

PC – Program "MEVIS T"



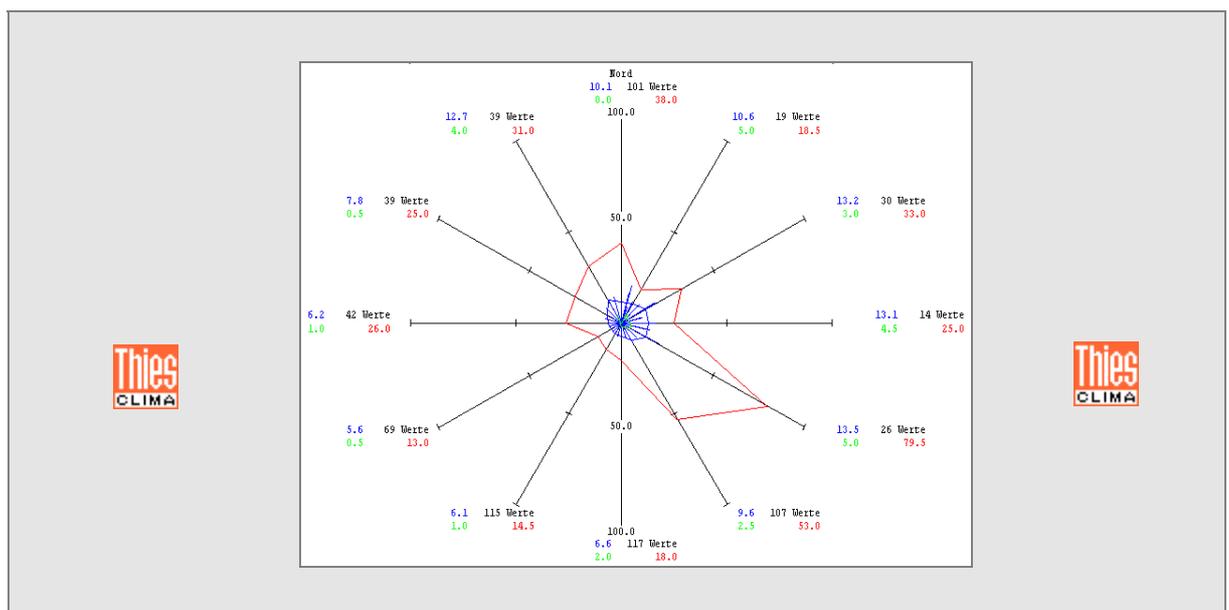
Documentation

MEVIS

Version 1.7

May 2003

**System for acquisition, analysis and visualisation
of meteorological measured data of the data
logger DL1n, TDL14 or DL15**



Designation	Order number	Short description
PC - Program " MEVIS T 1.7 s "	9.1795.50.000	<p>The Standard Version allows to use the complete set of functions described in this documentation.</p> <p>The Standard Version requires a matching dongle.</p>
PC – Program " MEVIS T 1.7 s Viewer"	9.1795.60.000	<p>The Viewer Version serves for visualisation of MEVIS data. It requires the data collection with a standard version application.</p> <p>The MEVIS data access can be executed via Local Area Network. Therefore the MEVIS data have to be stored on a read enabled path.</p> <p>The Viewer Version cannot collect, import or modify data by oneself. That's why it is not able to show present values.</p> <p>The following functions are not available in the Viewer Version.</p> <ul style="list-style-type: none"> ▪ Configurations of stations and components ▪ Control functions for polling data loggers ▪ Collecting and displaying of present values ▪ Import of dBase and ASCII files ▪ Post processing of data ▪ Automatic functions ▪ Export to data bases via ACCESS file ▪ Controlling of the Universal Switch Unit <p>The Viewer Version requires a special dongle (different to standard version).</p>
PC – Program " MEVIS T 1.7 s Light"	9.1795.40.000	<p>The Light Version does not include all functions.</p> <p>You cannot use the functions described in the chapters marked with "... not available in the Light ... Version".</p> <p>The Light Version requires a customer specific code for operation but no dongle.</p>

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1. Principle structure of the system

MEVIS is a measured value acquisition, processing and information system for meteorological and ecological data. In this case MEVIS is a data central for the evaluation of meteorological data under the specific conditions and qualifications of the Adolf Thies company.

The system offers several opportunities to process data (multi-phase formation of mean values up to one year, different coloured graphics, depictions, correlations or wind roses) and to output data (output via MEVIS independent Windows drivers to almost arbitrary printers and plotters, data base output and the preparation of reports).

