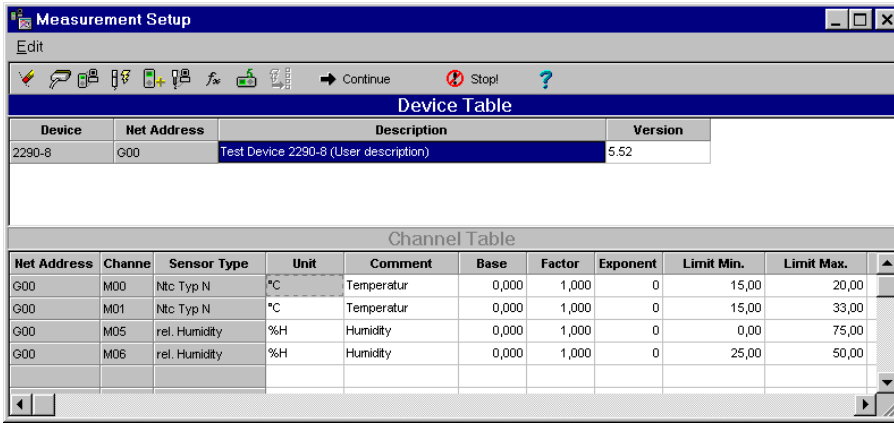
If you have check marked the option **Use modem**, the program opens the dialog box **phone book**, where you may select your desired subscriber.

After pressing **Continue**, the program starts scanning the **Measurement Setup** from the measuring device.



Note: If you have chosen in the execution control the action „ Load Device Setup from Data File“, a selection box containing the saved measurement setup file for loading will appear before data transfer begins.

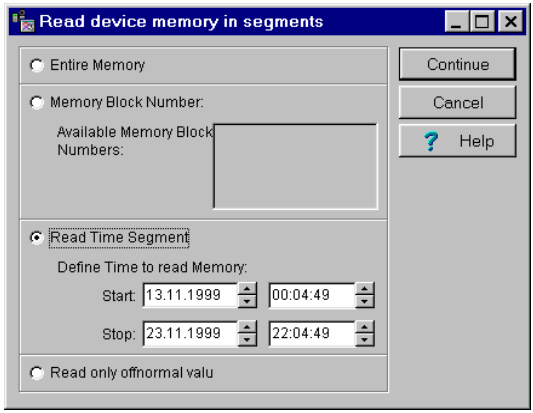
The program finally displays the scanned measurement setup in the channel table. Select **Continue**, to proceed to the automatic execution, or **Stop** to cancel.



If an **ALMEMO-5-measuring device** is connected you may chose in the dialog box between the options

- Entire memory
- Memory block number
- Read time segment
- Read only offnormal value

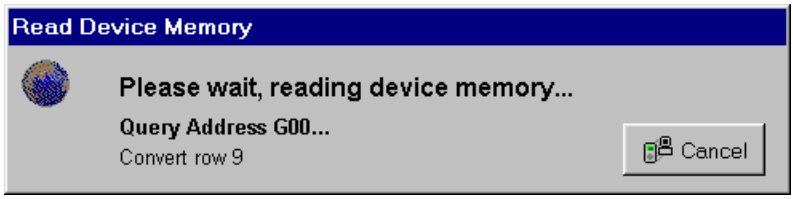
Select the option **Entire memory**, to read the measuring data completely once. If you know the **Memory Block Number** of your measuring device you may directly address herewith your desired data segment and read it. Use the option **Read time segment**, if you know the exact period of your measurement. Use the option **Read only offnormal value**, if you want to use offnormal values only



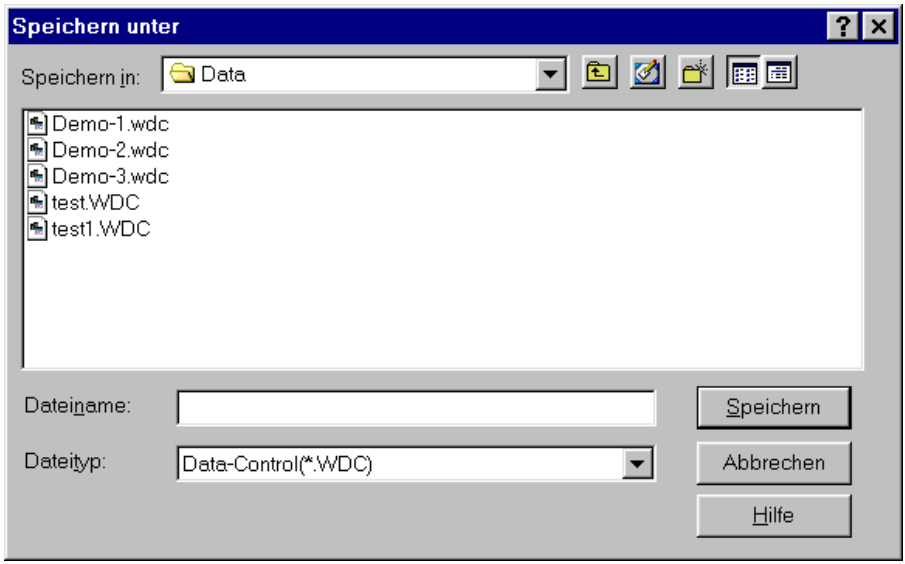
Note: If an **ALMEMO-Standard measuring device** is connected, a common dialog box will at this point be displayed where you may enter your memory block number.

Continue starts the data transfer from the measurement device or from the network.

Because data transfer may take some time depending on the data size, this message will be displayed during device reading.

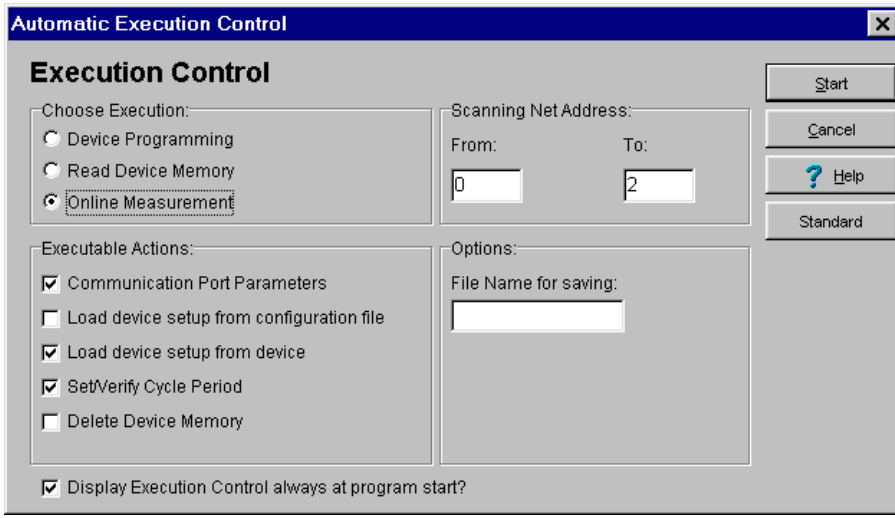


Finally the selection box for saving of files appears. In case a file name has already been assigned in the execution control, this box will no longer be displayed.



Online Measurement

Select this execution for the automatic **Online-Measurement**. The Standard executable actions are shown on the left dialog box.



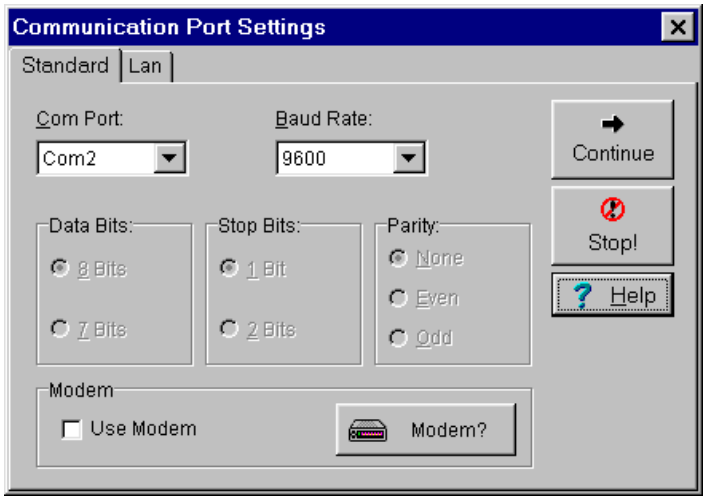
starts the selected execution

cancels the execution

opens online help for execution control

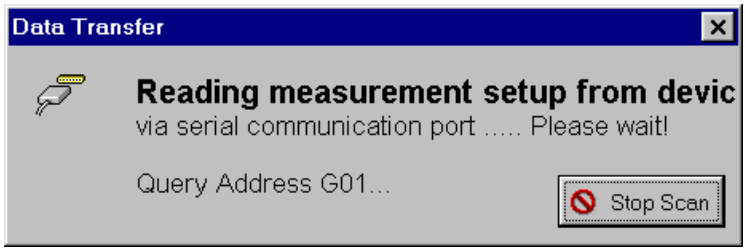
sets the standard values for the executable actions

After the program start, you will be asked to set the **Communication Port Parameters**. Select **Continue**, to proceed to the automatic execution, or **Stop** to cancel.



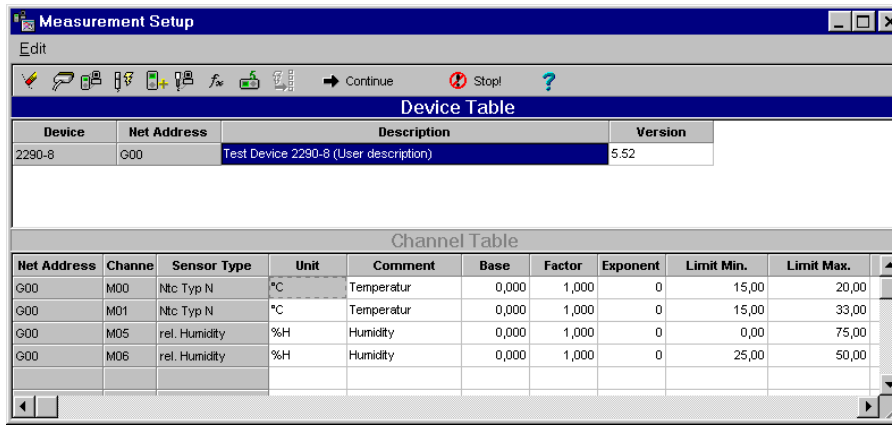
If you have check marked the option **Use modem**, the program opens the dialog box **phone book**, where you may select your desired subscriber.

After pressing **Continue**, the program starts scanning the **Measurement Setup** from the measuring device.

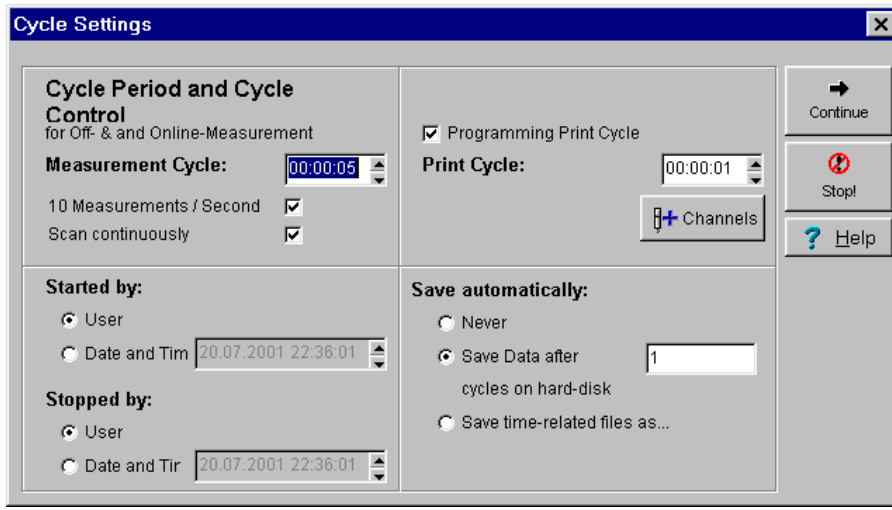


Note: If you have chosen in the execution control the action „ Load Device Setup from Data File“, a selection box containing the saved measurement setup file for loading will appear before data transfer begins.

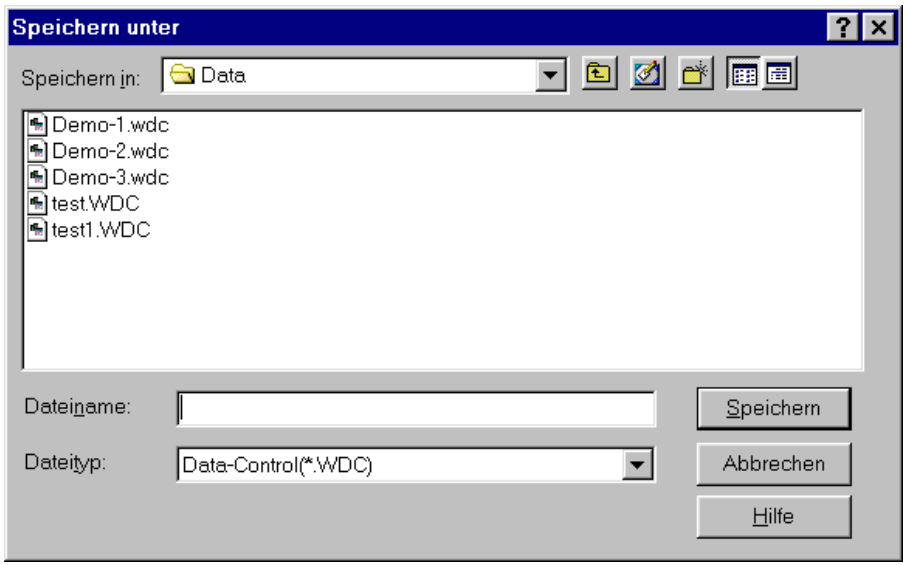
The program finally displays the scanned measurement setup in the channel table. Select **Continue**, to proceed to the automatic execution, or **Stop** to cancel.



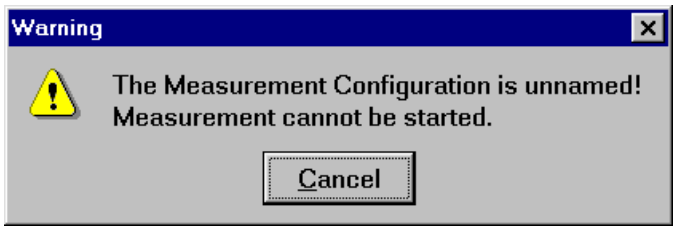
The next step is to set your cycle period and your start and stop time. Select **Continue**, to proceed to the automatic execution, or **Stop** to cancel.



Finally the selection box for saving of files appears. In case a file name has already been assigned in the execution control, this box will no longer be displayed.



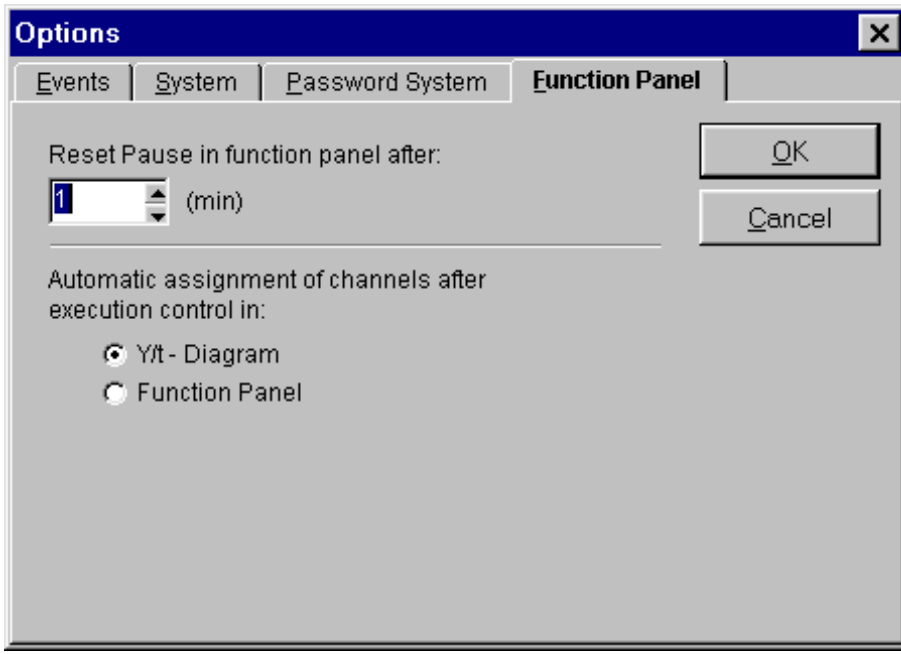
You must assign a file name to your measurement file to start measuring, otherwise this warning will appear.



Graphing the Data after the Execution Control

Normally the program graphs the data after the automatic execution control in a Y/t-diagram.. You may however as master user let a function panel be created (option OP-PANEL/ALARM).

Select in the main menu **Options** the item menu **System Settings** and the register **Function panel**. Choose the option Y/t-diagram or function panel and enter also the time which after it had lapse the break function in the function panel will be set back by itself again.



The Password Protection (Option OP-PANEL/ALARM)

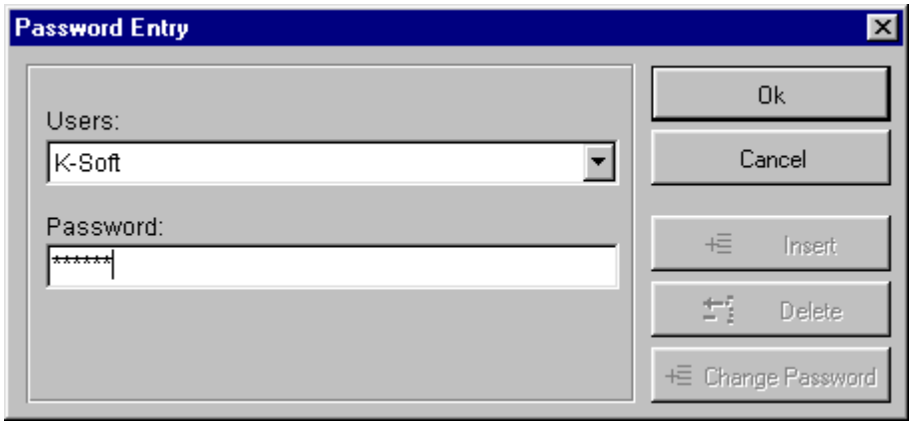
The User Administration

The program supports the administration of several users with different passwords. With the help of user names you may enter or cancel registration in the system. This serves to protect measurement from unintended or unauthorized access. If the program is locked up, entries are no longer possible.

The user administration is hierarchical in two levels. In the upper level the system administrator have the right to set up and to delete password of the user in the lower level. The lower level user may change his/her password. On program delivery, the system administrator **K-Soft** and the password „**k-soft“** are pre-set.

The entering and canceling of registration of various user and their activities are documented in the event protocol. The tracking-up of activities are hereby ensured.

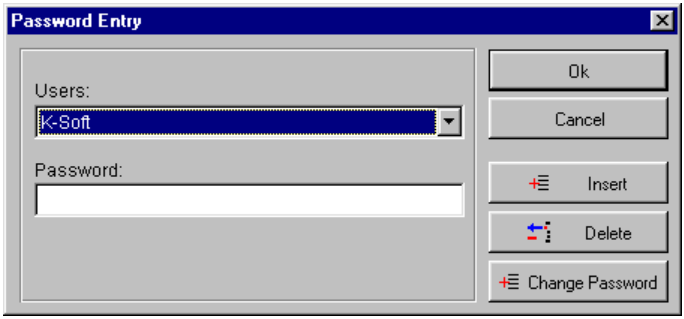
Select in the main menu the item **options** and then the menu item **password entry** to open the user administration. You may also use the corresponding button in the tool bar. Register first as system administrator.



activates the dialog box for the password entry.

Register as System Administrator

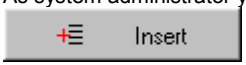
If you enter system administrator **K-Soft** and the password „**k-soft“** in the password entry of your delivered program version, the next time you activate this menu you will be given the right to set up lower level user, to delete and to assign passwords and to generate a new system administrator.



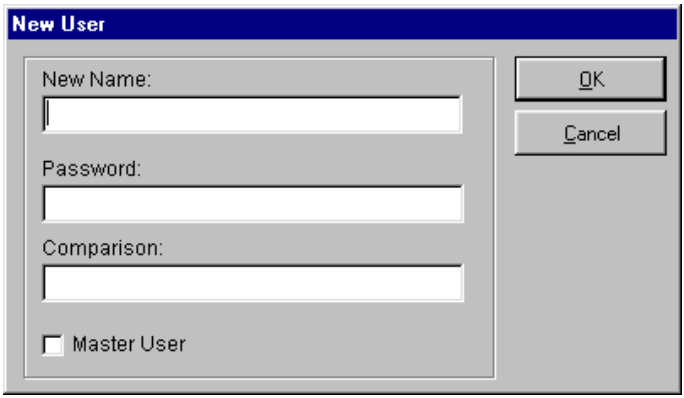
The buttons **insert, delete and change password** in the dialog box for password entry are then active.

Insert User

As system administrator you may insert new users. The button



opens the dialog box **New users**

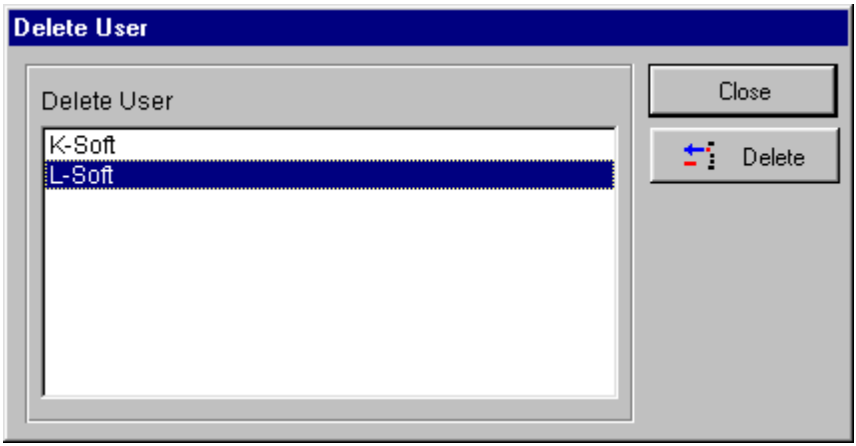


Enter a **new name** and the **password**. For comparison you must enter the password again. Check mark the option **master user** if the user is entitled to rights of the system administrator. The rights of the old master user will become the rights of the normal user. For safety reasons, there will be just one System Administrator.

Delete User

As system administrator you may delete users. The button

opens the dialog box **delete user**

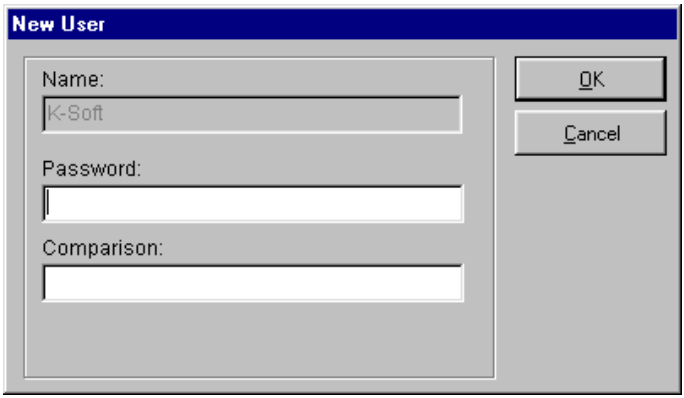


Select the user which you want to delete. Confirm this with **delete**. The system administrator itself cannot be deleted.

Change System Administrator Password

As system administrator you may change your own password. The button

opens the dialog box **change password**



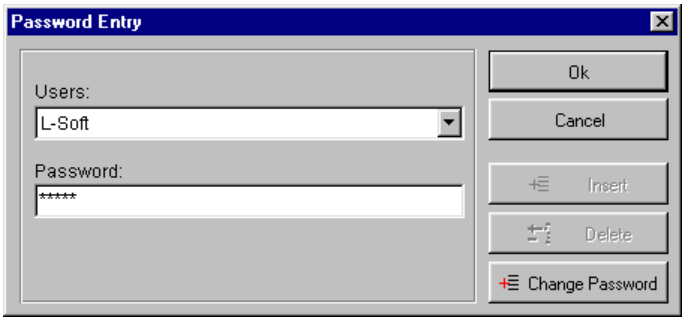
Enter a **new password.** For safety reasons you must enter the password again for **comparison.**

Automatic Locking at Program Start (Option OP-PANEL/ALARM)

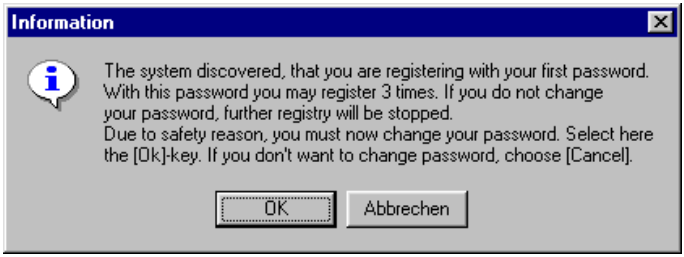
The program is delivered unlocked. As system administrator you may decide if the program should be locked up right at the start. Select here **options** in the main menu, then the menu item **system settings** and then the register **password system**. Select the option if needed and enter the time when the program will lock up by itself again.

Register as User

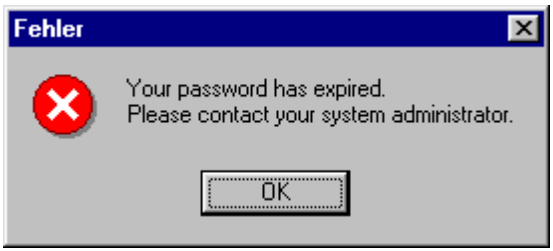
If you are registered as user by the system administrator, you may register to the system via password entry. Choose a **user** and then enter the corresponding **password**. Confirm the entry with Ok to register to the system.



If the user was newly set up by the master user, the following hint appears during the first registration .



You must change the password because the master user knows the password. This means protection is no longer guaranteed. In case you registered three times and you did not change your password, the program will be locked up and the following message appears.



Cancel Registration and Program Locking

Select in the main menu the item **options** and then the menu item **lock**, to cancel registration from system and to protect you measurement from further entry. You may also use the corresponding button in the toolbar.

locks the program.

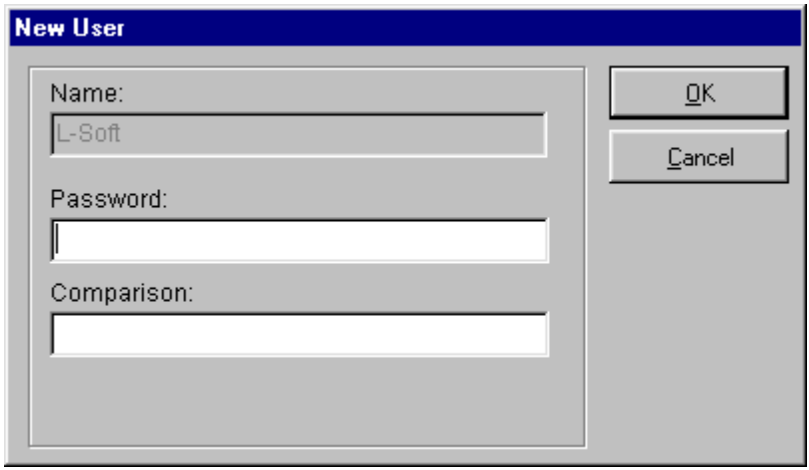
You may then again run the program if you register yourself again as user or as system administrator via the password entry.

activates the dialog box for the password entry.

Change User-Password

As user you may change your password. The button

opens die Dialog-Box **change password**

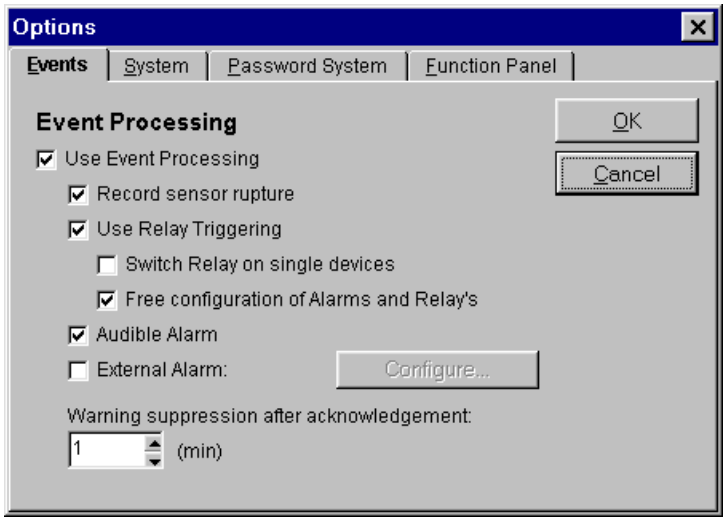


Enter a **new password**. For safety reasons you must enter the password again for **comparison**.

The Event Processing (Option OP-PANEL/ALARM)

Activate Event Processing

As main user you may determine how the program should behave by the event processing. Select here the main menu **options** then the menu item **system settings** and then the register **events**. Here you may decide if the protocol should be generally used and which events should be reported.