MEVIS realises the data acquisition, the intermediate storage, transmission and visualisation of the meteorological data. It is possible to configure MEVIS universally for the particular application case.

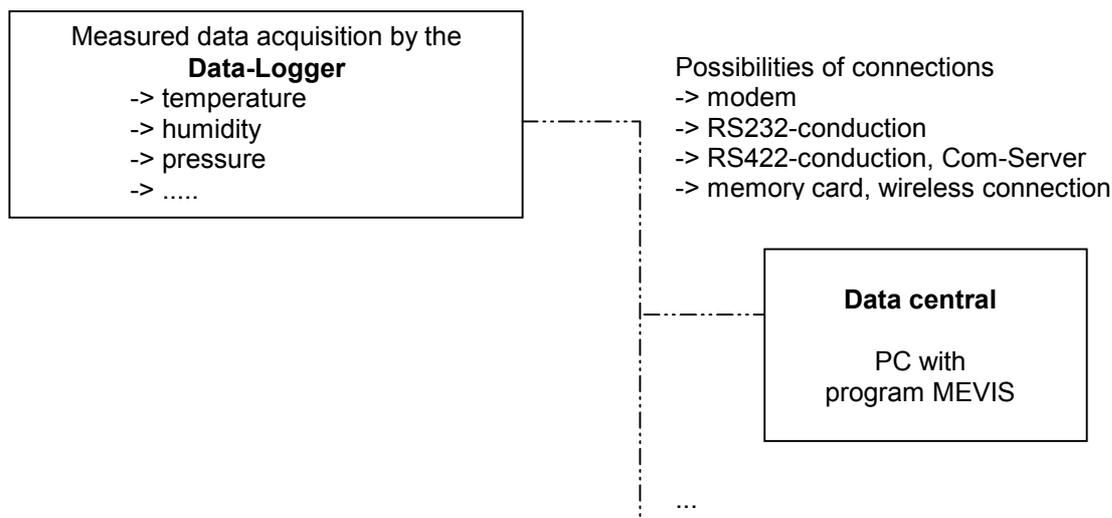


Fig. 1: Example of the system structure for the supervision of measured meteorological data

The program MEVIS works on IBM compatible personal computers with the operation system MS WINDOWS version 3.1 and higher in the extended modus. The ASCII import function requires MS Windows 98 Second Edition at least.

The standard version of MEVIS as data central

- fetches the measured values from the meteorological measuring systems made by of the Adolf Thies company.
- stores the data sorted by components into the MEVIS database.
- presents the measured values in tables and actualises them when new data will be received,
- realises alarm functions if threshold will be exceeded,
- offers extensive possibilities for the visualisation of measured data (for instance time related graphics, correlations, wind roses, diurnal variations),
- allows data export to dBase-files,
- allows the extension with MEVIS components of the UMAD GmbH Berlin company.

To increase the potential of the system it is possible to use several PCs for the data central, which share the listed functions.

One personal computer works in this case as **communication computer**. It realises the communication with the measuring devices, the valuation of the data on threshold exceeding and the storage of the measured data.

One or more other PC's can be configured as **valuation and visualisation computers**. They get the processed data from the communication computer via serial interfaces. That's why time-consuming researches (e.g. curves of several measured values for a year, calculation of long-term mean values) can be executed without loss of the fetch speed to the measuring devices.

Several PC's running MEVIS with the same measuring system can be coupled via a local area network (LAN).

Principle structure

The data are measured and stored by one of the computers. The other computers fetch the data via the LAN. In this case PC's have to use the operation system WINDOWS for WORKGROUPS 3.11 or WINDOWS 95 or WINDOWS NT at least.

For data collection you can use several kinds of data communication, which are using serial ports on the computer or simulate that with drivers. In this case the communication appears to MEVIS as direct serial connection.

If necessary the computer has to be completed with interface cards to work with additional 8 or 16 serial ports.

The computer polls the measured data (stored in the memory of the data loggers) in a device specific period to prevent the overwriting of data in the loggers.

1. As standard the data acquisition takes place via single RS 232/422 interfaces to the particular measuring device/data logger (star structure).
2. Alternatively the possibility exists to use communication services as data channel, like the public telephone network, telephone lines within a branch exchange, the ISDN or radio channels. Via terminal adapter you can communicate with an analogue modem on an ISDN line. Using an ISDN adapter it works with a direct connection to the ISDN line. To use radio channels (for instance in digital mobile telephone systems) there are special modems available.
3. Using a LAN to Serial Device Server and TCP/IP protocol you can poll data logger via Local Area Network.
4. MEVIS can import logger data from a special memory card reader. The data have to be written in the slot of the data logger from its memory.