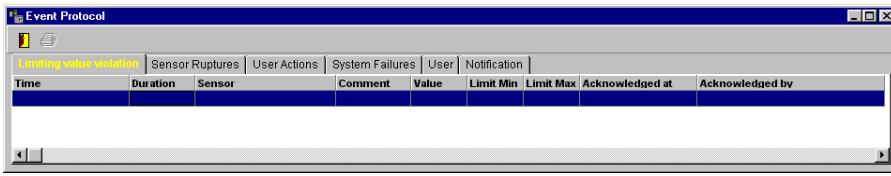
The Event Protocol

The program is capable of recording **event protocol** parallel to measuring process. The following events are documented:

- Limiting Value Violation
- Sensor Rupture
- User-Actions
- System Failure.

Select in the main menu **options** the menu item **event protocol**, to activate the table with the corresponding protocol. The program takes down all event reports with date, report text and acknowledgement.

Limiting Value Violations

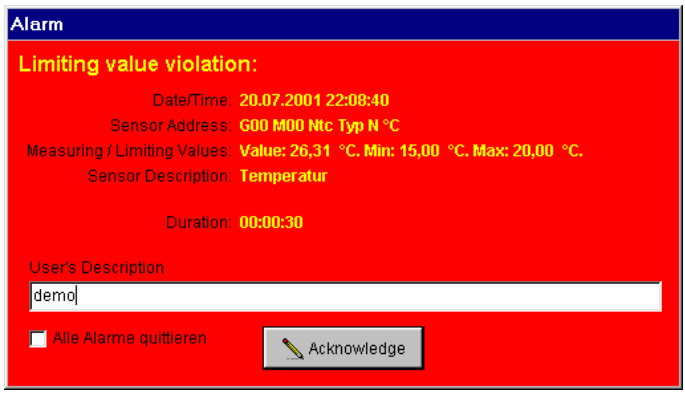


The fields of the event protocol for limiting value violation means:

Time: Time of occurrence
Duration: Duration of limiting value violation
Sensor: Sensor, where the limiting value violation occurred
Comment: Type of measurement value
Value: Measurement value
Limiting Value-Min: Lower limiting value
Limiting Value-Max: Upper limiting value
Acknowledge at: Date and time of acknowledgement
Acknowledge by: Current registered user of the program
User Description: User specific reason/comments

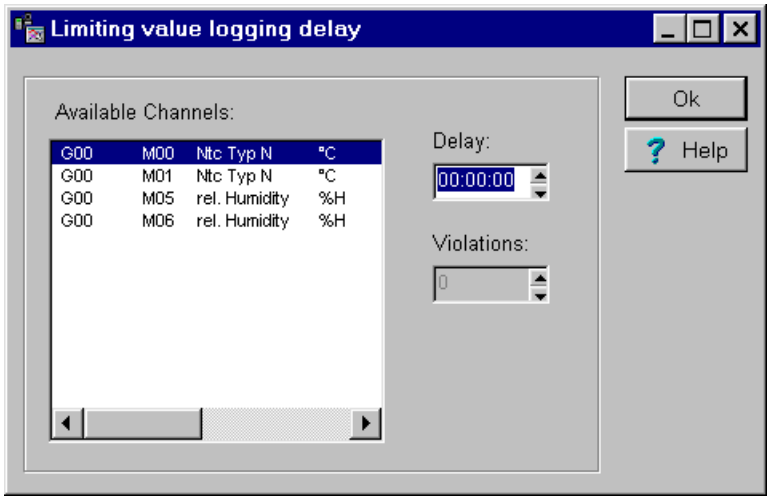
Alarm by limiting value violation during measuring process

If the event protocol is turned ON and during the measuring process a limiting value violation occurred, the **alarm dialog box limiting value violation** appears. You must enter a short comment to be able to acknowledge the alarm report (the entry field is only active with the option OP-PANEL/ALARM).

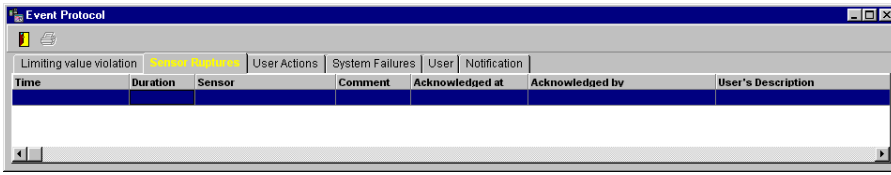


The Logging Delay of the Limiting Values

For each channel you may enter logging/protocol delay. Select **diagrams** in main menu then the item **logging delay** to set the delay function. The program records all event reports like limiting value violation but only until the set delay time had lapsed. This function could be used to suppressed undesirable reports during the transient period.



Sensor Rupture



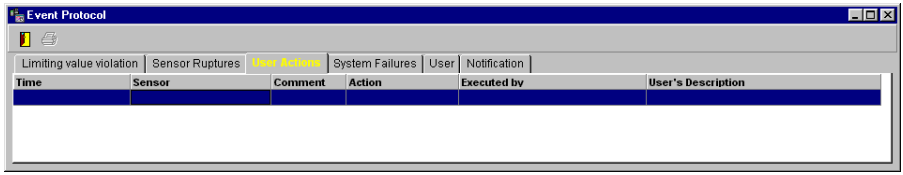
The fields of the event protocol for sensor rupture means::

Time: Time of occurrence
Duration: Duration of limiting value violation
Sensor: Sensor where the sensor rupture occurred
Comment: Type of measurement value
Acknowledge at: Date and time of acknowledgement
Acknowledge by: Current registered user of the program
User Description: User specific reason/comments

Alarm by sensor rupture during the measuring process

If the event protocol is turned ON and during the measuring process a sensor rupture occurred, the **alarm dialog box sensor rupture** appears. You must enter a short comment to be able to acknowledge the alarm report (the entry field is only active with the option OP-PANEL/ALARM).

User-Actions

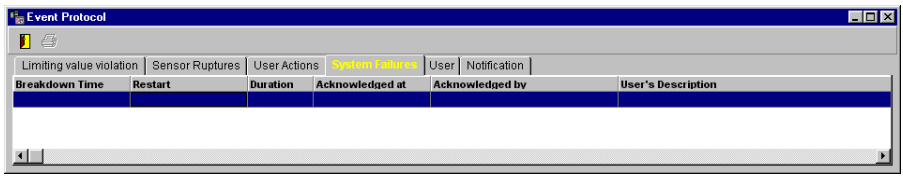


The fields of the event protocol for the user-actions means:

Time: Time of occurrence
Sensor: Sensor where the user-action occurred
Comment: Type of measuring value
Action: Action description
Carried out by: Current registered user of the program
User Description: User specific reason/comments

User actions are not directly reported as alarm on the screen.

System Failure



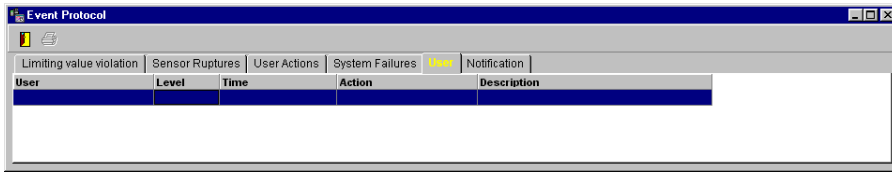
The fields of the event protocol for the system failure mean:

Breakdown time: Time of system failures
Re-start: Time of re-start
Duration: Duration of system failure
Acknowledge at: Date and time of acknowledgement
Acknowledge by: Current registered user of the program
User Description: User specific reason/comments

System failure is not directly reported as alarm on the screen.

User

In the register **User** entries about registration, cancellation of user as well as setting up of new user or changing of passwords are being entered. The user actions will not be reported directly on the screen as alarm.

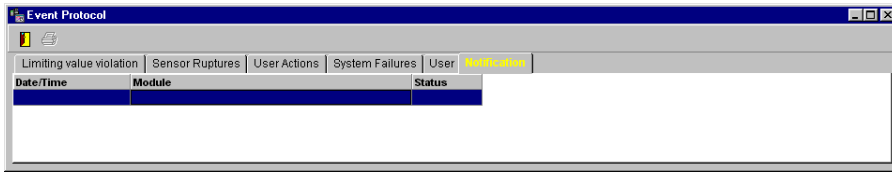


The fields of the event protocol for user means:

User:	User name
Level:	User authorized level
Time:	Date and time of user action
Action:	User action (ex.: registering, canceling, setting up of user, changing password
Description:	additional description of action

Notification

Under the register **Notification** all external notifications will be registered, if successful or not. Notifications are not directly reported as alarm on the screen.

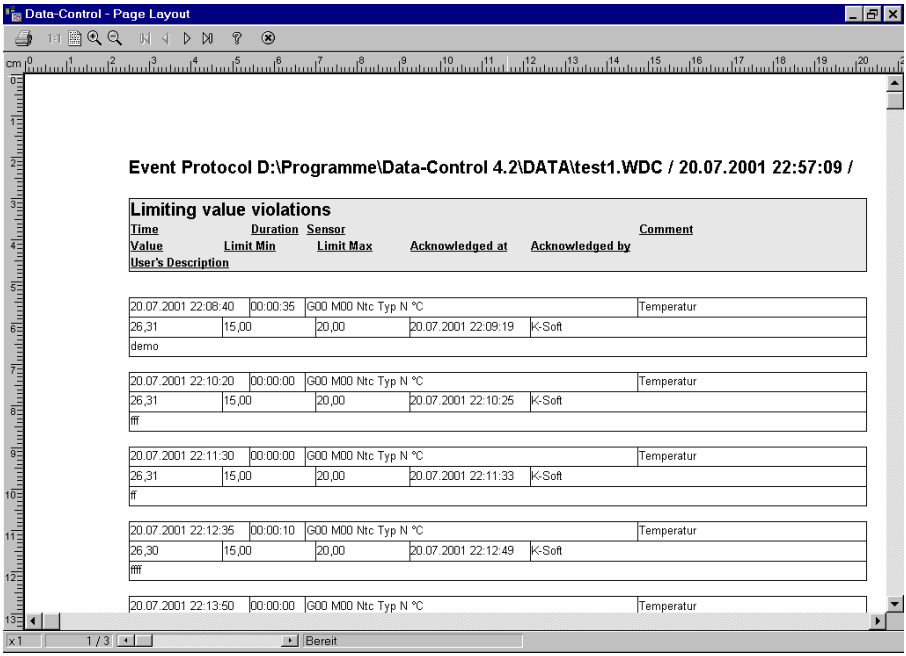


The fields of the event protocol for the notification means

Time:	Notification time
Module:	Notification module
Status:	Notification status condition

Print Event Protocol

activates the page preview, where you may print the **event protocol**.



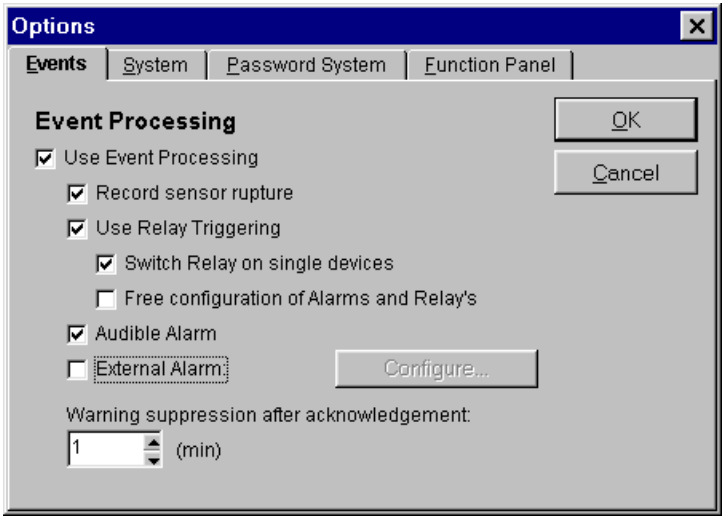
Note: The event protocol will always be completely printed out – it contains all limiting value violations, eventually occurred sensor rupture, user-actions and system failures.

Relay Adapter Control

Activate Relay Adapter Control

The devices of the ALMEMO V5 series are provided with a relay adapter which could turn on/off other external devices in case of alarm.

The triggering of the relay adapter connected to the devices could be turned on/off. To activate click on the main menu **Options** the submenu **System Settings** and then the register **Events**. With the option **Use Relay Triggering** you may turn the relay triggering on/off.



As soon as the relay triggering is switched on, you may choose between

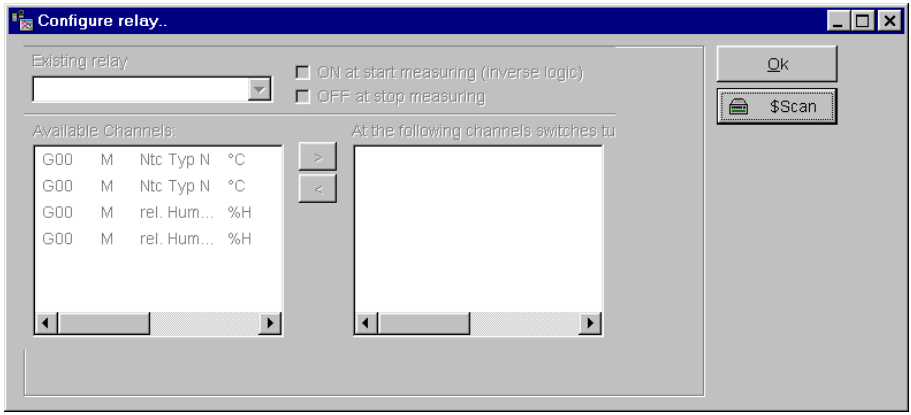
- Switch relay on all devices
- Free configuration for alarms to relays

With the option **Free Configuration for Alarms to Relay**, you may assign to which device in the network the relay adapter in case of alarm is to be activated and switched on. Standard setting is that on all devices the command switch on relay will be broadcasted.

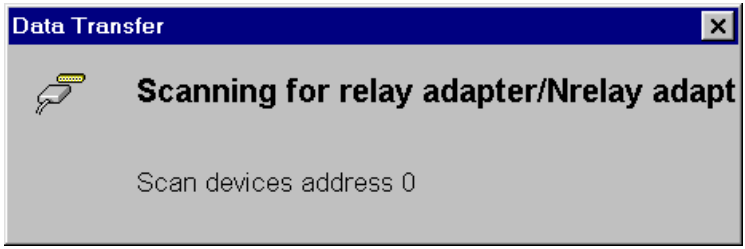
Note: This function is only active, if you are registered as main user with a master password.

Configuration of the Relay Adapter Control

For the configuration of the relays, choose in the main menu **Settings** the submenu **Measurement Setup** and then the button **Relay Adapter Control**. The devices are now displayed in the following mask:



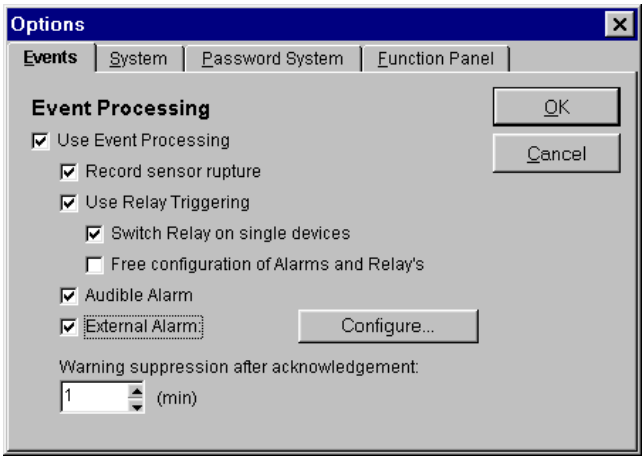
scanning for connected relay adapter in the network.



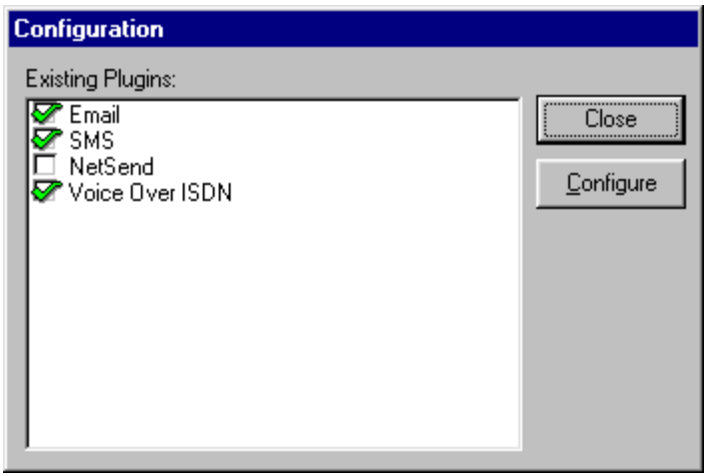
External Alarm

For the **external Alarm** the following protocols are available as plug in:

- Email (delivered with OP-Panel/Alarm)
- SMS (additional option OP-SMS)
- NetSend (additional option OP-NET-SEND)
- Voice Over ISDN (additional option VOICE-over-ISDN)



activates the dialog box for the external alarm configuration.

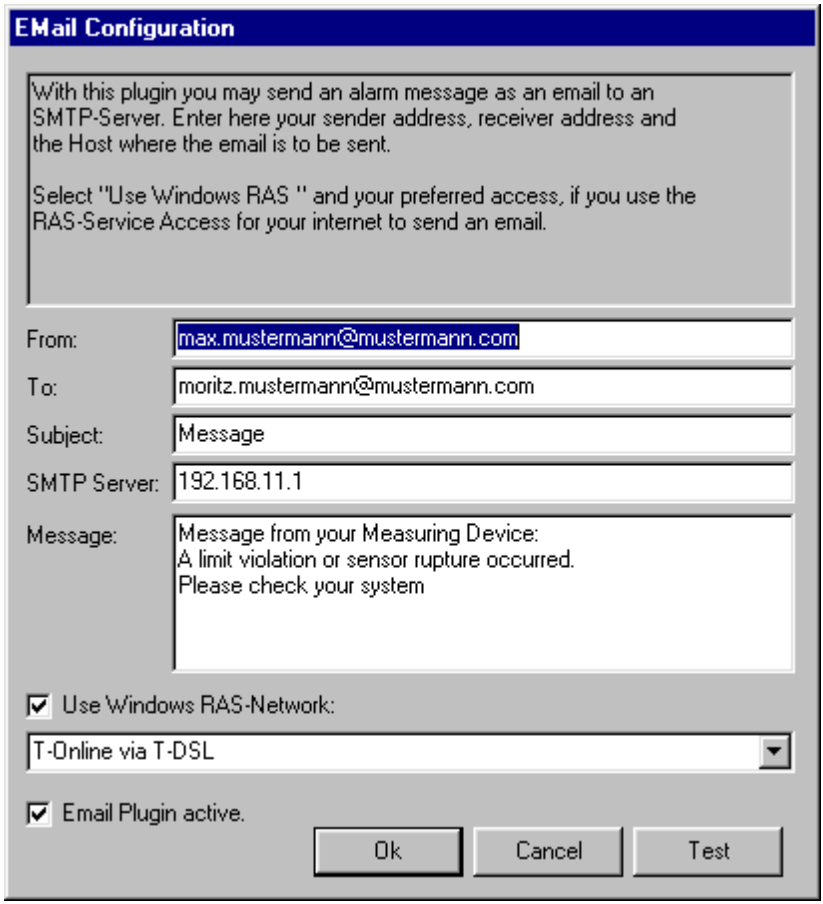


Alarm via Email

Please activate the Plugin **Email**, if the program in case of alarm should automatically send an Email to an addressee. The program assumes a successful alarming if the Email is being transmitted.

Configure... activates the dialog-box for the configuration of the Email -parameters.

In this box you may enter the parameters for the alarm via Email.



The fields of the Email – plugin mean:

From:	Enter here the Email - Address of the sender
To:	Enter here the Email - Address of the receiver
Subject:	Subject of the Email
SMTP-Server:	Name or IP-Address of the Mail Server for outgoing Email
Message:	Enter Email message. The following formatting characters are possible: %s% inserts automatically the channel description in the text %d% inserts automatically the Date/Time in the text

Checkmark the option **Use Windows RAS-Network**, to choose a connection via the RAS-Network. The program dials this connection automatically and disconnects after sending the email automatically as well.

Checkmark the option **Activate Email Plugin**, to use this function for the external alarming.

With the button **Test**, you may test the functionality and the correctness of your entered data.

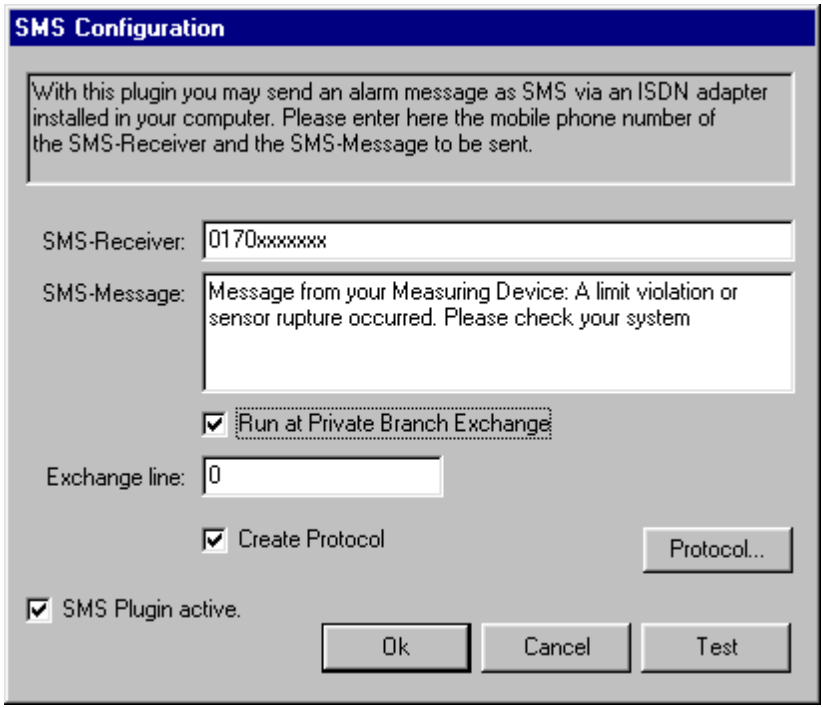
Note: The Plugin Email assumes a functioning access to a SMTP-Server in Intranet or Internet (ex. RAS-connection to the Internet or MS Exchange Server). In case you cannot establish a connection, please contact your network administrator.

Alarm via SMS (Option OP-SMS)

Please activate the Plugin **SMS**, if the program in case of alarm should automatically send an SMS to receiver with mobile phone. The program assumes a successful alarming if the SMS is being transmitted.

Configure... activates the dialog-box for the configuration of the SMS-Parameters.

In this box you may enter the parameters for the alarm via SMS (Short Message Service).

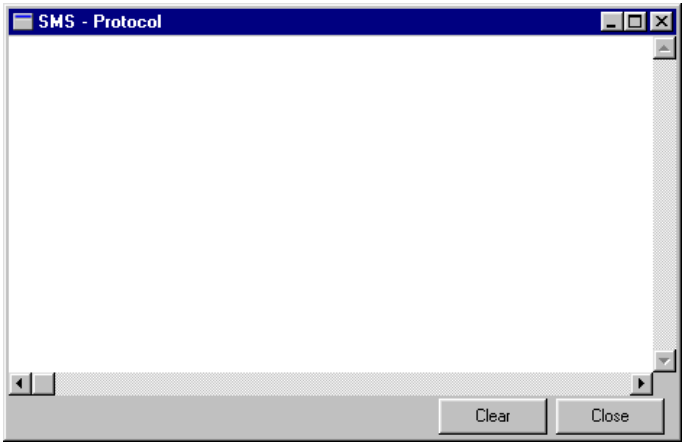


The fields of the SMS-Plugin mean:

SMS-Receiver: Enter here the mobile phone number of the receiver
SMS-Message: Enter here your SMS – Message with a maximum of 160 characters
Exchange line: Enter here the number of your Exchange line access

Checkmark the option **Create protocol**, it the program should protocolize the sending of SMS. In case of uncertainty an exact analysis may be done through this protocol.

With the button **protocol**, you may activate the sending protocol. Here you may trace your sent SMS-Messages.



Checkmark the option **Activate SMS Plugin**, to use this function for the external alarming.

With the button **Test**, you may test the functionality and the correctness of your entered data.

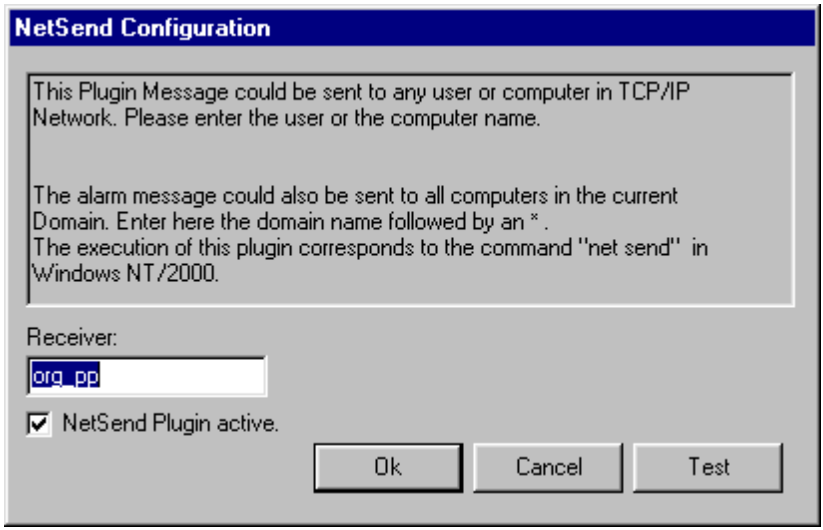
Note: The Plugin SMS assumes a functioning access to the telephone net via ISDN-Protocol. An ISDN-Adapter and the corresponding CAPI-drivers must be installed. In case you cannot establish a connection, please contact your network administrator.

Alarm via NetSend (Option OP-NET-SEND)

Please activate the Plugin **NetSend**, if the program in case of alarm should automatically send an receiver in the network. The program assumes a successful alarming if the NetSend message is being transmitted.

Configure... activates the dialog-box for the configuration of the NetSend - Parameters.

In this box you may enter the parameters for the alarm via NetSend.



The fields of the NetSend-Plugin mean:

Receiver: Enter here the network address of the receiver

Checkmark the option **Activate NetSend Plugin**, to use this function for the external alarming.

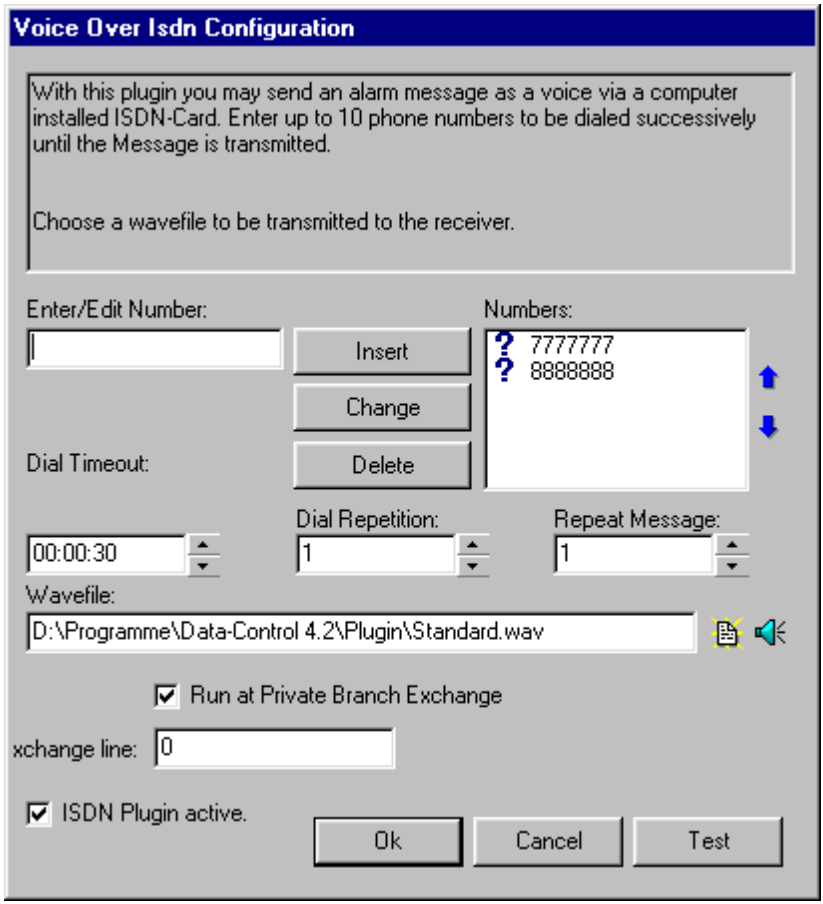
With the button **Test**, you may test the functionality and the correctness of your entered data.

Note: The Plugin SMS assumes a functioning access to the network via TCP/IP-Protocol. In case you cannot establish a connection, please contact your network administrator.

Alarm via Voice Over ISDN (Option OP-VOICE-over-ISDN)

Please activate the Plugin **Voice Over ISDN**, if the program in case of alarm should automatically send a voice message via telephone to a receiver. At the receiver a voice message will be automatically transmitted (WAV-file). The program scans a list of maximal 10 phone numbers consecutively until a number is being reached or until all numbers are being dialed to a maximum number of dial repeat. The program assumes a successful alarming if the voice message is being transmitted.

Configure... activates the dialog-box for the configuration of the Voice Over ISDN – Parameters. In this box you may enter the parameters for the alarm via Voice Over ISDN.