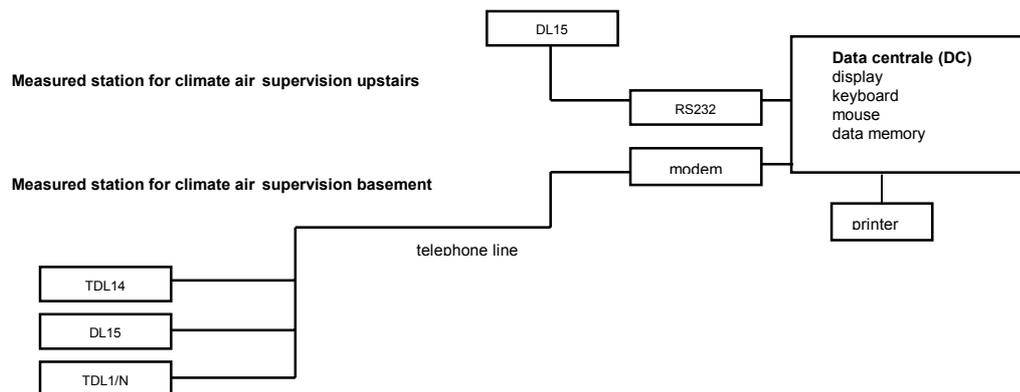


Fig. 2: Example of the system structure for the climate surveillance

2. Installation

To run the installation please insert the installation CD ROM in the drive of the computer.

Use the Program Manager with the menu item "File.Execute" to run SETUP.EXE.

You can choose any valid drive and directory for the installation.

After editing of drive and directory name the installation continues automatically and adds the following **file structure** to your hard disk drive. The "DAT" path and its sub directories will be created when data will be saved for the first time.

Directory	Comment	Copied files
C:	your drive	
\MEVIS	your directory	program file help file initialisation files logbook files
\DAT	standard sub directory	Mevisnet.dat
\YY	two digits of the year as name of directory	diurnal files
\MM	two digits of the month as name of directory	organisation files universal time files

In the WINDOWS program menu a program group with the MEVIS program will be created.

At the end of the installation the program will be executed. The MEVIS main window with the title bar, the menu bar and the basis screen will be shown on the monitor.

The MEVIS system will be configured by THIES CLIMA before delivery. That's why the connected data loggers can be polled immediately.

The general code is set for "111" as standard and is valid until the first alternation.

	<p>With the installation CD ROM you can realise an unlimited number of installations. Please note that the hardware of the host PC has to match the requirements of communication with the data logger. The MEVIS program works only on that computer, on which the special dongle was plugged into the printer or USB port.</p>
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Please respect the MEVIS licence agreements. You have to accept them in the installation procedure.

The **light version** doesn't include all described functions. The excluded functions are marked with "(menu not available in the light version)" in the table of contents and in the headline of the chapter.

You do not need a dongle to work with the light version.

Configuration	Control	Screen	Station	Graphics	Lists	Data import	Data export	Accessories	Help
C ode ...									
D ate&Time ...									
Time 00:00/24:00									
A coustics ...									
D ata path									
S tations ...									
C omponents ...									
C hannels ...									
O bject depictions ...									
S tandard graphics ...									
S tandard graphics (12-in-1) ...									
S tandard frequency curve ...									
S tandard diurnal variations ...									
S tandard correlations ...									
S tandard lists ...									
S tandard station lists ...									
S tandard wind roses ...									
E nd ...									

3. Menu item configuration

You can configure MEVIS via the menu item "Configuration". The General Code has to be entered each time before a configuration dialogue opens. The General Code is set to "111" before it will be altered.

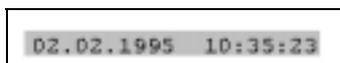
3.1. Code (menu not available in the light version)

Viewer Code and General Code are the two kinds of user codes. The matching code has to be entered before a function will be executed.

General code	The General Code blocks all configuration steps, i.e. changes within the settings of the system. It has to be entered each time before a configuration dialogue opens.
Additional general code(s)	Instead of the General Code you can use an Additional General Code for changes of the system settings. However it doesn't allow to change the General Code or any Additional General Code. You can configure up to 16 different Additional General Codes related to various persons. The number of the entered Additional General Code will be added to the protocol of configuration changes in the log file.
Viewer code	With the Viewer Code you can draw new graphics, wind roses or lists. After the program has been started and the viewer code has been entered correctly the menu options for the view on all information is enabled until they will be blocked using the menu item "Control.Block view". You can also enter the General Code instead of the viewer code.
	The General Code is set to "111" by the manufacturer and is valid until its first alternation. The viewer code is set to "888" by the manufacturer and is valid until its first changing.