The fields of the Voice over ISDN – Plugin mean:

Enter/Edit number	Enter here the phone numbers of the receivers
Numbers	List of phone numbers to be dialed consecutively. A Maximum of 10 numbers are possible.
Exchange line:	Enter here the number of your Exchange line access
	inserts the number in the enter field of the list
	inserts the number to be changed in the enter field and overwrite this in the list
	deletes the number
	moves the number in the dial position upwards
	moves the number in the dial position downwards
Dial Timeout	Time of rings until the connection is identified as unreachable. You may set the value between 15 s and 1 min 30 s
Dial Repetition	Number of dial trials before transmitting voice message. You may set the value between 1 and 3
Repeat Message	Number of repetitions of the voice message by dial success
Wavefile	Selection of File for the voice message.

The Voice files always have the suffix *.wav. The file must have the following format:
Sample frequency 8000 Mhz
16 Bit Mono with signs

Via the button right of the enter field, you may select a dialog-box to open the voice file.

Press the button to load the voice file through the sound card in your computer.

Checkmark the option **Activate Voice over ISDN Plugin**, to use this function for the external alarming.

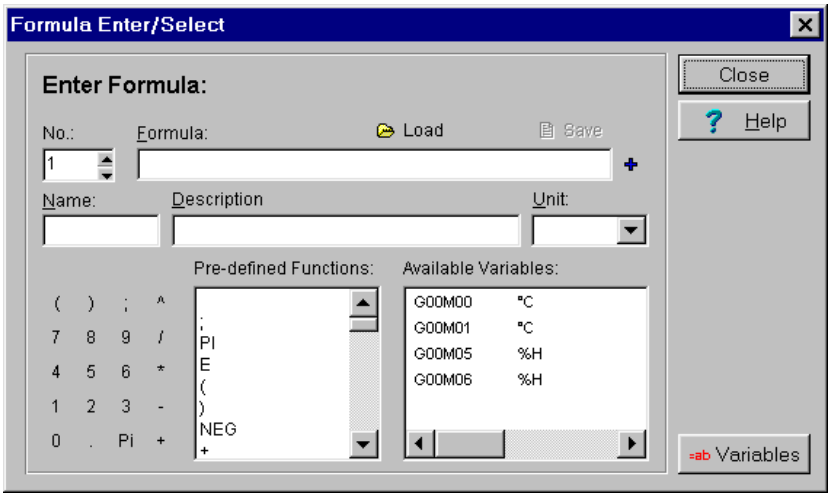
With the button **Test**, you may test the functionality and the correctness of your entered data.

Note: The Plugin Voice over ISDN assumes a functioning access to the telephone net via ISDN-Protocol. An ISDN-Adapter and the corresponding CAPI-drivers must be installed. In case you cannot establish a connection, please contact your network administrator.

The Evaluation of the Measurement

Entering / Editing Formula

Select in the main menu **Evaluate** the command **Formula Enter / Edit**, to create the formula you need for the evaluation of your measurement values. This dialog box appears.



You may select an existing formula from the **formula data bank** and enter this as formula channel in die channel table.

The Fields of the Formula Enter / Select Dialog Box

No.: Formula channel number to be entered in the channel table analog to measurement channel number (starting with F..)

Formula: Mathematical term consisting of variables (Measurement and Formula Channel) combined with mathematical functions

Name: Short description of the formula for the channel table and formula data bank

Description: Text box for user specific comments about the formula

Unit: Physical unit selectable from the units list

Predefined Functions: Mathematical functions for combining variables

Available Variables: Measurement or formula channels consisting of device number and measurement channel number or device number and formula channel number

=ab Variables opens an additional dialog box with **user specific defined variable**, which you may additionally use as part of the formula for the formula definition.

Note: A formula channel for combining measurement data will be entered in the channel table of the measurement setup like a measurement channel. A **maximum of 99 formula channels** is possible. A formula can only be saved, if the mathematical term is valid and if the formula name is defined. The **Limits** of a formula are to be entered in the channel table.

Creating a New Formula

To create a new formula, proceed as follows:

1. First choose a free formula channel number.
2. Enter your mathematical term in the formula box. Signs from the keyboard block may be applied by clicking the left mouse button. Mathematical functions and variables such as measurement channel and other predefined formula channel may also be applied in your mathematical term by double clicking the left mouse button.
3. Always add at the end of your mathematical term a semicolon „;“. Only then is your formula complete.
4. Assign your formula a name which will be used as a short description for the channel table and for the formula data bank.
5. Select a physical unit for your formula.
6. Describe briefly the function of the formula in the respective text box.

Note: If you want to repeat the calculation with different parameters just change the desired formula channel. Calculations from combination of formula channels will be considered and automatically be computed.

List of Implemented Mathematical Functions

+ - * / ( ) < > =	basic mathematical operations
DIV, MOD	integral division and module (the remainder from division)
GGT,KGV	largest common divisor, and smallest common multiple.
^	raise to a higher mathematical power
SQR,SQRT	square and square root
EXP	exponential function
LN,LG,LD	natural logarithm, base 10 logarithm and base 2 logarithm
PI	pi
E	exponential function (inverse logarithm)
NEG	negation
SIN,COS,TAN,COT, ARCSIN,ARCCOS, ARCTAN,ARCCOT, SINH,COSH,TANH,COTH, ARCSINH,ARCCOSH, ARCTANH,ARCCOTH	trigonometric functions
ABS	absolute value
REZ	reciprocal
FAK	faculty
INT	integer (whole number form floating point number)
DEG	conversion from radial to degrees
RAD	conversion from degrees to radian
RND	rounding
SGN	determines sign (-X = 1, 0 = 0, +X = 1)

Special Function

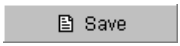
The following are **special functions**, where you can get a direct access to the channel and to the contained data. The variable name must have an prefix **„I“** (for **I**ndex) to enable the program to determine the correct value.

Example: normal variable name: **G00M00**
special function variable name: **IG00M00**

I	Index Designation	
INDEX	value of the channel at index x.	*Example*: (IG00M00 INDEX 10)
MEAN	mean value of the channel data	*Example*: MEAN(IG00M00)
MIN	smallest value of the channel data	*Example*: MIN(IG00M00)
MAX	largest value of the channel data	*Example*: MAX(IG00M00)
LAST	last recorded value of the channel data	*Example*: LAST(IG00M00)
FIRST	first recorded value of the channel data	*Example*: FIRST(IG00M00)
SUM	summation of all values of the channel data	*Example*: SUM(IG00M00)

Applying / Saving a New Formula

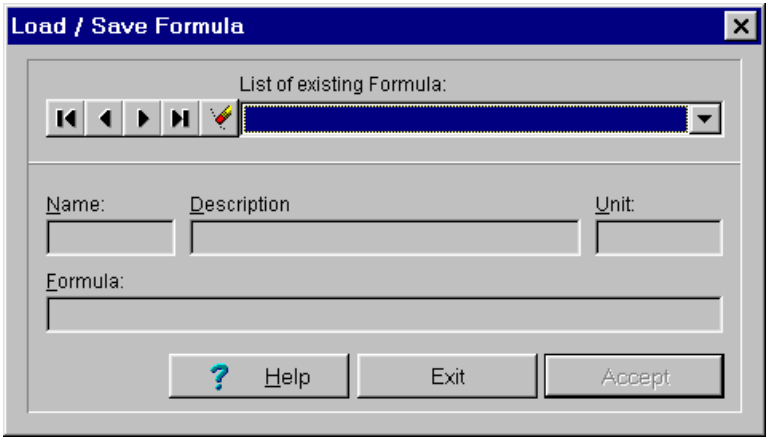
Adds your formula as formula channel to your **channel table** in the measurement setup.



Saves the valid and complete formula in the **formula data bank**. If your desired formula name already exists in the data bank, you can either overwrite the existing formula name or change your formula name.

Loading an Existing Formula

in the dialog box of **Formula Enter/Edit** click the **load** button to open this dialog box where existing formulas are listed. Select your desired formula from the list of existing formula and enter this in the Formula Enter / Select box. Formula characteristics will be displayed in the respective fields. Use buttons to scroll from one data record to the other or to delete unnecessary formula.



go to first data record

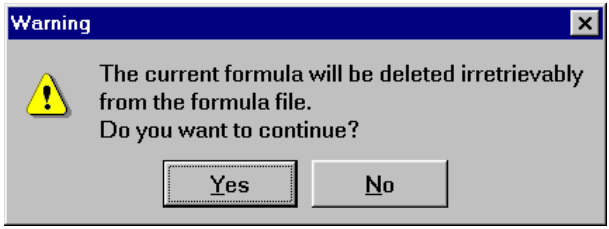
go to previous data record

go to next data record

go to end of data record

delete current formula

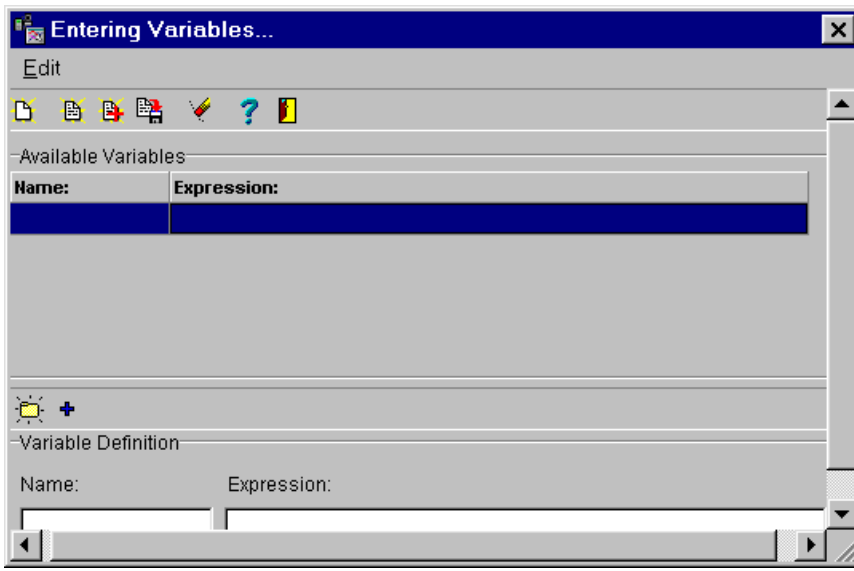
This security check will be displayed before a formula from the formula data bank will be finally **deleted**.



Using Variables

Enter / Edit Variables

Use variables to save often recurring formula part. Hereby you may reduce effort in entering your formula. Select in the main menu **Evaluate** the menu item **entering/editing variables** to define the variables for the processing of your measurement data. This dialog box will appear.

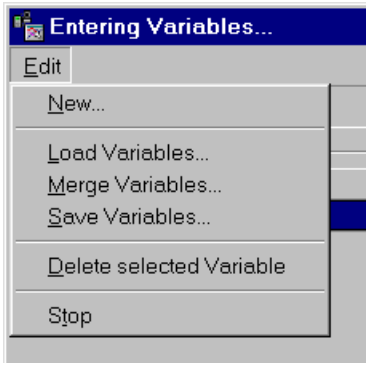


You may save a variable in a **variable data bank**, or you may save in a file and use in any formula.

Editing Variables

Select in the submenu of the **variables** the item **Edit** the shown menu will appear with the following functions:

- Add new variable
- Load variable
- Merge variable
- Save variable
- Clear marked variable
- Stop (close table)



The functions are also via the **tool bar of the variable table** comfortable to handle. The buttons in particular means:

delete all variables

load variables

merge variables to existing configuration

save variables in files

delete marked variables

close variable table

activate help to variables

enter new variables

entered variables verify and insert

The Fields of the Variable Entry / Selection

At the upper part of the dialog box the **available** v**ariables** are listed. At the lower part you may enter and insert in the **definition of variables** new variable and modify existing variables. The entry fields means:

Name: Short description of the variable for the variable data bank (file)
Expression: Calculation equation for variables to be use in the measuring and formula channels

Formulate a New Variable

To formulate a new variable, please proceed as follows:

1. Enter your Calculation equation in the field terms .
2. End-up your calculation equation with a Semicolon „;“. Only then is your equation complete.
3. Give your variable a Name as short description for the variable data bank.

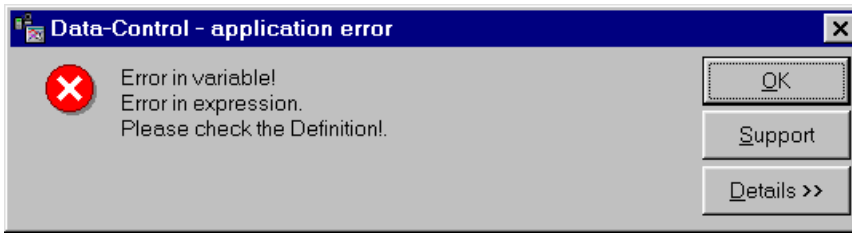
Note: If you want to repeat the calculation with a different parameter, you only have to modify the desired term. Calculations from interdependent formulas will automatically be recalculated.

Accept / Save a New Variable

verify the entered variable and insert a valid and complete variable in the **variable data bank**.

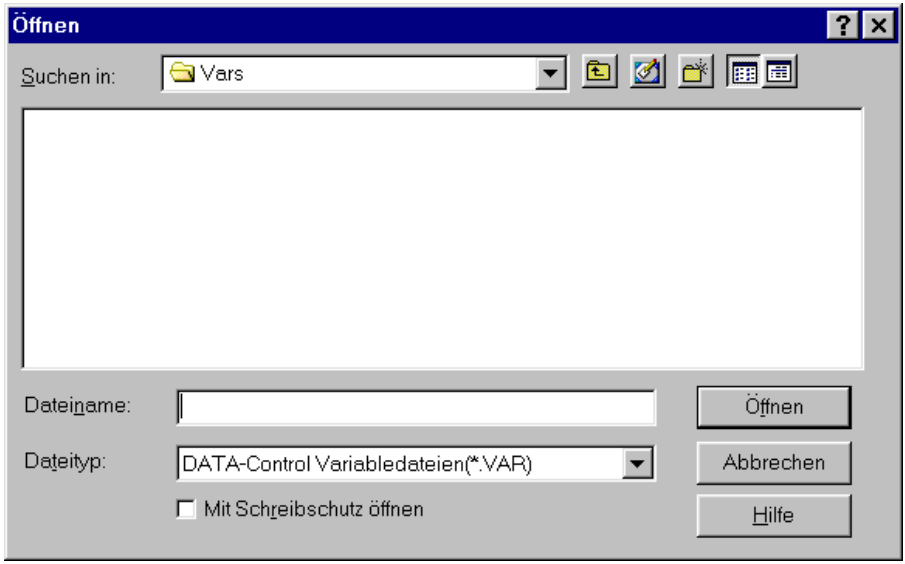
saves the existing variables in a file.

If the definition of the variable is incorrect this message in the box will appear.



Load Variable / Merge Variable / Save

Select in the submenu **variables** the item **load/ merge/ save variable** or the corresponding button in the tool bar. This dialog box appears. Files for variable have the ending *.var.