3.2. Date & Time (menu not available in the light version)

With this dialogue you can set date and time of the PC. Please note that this setting affects all of your DOS and Windows programs.

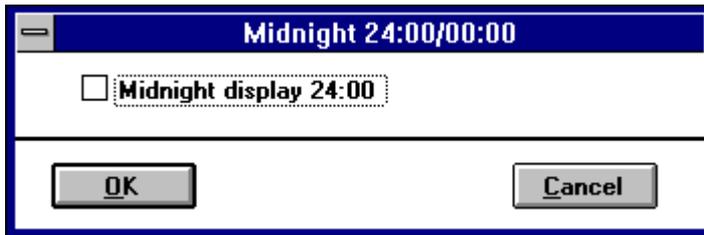


In the upper right corner of the MEVIS basic screen you can see the **current time** of the computer. It will be updated continuously. If you compare the time on the MEVIS screen with the system time of WINDOWS or DOS (for example you execute the WINDOWS program CLOCK.EXE), sometimes you will find out different times.

The reason is that two different timers work in the computer. The first runs with the battery buffered CMOS real time clock and the second is emulated by the software. MEVIS works with the CMOS real time. That timer also works if the computer is powered down. The software timer will be only set when the computer boots. Both timers are running with a little different clock rate.

3.3. Time 00:00/24:00

MEVIS shows moments of values with its end time. So the presentation of diurnal mean values will be shown normally at 00:00 of the next day. The operator can switch the presentation of midnight to 24:00 of the previous day.



3.4. Acoustics (menu not available in the light version)

You can set the program to inform you acoustically that it has detected a warning or an alarm (one beep per second or permanently playing a *.WAV file). Only warnings or alarms that are more unfavourable than that are shown in the channel table of the corresponding station will be signalled.

In the menu item "Configuration.Acoustics" you can switch on or off this function.

Suppositions to play a WAV file:

- Sound card and speaker are mounted and connected.
- Sound card is installed in WINDOWS (menu "System settings.Driver").
- WINDOWS option „Sounds“ is active (menu "System settings.Acoustics“) and
- name of the WAV file is chosen.

You can press the button „Listen“ to play the WAV file that should signalise alerts. If a supposition is not accomplished the standard acoustic signal (beep) will be heard.

Pay attention that the volume of sound card and speaker is set audible.

3.5. Choose data path (menu not available in the light version)

Here you can change the central directory of the MEVIS database. This directory was set during the installation of MEVIS as standard.

Here you can choose the MEVIS database, especially in a network (the data are located on a network drive) or to use different sets of measuring data.

You can select the path with a double click (folder will be opened) and confirm it with "OK". An allowable data path has to include the annual directories (like 99, 00,01) of the data.

After the selection of another data path the channel table of the actual station will be actualised.

3.6. Stations ... (menu not available in the viewer version)

With this dialogue you can change the parameters of an existing station or via "-----New-----" insert a new station to the system.

In the standard version the maximal number of stations is 99. In the light version this number is reduced to five.

If a station already exists, you can edit the **name of the station**. Titles of various windows use this name. It consists of an arbitrary string and can consist of up to 40 characters.

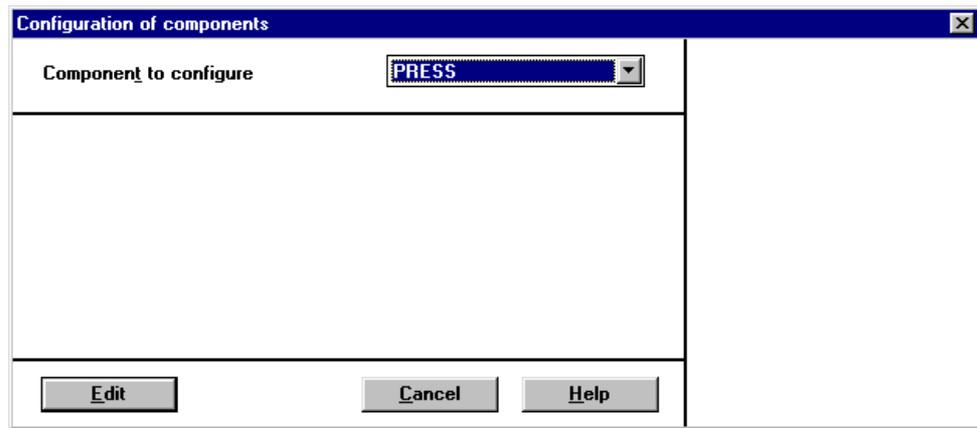
3.7. Components (menu not available in the light and viewer versions)

Via two connected dialogue windows you can add one or more components to a station and configure them. Of course it is also possible to change the settings of an already existing component. In the standard version the maximal number of components is 99. In the light version this number is reduced to 30.