Adding Pre-Defined Functions

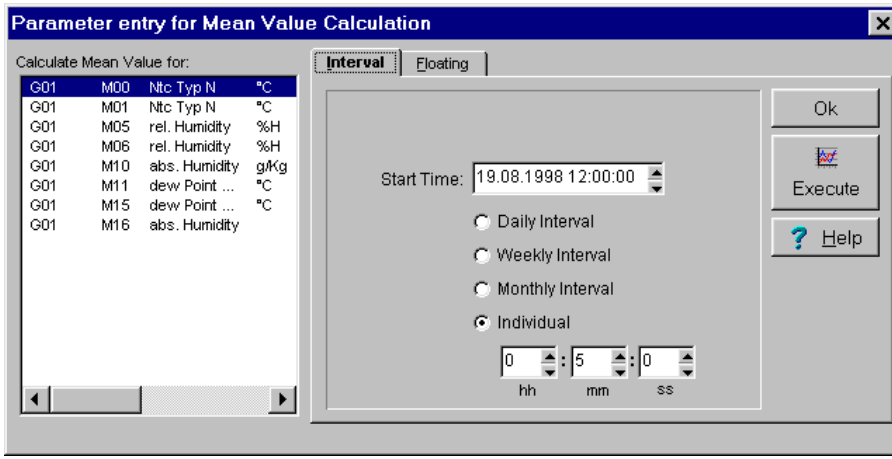
Several pre-defined functions may be delivered optionally with this program. These functions are not included in the standard version of AMR Data Control 4.3.X The following describes the functionality and the integration in the measurement setup.

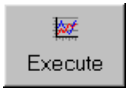
Mean Value Calculation (Option OP-MWSUM)

Select in the main menu **Evaluate** the item **Mean value**. This function is only active in Offline-Mode and if your file contains measuring data. Mean values may be calculated for measuring channels as well as for formula channels. Mean value calculations will be entered in the channel table of the measurement setup with **Channel Definition A...** and **Sensor Type MW...**. The program automatically adds comments about the source of the data in the field description. For mean value calculations you may choose between **interval** and **floating** calculation.

Mean Value Calculation in Interval

Select a channel for **mean value calculation in interval**. Enter start and stop time for the evaluation range and enter the **Interval**. To define the interval you may choose between daily, weekly, and monthly interval or you may determine the interval individually.

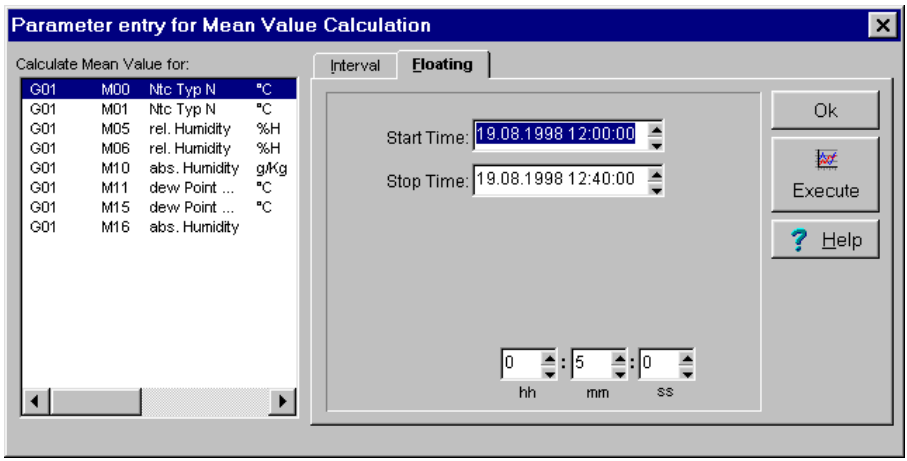


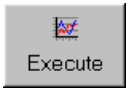


Click **Execute** with the left mouse button. The program adds an evaluation channel in the measurement setup and calculates mean values of the predefined interval within the evaluation range. The values will be arranged in the middle of the interval and may be displayed in a diagram.

Mean value floating:

Select a channel for **floating mean value calculation** to smoothen your measuring results. Enter **start and stop time** for the evaluation range and enter the **Interval**.





Click **Execute** with the left mouse button. The program adds an evaluation channel in the measurement setup and calculates mean values of the predefined interval within the evaluation range. After each calculation the interval will be moved one step to the next measuring value. In this manner the measuring data will be smoothened. The values will then be arranged in the middle of the interval and may be displayed in a diagram.

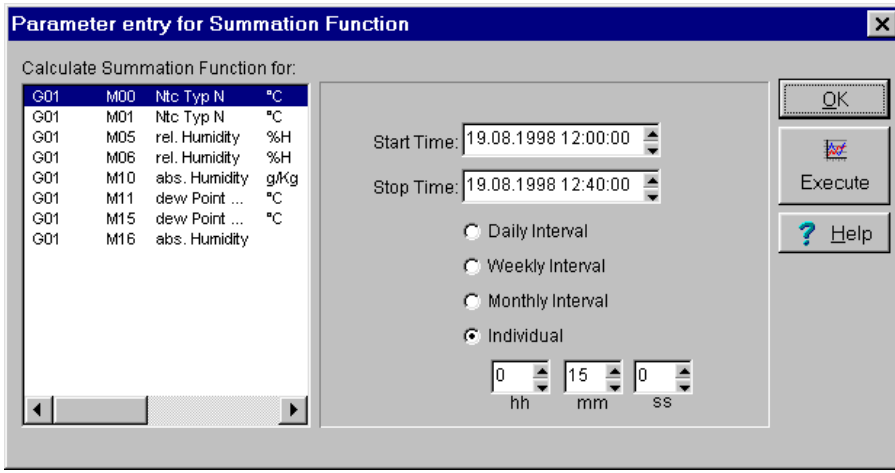
opens the mean value calculation via the tool bar.

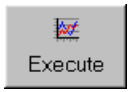
Summation (Option OP-MWSUM)

Select in the main menu **Evaluate** the item **Summation**. This function is only active in the Offline-Mode and if your file contains measuring data.

Sums may be calculated for measuring channels as well as for formula channels. The summations will be entered in the channel table of the measurement setup with **Channel Definition S...** and **Sensor Type Sum**. The program automatically adds comments about the source of the data in the field description.

Select a channel for Summation. Enter **start and stop time** for the evaluation range and enter the **Interval**. To define the interval you may choose between daily, weekly, or monthly interval or you may determine the interval individually.





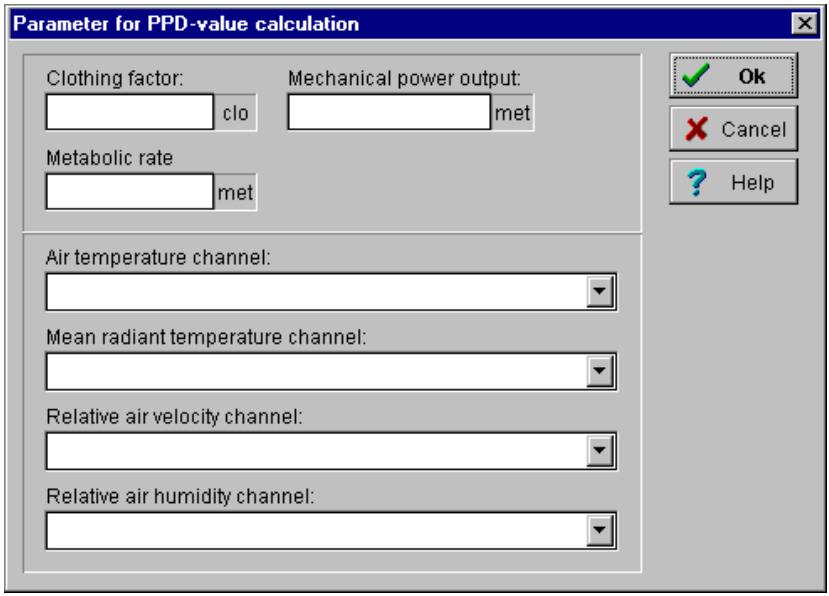
Click **Execute** with the left mouse button. The program adds an evaluation channel in the measurement setup and calculates the sum of the predefined interval within the evaluation range. For each interval the calculation starts at zero. The sums may be displayed in a diagram.

opens the function summation via the tool bar.

PPD-Value Calculation (Option OP-PPD)

This function enables you to calculate the PPD (predicted percentage of dissatisfied) according to DIN EN ISO 7730. The PPD-Index represents a quantitative prediction about the number of dissatisfied persons in a particular surrounding climate.

Select in the main menu **Evaluate** the item **PPD-Value**. This function is only active during configuration without measurement data. The function is not available if your file contains measuring data.



Enter the **Parameters** for the calculation of the PPD-value and select the channels with the corresponding **Measuring values**. The program adds an evaluation channel for the **PPD-Value** in the measurement setup with a **Channel Definition PD...** and with a **Sensor Type PD-Value** and also adds an evaluation channel for **Turbulent Rate** with a **Channel Definition T...** and with a **Sensor Type Turbulent**. For the PPD-Value Calculation the following **Parameters and Measuring values** are necessary:

PARAMETERS

1. Clothing factor in [CLO]
   (Thermal isolation value for clothing combinations)
2. Energy Yield in [met]
   (degree of physical activity)
3. Mechanical Output in [met]
   (the effective mechanical output – for most works = 0)

MEASURING VALUES

1. Air Temperature in [°C]
   (surrounding temperature at measuring point)
2. Mean Radiant Temperature in [°C]
   (Globe Thermometer)
3. Relative Air Velocity in [m/s]
   (air velocity at measuring point)
4. Relative Air Humidity in [%]
   (relative surrounding humidity at measuring point)

Depending on the number of sensors, several PPD-Indices may be determined simultaneously during measurement.

The first PPD-Index and Turbulent Rate will be calculated after the first 200 measuring values and will be continuously displayed from there on.

activates the calculation of the PPD-Indices via the tool bar.

Application Fields of the PPD-Index

The aim of this norm is,

1. to describe a procedure for predicting the warmth feeling and the degree of discomfort of persons who are exposed to a moderate surrounding climate.
2. to lay down conditions for the surrounding climate which bring about a feeling of comfort.

The international norm is valid for healthy men and women. It is originally based on the study of the north American and European citizens. It also corresponds to current studies on Japanese which are exposed to moderate climate. It is expected that the norm is applicable with good approximation to almost all part of the world. However ethical and national-geographical deviation may occur which makes a further study necessary.

The norm is applicable to persons exposed in an inside room climate, where a feeling of thermal comfort is to be attained. It is also applicable to inner room climate where a moderate deviation of the comfort condition may exist. In an extreme surrounding climate, other international norms are applicable. Deviation may occur for sick and handicap persons. This norm is applicable for the creation of a new surrounding climate or for the evaluation of an existing surrounding climate. This norm is drawn for the working surrounding climate, but may also be applied for any other kind of surrounding.

Predicted Percentage of Dissatisfied (PPD)

The PPD-Index represents a quantitative prediction about the number of dissatisfied persons in a particular surrounding climate. With the PPD-Index, it is possible to predict the percentage of a large group of persons who feel warm or cold. This means that these persons could be categorized according to the 7 levels of climate rating scale which is either very warm, warm, cold or very cold.

With the PPD-Index, it is possible to predict the number of a large group of persons who are dissatisfied with the surrounding climate. The rest of the group may have a climatic neutral, a little bit warm or cold feeling.

Acceptable Surrounding Climate for Comfort

Thermal comfort is defined as a feeling which expresses the satisfaction with the surrounding climate. Dissatisfaction arises from discomfort of the body as a whole due to the effect of warmth and coldness. This is expressed through PMV and PPD. Thermal discomfort may also be due to unintended cooling (or warming) of certain part of the body, example through draft which could be expressed through a model for predicting the degree of impairment through draft. Local discomfort may also be due to an abnormal high vertical temperature difference between the head and the ankle, caused by very warm or cold flooring or very high asymmetry of the radiant temperature. Discomfort may also be caused by very high energy yield or heavy clothing.

Due to individual difference, it is impossible to define a surrounding climate which satisfies everybody. There will always be a percentage of dissatisfied persons. But it is possible to define a surrounding climate which could be predicted that a certain percentage of surrounding exposed persons feels the climate to be acceptable. In appendix D of DIN EN ISO 7730 are suggestions for the comfort requirements drafted, which could be predicted that 90% of the surrounding exposed persons accept and 85% feel not annoyed by draft.

In some cases, a higher quality of the surrounding climate as mentioned above (less dissatisfied) is desired. In some other cases, a lower quality of the surrounding climate (more dissatisfied) could be sufficient. In both cases, the PMV-and the PPD-index and the model for prediction of the degree of impairment through draft could be applied to determine other fields of surrounding climate parameters as suggested in appendix D of DIN EN ISO 7730.

Turbulent Rate Calculation

The Turbulent Rate is calculated as follows:

$$T = sv / vm * 100$$

$$vm = 1/n * Sum (n, i = 1) * vi$$

$$sv = SQRA (1/(n-1)) * Sum (i = 1 to n) *(vi -vm)^2)$$

where:

T	Turbulent Rate in %
sv	Standard deviation of the current values of the air velocity
vm	mean air velocity (time related mean value of the air velocity, see also VDI 2080)
n	number of measurements
vi	current value of the air velocity

Energy Yields of Different Physical Activities

Kind of Physical Activities	Energy Yield W/m²	met
Leaned	46	0,8
Seated, relaxed	58	1,0
Sitting activity (office, apartment, school, laboratory)	70	1,2
Light standing activity (shopping, laboratory works, light industrial works)	93	1,6
Mid-heavy standing activity (Selling, house keeping, operation machines)	116	2,0
Walking on plane surface:		
2 km/h	110	1,9
3 km/h	140	2,4
4 km/h	165	2,8
5 km/h	200	3,4

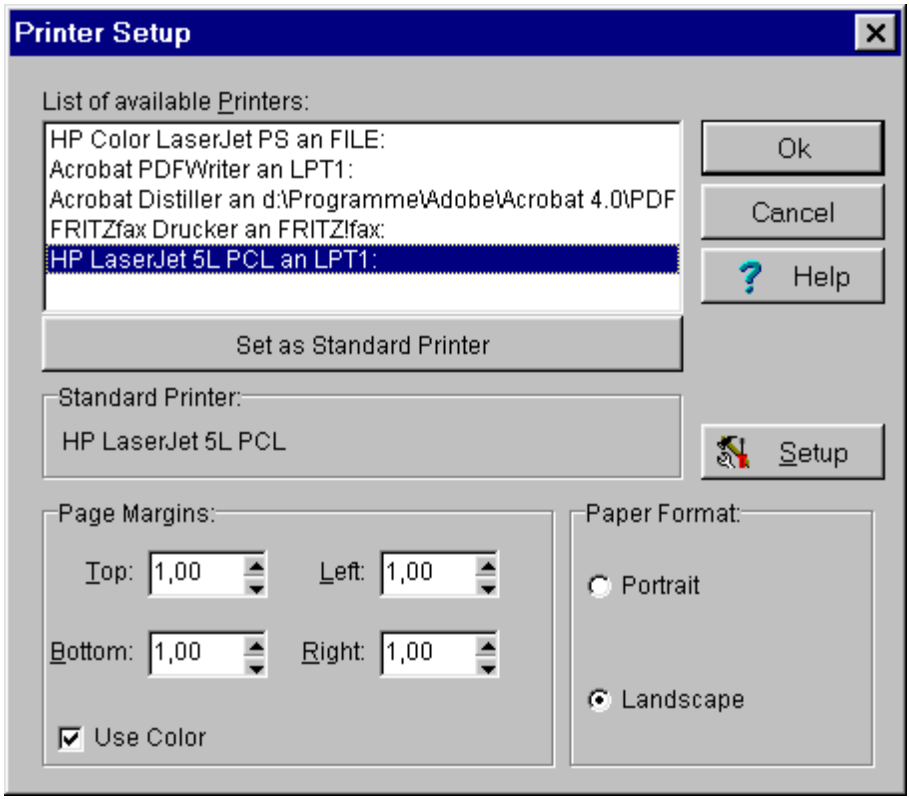
Thermal Isolation Value for Clothing Combinations

Clothing Combinations	Thermal Insulation m²/W/kW	clo
Naked	0	0
Light clothing (shorts, shirts)	80	0,5
Clothing with shirts, pants, socks, shoes	100	0,65
Normal working clothes	125...160	0,8...1
Light sport dress with jacket	160	1
Heave working clothes with underwear, socks, shoes, vest, jacket	200	1,3
Clothes for cold weather with coat	250...300	1,6...2
Clothes for very cold weather	450...600	3...4

The Printing of the Measurement

Configure Printer

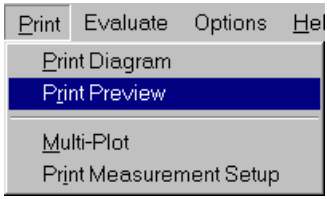
Select in main menu **File** the command **Printer Setup**, to configure your printer. The dialog box on the left will appear.



opens the printer setup according to Windows-Standard. You may set here further options of your printer.

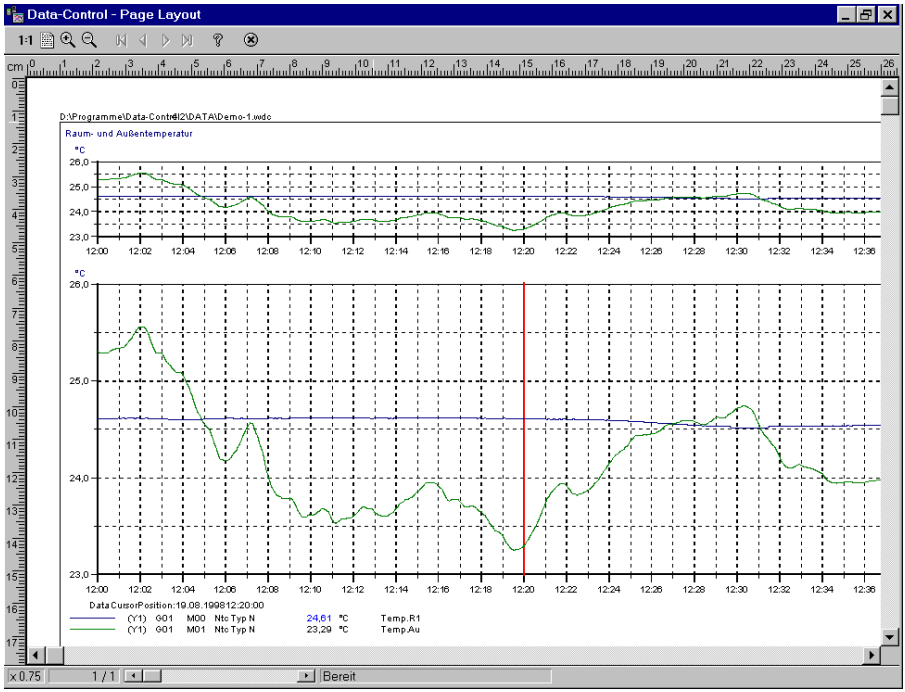
Diagram Preview

Select in the main menu **Print** the command **Page Preview**. The page preview shows the page which will be printed later. This view mode is only available for the Y/t-diagram and for the X/Y-diagram. The digital and column monitoring diagrams do not have page previews.



Hint: By activating the page preview via Menu Print, the printer selection box will first appear.

go to diagram preview.



go to printer setup

shows view in scale 1:1

shows all pages at the same time

enlarges view

reduces view size

apply grid

go to page one of view

go to previous page

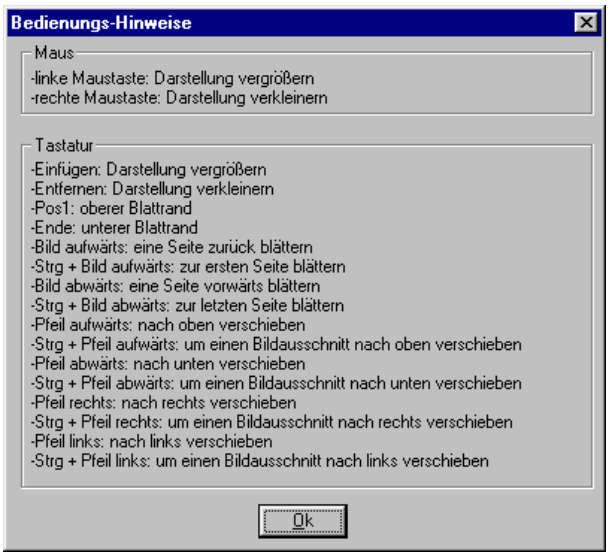
go to next page

go to last page of view

displays help for mouse button and key functions

exits page preview

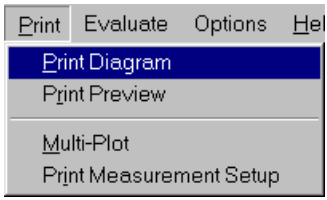
Press the button , to activate the help functions below.



Print Diagrams

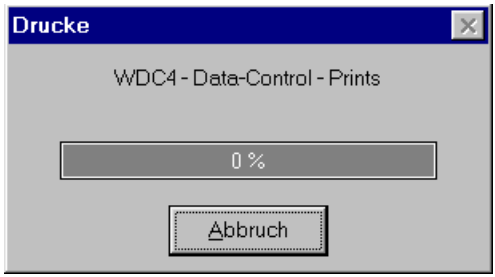
The function **Print Diagram** is available only for active Y/t-diagrams or X/Y-diagrams. Digital and column monitoring diagrams cannot be printed.

Select in main menu **Print** the command **Print Diagram**, to directly print your diagrams. The page preview will not be shown anymore.



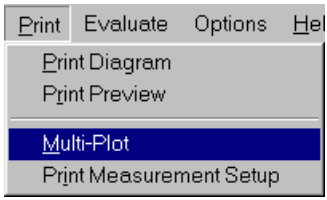
prints your Y/t- or X/Y-diagrams directly without printer setup and page preview.

During printing, the box on the left appears. You may cancel printing here.

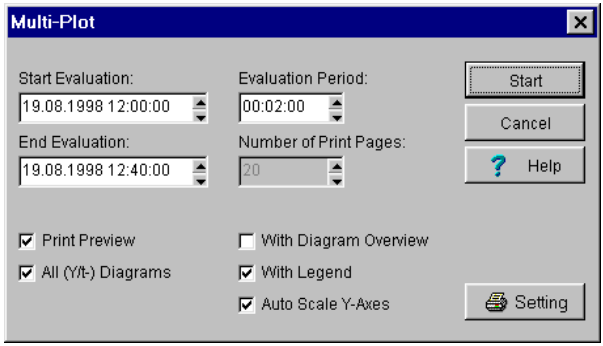


Multi-Plot (Option OP-MPT)

The function **Multi-Plot** is available only for active Y/t-diagram. It allows to print your measurement data in several consecutive pages. Select in main menu **Print** the command **Multi-Plot**, to print your measurement data in several consecutive pages.



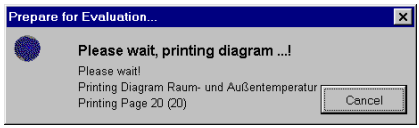
activates the function Multi-Plot from the toolbar.



Enter the **Start and End Time** of the measuring data to be printed. With the **Evaluation Time** you may determine the interval between two consecutive measurement values. The number of pages to be printed will be automatically calculated by the program. Set your printer if necessary and select from the following options for your printouts:

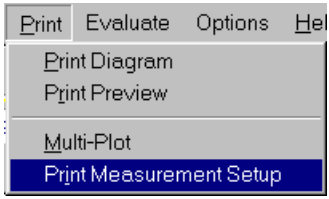
- Page preview
- Print all Y/t-diagrams
- Print with overview diagram
- Print with legend
- Automatic scaling of the Y-axes

After confirming your entries this notice appears during printing. You may cancel here your printing job.

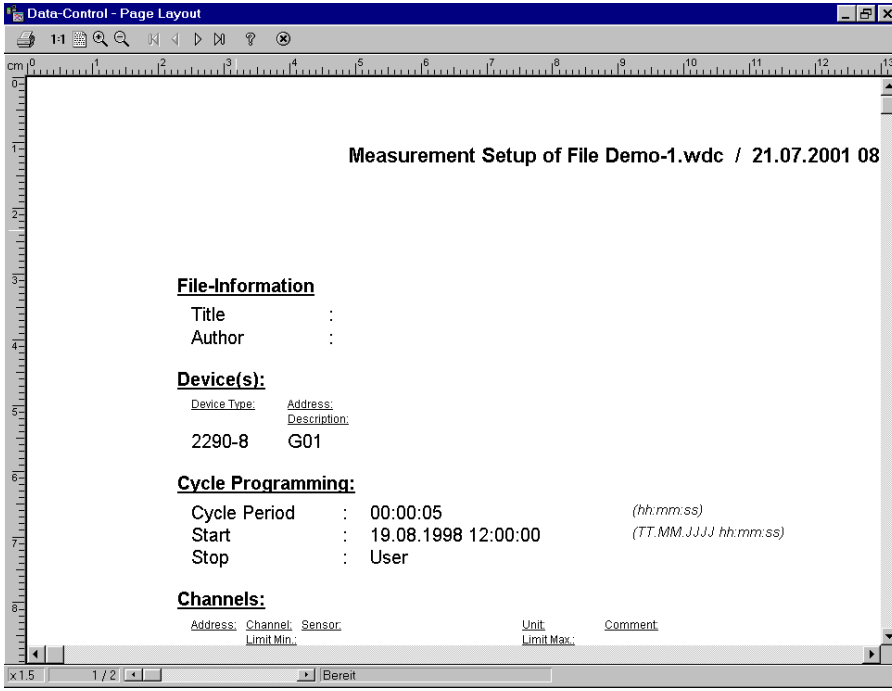


Print Measurement Setup

Select in main menu **Print** the command **Print Measurement Setup**, to print your measurement setup.



Before finally printing, the program goes to page preview and shows the measurement setup there.



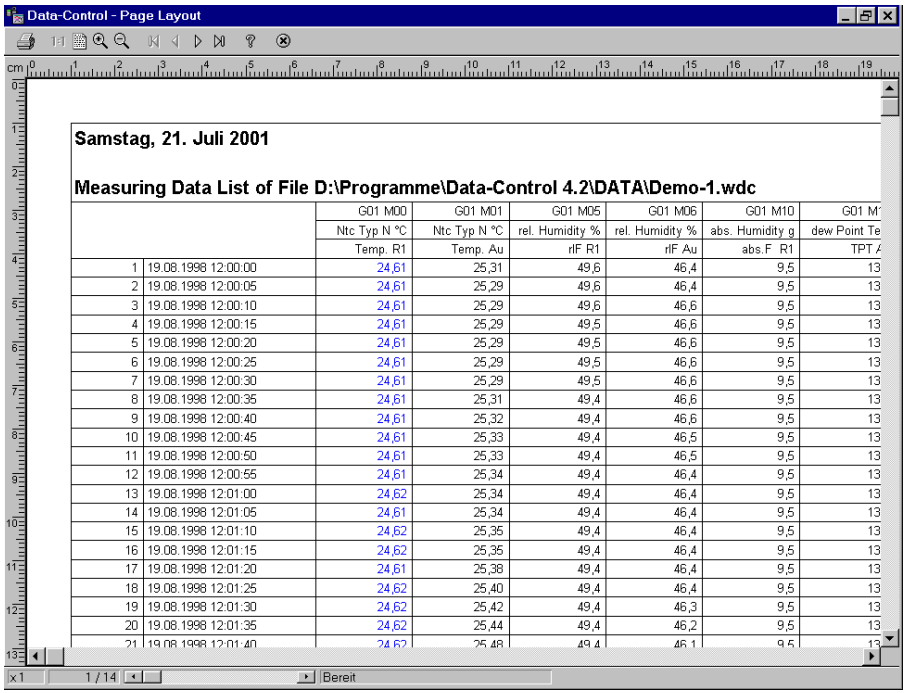
Print Measuring Data List

Select in the main menu **Diagrams** the menu item **Global Measuring Value List** and press here the button **Print Table.** The preview of the measuring data list appears on the screen. You may print from here your measuring data list.

To print a **local measuring data list**, proceed as follows:

- Create a **Diagram** and assign your desired measurement channels.
- Activate the **Local Menu** by clicking the right mouse button
- Select here the command **Measuring Data List**
- Press the button **Print Table**

The program goes to the page preview. From here you may print your measuring data list.