Components for MEVIS are:

- measured variables, which were acquired on the lowest level in a rigid sequence given by the port connection or the communication protocol and which have not yet been processed,
- new measured variables that will be calculated from two measured variables or by another calculation rule.

Components will be used for the calculation of mean values. Their values will be stored on hard disks and serve as basis of processing and displaying data in the system, at first for calculation of the channel values.



Component to configure	The list contains the already existing components of the current stations and the entry "----New---". Select the component that you want to edit or the entry "----New----" if you want to create a new component.
-------------------------------	--

If you leave this dialogue with "OK" a dialogue will be opened and you can enter the settings for the chosen component.

Component configuration PRESS

Componentname: Measure:

Component is sum

Calculation of the component

Component is taken over 1:1

Component has rule of transformation: Parameters

Component is an analog quantity

Formula

No

$y = a x + b$

$y = a \exp (b x) + c$ c =

Measuring points

MP	Current[mA]	Value[measure]
1	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>

Component is wind direction

No Matching wind speed:

Vectorial

Vectorial from standard vectors

Saving format

Range -100.0 bis +3176.7, accuracy 0.1
(less disk space)

Range -1.7E38 bis +1.7E38, accuracy 11 digits

Extreme values

No saving (less disk space)

Speichern

Component name	Every component of a station is named by a specific string. You cannot assign the same string to more than one component.
Measure	The measure is a string with informative nature. It will not be used to convert a physical quantity. So it can be changed without serious consequences.
Component is sum	The aggregated mean values of such components will be calculated as sum of the original values (e.g. precipitation, evaporation).
Component is taken over 1:1	The measured values will be imported without calculations from the data logger to the component data set (e.g. via a serial protocol).
Component has rule of transformation	<p>It is possible to calculate components according to a rule. You can select the rule in this list. Its parameters can be set in an additional dialogue. The source components of a calculated component have to be declared in the sequence of the components of a station before they can be used. A component with rule of transformation can be also a source component for another calculated component.</p> <p>At the moment you can use the following rules of transformation:</p> <ul style="list-style-type: none"> • Fundamental operations of arithmetic • Relative humidity (Psychrometer) • Dew point • Absolute humidity • Mixture ratio • QFF • QFE • QNH • Wind-chill • Perceptible temperature • Wind speed in a given direction • Evaporation by Haude • Evaporation by Richter • Evaporation by Wendling • Sunshine duration • Day mean value temperature of 4 values • Day mean value of 3 values • Flow at weirs by Swiss rule

	<ul style="list-style-type: none"> • Heizgradtage • Sunshine • Direct sun radiation • Diffuse sky radiation • Sunshine duration by day mean value of radiation • Reference evapotranspiration (Et_o) <p>(for more information see below)</p>
Component is an analogue quantity	<p>If an analogue interface or a serial protocol provides transformed measured values (e.g. as current values within the range from 0 to 20 mA) you can re-transform them to values of the original physical quantity. The conversion can be done with a linear or an exponential function. This can be selected in the box "Formula".</p> <p>The coefficients of the formula are determined with the "Measuring points". The function curve has to be declared at least with two measuring points. The measuring range can be divided into two partial ranges if it cannot be described by one formula. The first partial range is situated between the measuring points 1 and 2, the second partial range between the measuring points 2 and 3.</p>
Component is wind direction	Please see chapter 3.7.2.
Saving format	<p>The saving format determines the stored information but also the required disk space for storing of the data sets.</p> <p>The values will be saved as standard in 15 bits of two bytes (i.e. with an accuracy of 0.1) in the range from -100.0 to 3176.7.</p> <p>You can store values out of this range as 6-byte real number in a range from -1.7E38 to +1.7E38 with an 11-digit mantissa.</p>
Extreme values	<p>With this item you can influence the required disk space of measured data. The storage of mean values without extreme values requires less disk space than the storage including the extremes.</p>