		G01 M00	G01 M01	G01 M05	G01 M06	G01 M10	G01 M
		Ntc Typ N °C	Ntc Typ N °C	rel. Humidity %	rel. Humidity %	abs. Humidity g	dew Point Te
		Temp. R1	Temp. Au	rlF R1	rlF Au	abs.F R1	TPT A
1	19.08.1998 12:00:00	24,61	25,31	49,6	46,4	9,5	13
2	19.08.1998 12:00:05	24,61	25,29	49,6	46,4	9,5	13
3	19.08.1998 12:00:10	24,61	25,29	49,6	46,6	9,5	13
4	19.08.1998 12:00:15	24,61	25,29	49,5	46,6	9,5	13
5	19.08.1998 12:00:20	24,61	25,29	49,5	46,6	9,5	13
6	19.08.1998 12:00:25	24,61	25,29	49,5	46,6	9,5	13
7	19.08.1998 12:00:30	24,61	25,29	49,5	46,6	9,5	13
8	19.08.1998 12:00:35	24,61	25,31	49,4	46,6	9,5	13
9	19.08.1998 12:00:40	24,61	25,32	49,4	46,6	9,5	13
10	19.08.1998 12:00:45	24,61	25,33	49,4	46,5	9,5	13
11	19.08.1998 12:00:50	24,61	25,33	49,4	46,5	9,5	13
12	19.08.1998 12:00:55	24,61	25,34	49,4	46,4	9,5	13
13	19.08.1998 12:01:00	24,62	25,34	49,4	46,4	9,5	13
14	19.08.1998 12:01:05	24,61	25,34	49,4	46,4	9,5	13
15	19.08.1998 12:01:10	24,62	25,35	49,4	46,4	9,5	13
16	19.08.1998 12:01:15	24,62	25,35	49,4	46,4	9,5	13
17	19.08.1998 12:01:20	24,61	25,38	49,4	46,4	9,5	13
18	19.08.1998 12:01:25	24,62	25,40	49,4	46,4	9,5	13
19	19.08.1998 12:01:30	24,62	25,42	49,4	46,3	9,5	13
20	19.08.1998 12:01:35	24,62	25,44	49,4	46,2	9,5	13
21	19.08.1998 12:01:40	24,62	25,48	49,4	46,1	9,5	13

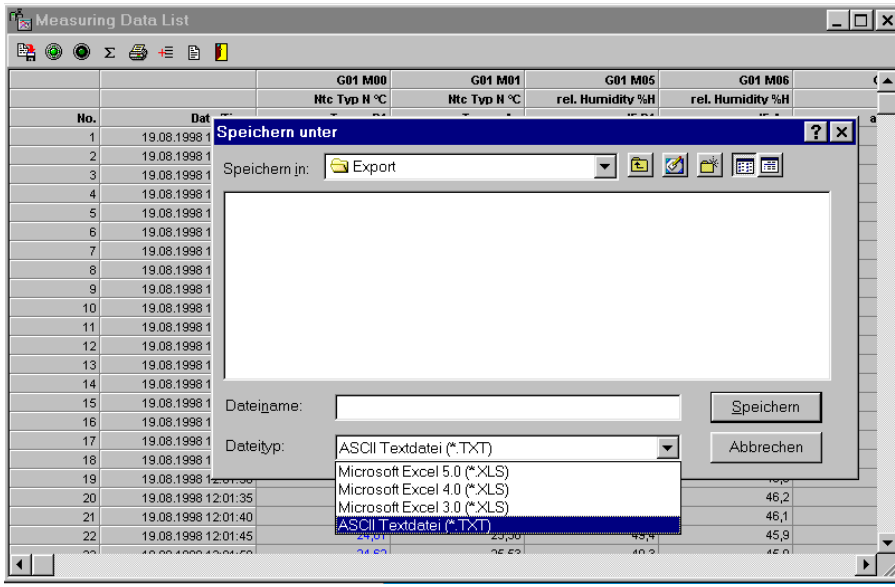
Hint: You may print your data from a Y/t-diagram independent of the exact measuring time. In case the option **relative time axis** is activated, the diagram shows the chosen values starting from 00:00:00 hours. The date is no longer active.

Exporting Measuring Data

Select in the main menu **Diagrams** the menu item **Global Measuring Value List** and press the button **Export Data** .A dialog box with formula selection will be open. From here you may then export your measuring data list.

To export a **local measuring data list** in EXCEL- or ASCII-Format proceed as follows:

- Create a **Diagram** and assign your desired measurement channels
- Activate the **Local Menu** by clicking the right mouse button
- Select here the command **Measuring Data List**
- Press the button **Export Data**
- Choose a **File Name**
- Choose a **Data Format**



The Files

File Types

All document processing are carried out in main menu **File**. The AMR-Data Control 4.3.X files follow the file name conventions **<name>.wdc**. The file extension “wdc” is permanent and is added automatically.

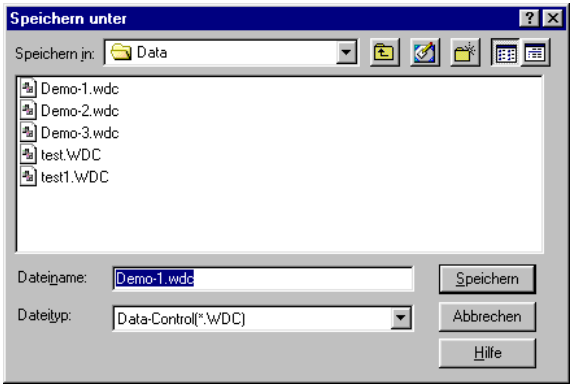
An AMR-Data Control 4.3.X file with the file name convention “*.wdc“ always contains **Configuration Data** of the measurement setup and may also contain **Measurement Data**. Independent of this are the **Export Data** in EXCEL or ASCII format. For a better file management AMR-Data Control creates during installation three subdirectories under the AMR-main directory. You may however choose different directories anytime.

...\CONFIG*.wdc	Configurations (*.wdc without measurement data)
...\DATA*.wdc	Measurement Data (*.wdc with pre-chosen configuration data)
...\EXPORT*.*	Export Data in EXCEL- or ASCII-format (*.xls or *.txt)
...\VARS*.var	Variables for Formula formulation

Note: Details about entering and saving variables are described in the corresponding chapters of this manual.

Save Measurement Files

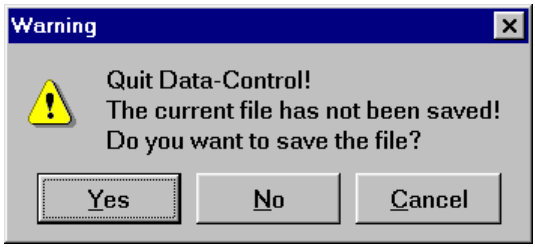
Select from the main menu **File** the command **Save** or **Save as** to save your measurement data and its corresponding configuration data.



Enter in the text box, drive, path and name of the file to be saved.

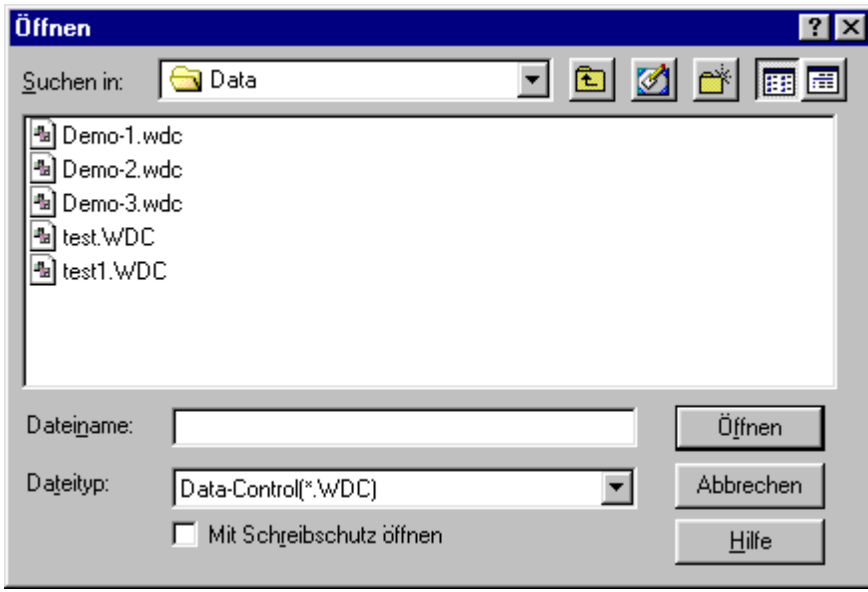
Choose the **directory ...\DATA for measurement data**. This is to distinguish the measurement data from your pre-defined measurement setup configurations. The file name extension „wdc“ is permanent and is added automatically.

Note: If you want to exit program and your data are not yet saved, this warning appears.



Open Measurement Files

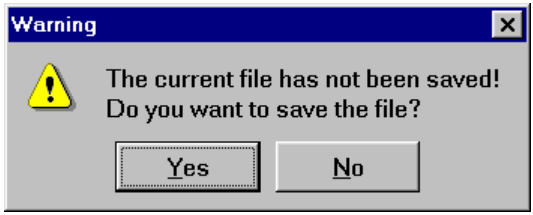
Select in the main menu **File** the command **Open**, to open your measurement data and its corresponding configurations.



Enter in the text box, drive, path and name of the file to be opened.

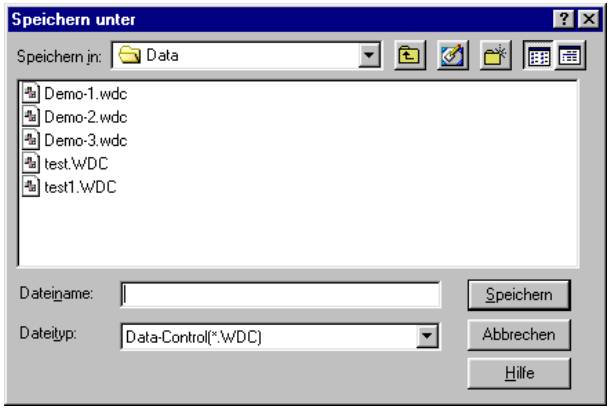
Choose the **Directory...\DATA for Measurement Data**. Your measurement data are normally saved in this directory. In the DEMO-Version the directory also contains the file „**DEMO.WDC**“. The file name extension „wdc“ is permanent and is added automatically

Note: If you want to open a new file and your current data are not yet saved, this warning appears.



Save Configuration Files

Select in the main menu **File** the command **Save Configuration**, to save the configuration of your measurement setup for future measurements. This does not contain any measurement data.

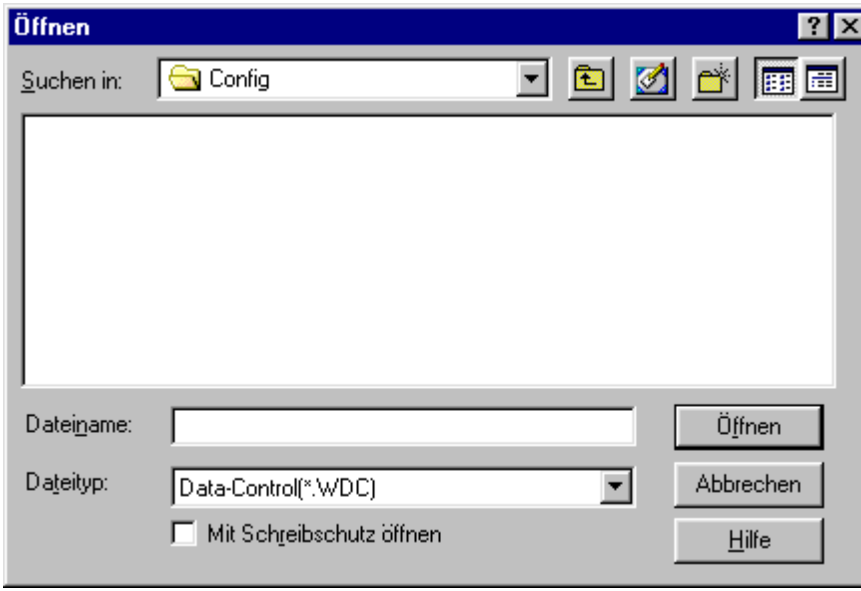


Enter in the text box, drive, path and name of the file to be saved.

Choose the **directory ...\CONFIG for configuration data**. This is to distinguish your pre-defined measurement setup configurations from the measurement data. The file name extension „wdc“ is permanent and is added automatically.

Open Configuration Files

Select in the main menu **File** the command **Load Configuration**, to open your configuration file. This does not contain any measurement data.

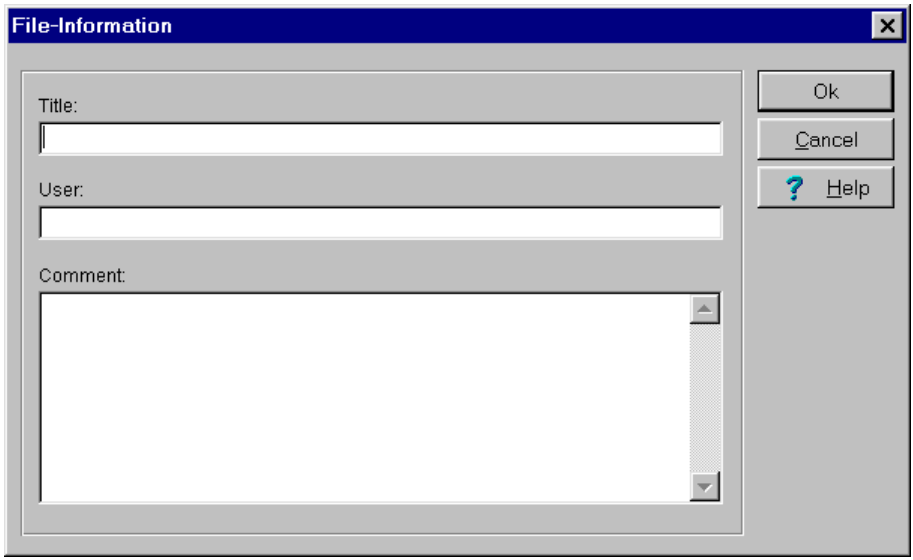


Enter in the text box, drive, path and name of the file to be opened.

Choose the **Directory...\ CONFIG for Configuration Data**. Your configuration data are normally saved in this directory. You may use this for future measurements. The file name extension „wdc“ is permanent and is added automatically. This function loads devices and channels, file information and diagrams from the selected file. Measurement data will not be loaded.

Enter File Information

Select in the main menu **File** the command **File-Info**. A dialog box **File Info** will appear.



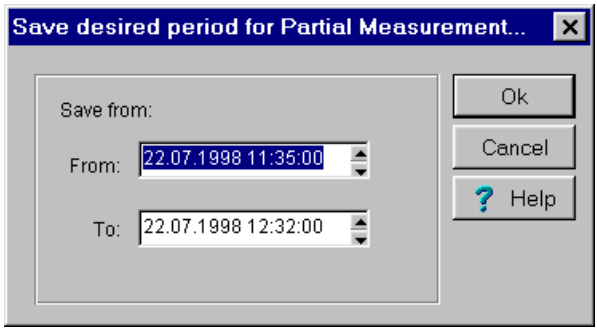
Here, you may enter into your currently opened file, user defined information such as title, user and comments.

As comments you should enter here all measurement relevant information such as measurement location, used devices and its eventual irregularities, which may occur during measurement and which should be considered in the evaluation. Please enter as many information as you can!

Note: These information will be printed together with the measurement setup.

Save Partial Measurement

Select in the main menu **File** the command **Save Partial Measurement**. The dialog-Box **Save desired period for partial Measurement** will appear.



Enter the desired period manually or scroll up or down, holding the left mouse button pressed until your desired range appears. Holding the scroll button pressed increases the scroll speed.
Note: The function **Save Partial Measurement** is available only for activated Y/t-diagrams.

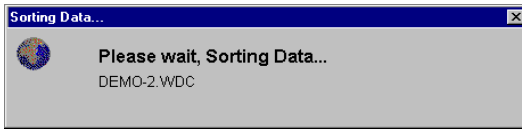
Join Several Measurement Data Files

With this function you may join together several measurement data files to one file. For example, files from two consecutive days with the same measurement setup. You may however also join any other files together; configuration data from the files to be added will not be applied to the current file.

How to join files:
1. First open the file, where the new data are to be added.
2. Select in the main menu **File** the command **Join File**.
3. Open the file(s) to be added and confirm to join files.

In case of corresponding channels the new measurement data will be added in the current measurement file according to time. Data of new channels in the joined file will be shown in a new diagram on screen.

Note: Transferring of data may take some time depending on data size. Please wait ....



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