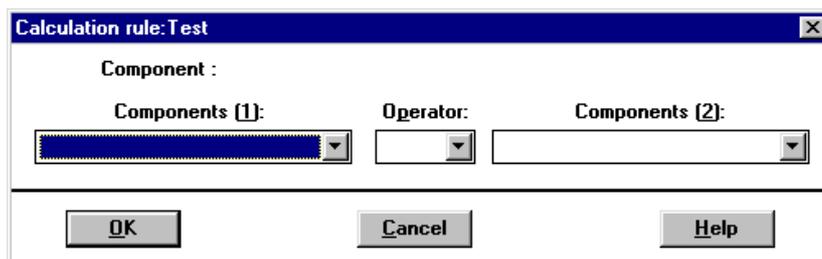
3.7.1. Rules of transformation

3.7.1.1. Fundamental operations of arithmetic

Link (+ - * /):

Two single components result a linked component. The calculation is made applying one of the four fundamental operations of arithmetic.

Linked component = component1 (plus/minus/mult/div) component2



3.7.1.2. Relative humidity (Psychrometer)

Relative humidity (Psychrometer) [%]:

The linked component is calculated of the dry temperature, the wet temperature and the absolute air pressure.

Formula:

dry temperature ≥ 0 °C

$$U_w = 100 \cdot \frac{E_0 \cdot C_1 \cdot e^{\frac{C_2 \cdot t_w}{C_3 + t_w}} - K_1 \cdot (1 + K_2 \cdot t_w) \cdot p \cdot (t - t_w)}{E_0 \cdot C_1 \cdot e^{\frac{C_2 \cdot t}{C_3 + t}}} \quad [\%]$$

dry temperature < 0 °C

$$U_i = 100 \cdot \frac{E_0 \cdot C_1 \cdot e^{\frac{C_4 \cdot t_i}{C_3 + t_i}} - K_3 \cdot p \cdot (t - t_i)}{E_0 \cdot C_1 \cdot e^{\frac{C_2 \cdot t}{C_3 + t}}} \quad [\%]$$

with:

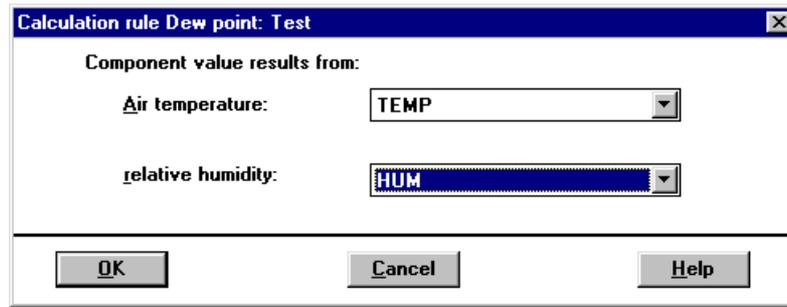
- t = dry temperature,
- t_w = wet temperature
- t_i = ice temperature

Constants:		Valid ranges:
$C_1 = 6,112 \text{ hPa}$	$K_1 = 6,53 \cdot 10^{-4} \text{ K}^{-1}$	$e_w(t): -45 \text{ °C} \leq t \leq +60 \text{ °C}$
$C_2 = 17,62$	$K_2 = 9,44 \cdot 10^{-4} \text{ K}^{-1}$	$e_w(t_w): -45 \text{ °C} \leq t_w \leq +60 \text{ °C}$
$C_3 = 243,12 \text{ K}$	$K_3 = 5,75 \cdot 10^{-4} \text{ K}^{-1}$	$e_i(t_i): -65 \text{ °C} \leq t_i \leq +0,01 \text{ °C}$
$C_4 = 22,46$		
$C_5 = 272,62 \text{ K}$	$E_0 = 1,0047$	Psychrometer formula in relation of water valid to +50 °C

3.7.1.3. Dew point

Dew point (absolute humidity) [°C]:

The linked component is calculated of the dry temperature and the relative humidity.



Formula:

$$DT = \frac{C_3 \cdot \left(\ln \left(\frac{RH}{100} \cdot E_0 \right) + \frac{C_2 \cdot TT}{C_3 + TT} \right)}{C_2 - \ln \left(\frac{RH}{100} \cdot E_0 \right) - \frac{C_2 \cdot TT}{C_3 + TT}} \quad [^{\circ}C]$$

with:

RH = Relative humidity (0..100%)
TT = air temperature

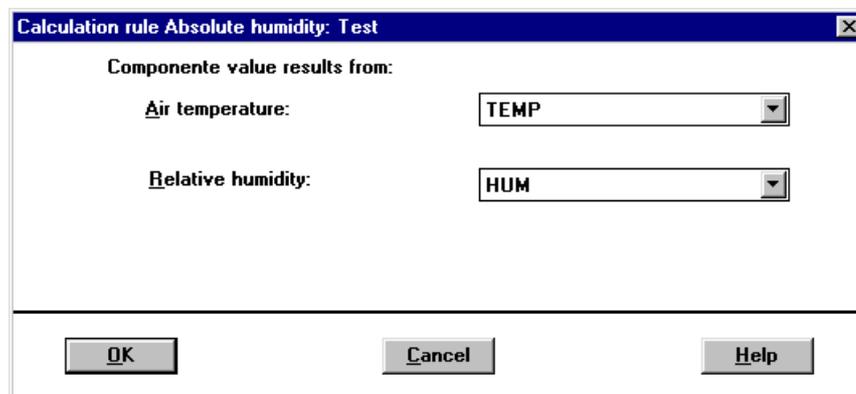
Constants:

*C*₂ = 17,62
*C*₃ = 243,12 K
*E*₀ = 1,0047

3.7.1.4. Absolute humidity [g/m³ humid]

Absolute humidity [g/m³ humid]:

The linked component is calculated of the dry temperature and the relative humidity.



Formula:

$$AH = \frac{RH \cdot E_0 \cdot C_1 \cdot e^{\frac{C_2 \cdot TT}{C_3 + TT}}}{CV \cdot RVAP \cdot (TT + T_0)} \cdot 10^3 \quad [g/m^3]$$

with:

RH = relative humidity (0..100%)
TT = air temperature

Constants:

C_1	= 6,112 hPa	
C_2	= 17,62	
C_3	= 243,12 K	
E_0	= 1,0047	
$RVAP$	= 461,51	
T_0	= 273,15 K	
$RVAP$	= 461,51	
T_0	= 273,15 K	
CV	= $1 - 2 \cdot 10^{-5} \cdot (0,1 \cdot (TT+60) - 1)^2$	for $TT < 0$ °C
CV	= $1 - 10^{-4} \cdot ((0,1 \cdot TT + 1)^2 + 4)$	for $TT > 0$ °C

3.7.1.5. Mixture ratio

Mixture ratio [g/kg dry]:

The linked component is calculated of the dry temperature, the relative humidity and the air pressure.

Formula:

$$MH = \frac{R' \cdot E_0 \cdot \frac{RH}{100} \cdot C_1 \cdot e^{\frac{C_2 \cdot TT}{C_3 + TT}}}{p - \frac{RH}{100} \cdot C_1 \cdot E_0 \cdot e^{\frac{C_2 \cdot TT}{C_3 + TT}}} \quad [g / kg]$$

with:

- RH = relative humidity (0..100%)
- TT = air temperature
- p = air pressure

Constants:

C_1	= 6,112 hPa
C_2	= 17,62
C_3	= 243,12 K
E_0	= 1,0047
R'	= 621,98

3.7.1.6. QFF

QFF (air pressure, reduced to sea level):

The linked component is calculated of the absolute air pressure, the air temperature and the given elevation above sea level.

Formula:

$$QFF = p \cdot \left(1 - \frac{a \cdot r \cdot H_s}{(H_s + r) \cdot (TT + T_0)} \right)^n \quad [hPa]$$

with:

- p = absolute air pressure
- TT = air temperature
- H_s = elevation of station (elevation of device)

Constants:

- a = -0,0065 K/m
- r = 6356766 m
- T_0 = 273,15 K
- n = 5,2558797

3.7.1.7. QFE

QFE (air pressure, reduced to site elevation):

The linked component is calculated of the absolute air pressure, the air temperature, the given elevation of the instrument above sea level and the given elevation of the site.

Formula:

$$QFE = p \cdot \left[1 + a \cdot r \cdot \left(\frac{H_p - H_s}{H_p + r} - \frac{H_s}{H_s + r} \right) \frac{TT + T_0}{TT + T_0} \right]^n \quad [hPa]$$

with:

- p = absolute air pressure
- TT = air temperature
- H_s = elevation of the station (elevation of the instrument)
- H_p = site elevation

Constants:

- a = -0,0065 K/m
- r = 6356766 m
- T_0 = 273,15 K
- n = 5,2558797

3.7.1.8. QNH

QNH (air pressure for altimeter):

The linked component is calculated of the air pressure of the site elevation (this value might have to be configured as a component with calculation rule beforehand), the air temperature and the given site elevation above sea level

Formula:

$$QNH = p_n \cdot \left[\sqrt[n]{\frac{QFE}{p_n}} + \frac{H_s \cdot r}{(H_s + r) \cdot H_a} \right]^n \quad [hPa]$$

with:

- H_s = elevation of the station
- QFE = reduced air pressure on site elevation

Constants:

- p_n = 101325 N/m²
- r = 6356766 m
- H_a = 44330,77 m
- n = 5,2558797

3.7.1.9. Evaporation by HAUDE

Evaporation by HAUDE [mm/d]:

The linked component is calculated as value for 24 hours of the values at 02:30 p.m., of the air temperature and the relative humidity dependent on the vegetation respectively a set of parameters. The calculation is executed past the input of the values at 02:30 p.m.

If the value of a component is not available, invalid or outside the range of values an evaporation value is not calculated. If the given vegetation is winter wheat or sugar beet, the vegetation grass is used for the months November to March.

The component is to declare as sum.

Formula:

$$ETP = f \cdot E_0 \cdot C_1 \cdot e^{\frac{C_2 \cdot t}{C_3 + t}} \cdot \left(1 - \frac{U_{14}}{100}\right) \quad [mm / d]$$

with:

U_{14} = relative humidity (0..100%) at 02:30 p.m.
 t = air temperature (-5°..+50°C) at 02:30 p.m.

Constants:

C_1 = 6,112 hPa
 C_2 = 17,62
 C_3 = 243,12 K
 E_0 = 1,0047
 f = month variable factor

Table for f of the set of the vegetation parameters:

(outside the defined time period the factor for grass $f=0.22$ is used for all vegetations)

Month	April	May	June	July	August	September	October
Grass	0,29	0,29	0,28	0,26	0,25	0,23	0,22
Winter wheat	0,26	0,34	0,38	0,34	0,22	0,21	0,20
Sugar-beet	0,15	0,23	0,30	0,36	0,32	0,26	0,19
Maize	0,14	0,18	0,26	0,26	0,26	0,24	0,21

The set of parameters "Original HAUDE" refers to grass also and uses the following factors f :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0,2025	0,2025	0,2100	0,2925	0,2925	0,2775	0,2625	0,2475	0,2325	0,2175	0,2025	0,2025

3.7.1.10. Evaporation by RICHTER

Evaporation by RICHTER [mm/d]:

The linked component is calculated as a value for 24 hours from the day mean for

- wind speed (measurement height 2 m over water surface),
 - temperature of the water surface,
 - relative humidity (measurement height 2 m over water surface) and
 - air temperature (measurement height 2 m over water surface)
- dependent on coefficients.

If the value of a component is not available, invalid or outside the range of values an evaporation value is not calculated.

From 12:00 a.m. the value for that day is outputted and actualised when new measurement values are available. The final value is available past 12.00 p.m.

The component is to declare as sum.

Formula:

$$E = (a + b \cdot v^c) \cdot \left(\left(E_0 \cdot C_1 \cdot e^{\frac{C_2 \cdot t_0}{C_3 + t_0}} \right) - \left(\frac{U}{100} \cdot E_0 \cdot C_1 \cdot e^{\frac{C_2 \cdot t}{C_3 + t}} \right) \right) \quad [mm / d]$$

with:

- v = day mean value of the wind speed (0..+50 m/s)
- t_0 = day mean value of the temperature of the water surface (0°..+50°C)
- U = day mean value of the relative humidity (0..100%)
- t = day mean value of the air temperature (-30°..+60°C)

Constants:

- a, b, c = changeable constants (-10<a<10, -10<b<10, 0,05<c<10)

The following fixings can be used for certain waters:

a	b	c	Comment
0,16	0,200	0,5	for north-east German lakes developed and tested
0,13	0,094	1,0	tested for the rivers "Neckar" and "Rhine" (German section)
0,21	0,103	1,0	by RIMSHA/DONCHENKO, without lift term
0,00	0,307	0,5	by TRABERT
0,13	0,110	1,0	for Lake "Neusiedler See" developed and tested

3.7.1.11. Evaporation by WENDLING

Evaporation by WENDLING [mm/h]:

The linked component is calculated from the hour mean values of the air temperature, the global radiation, the wind speed and the relative humidity as simplification of the corresponding formula by PENMAN. The component is to declare as sum, so that sums of day are calculated automatically.

Formula:

$$ETP_1 = 2,4 \cdot \frac{t+22}{t+123} \cdot \left\{ \frac{0,36 \cdot G}{410} + \left(0,5 + 0,54 \cdot v \cdot \frac{4,2}{3,5 + \ln h} \right) \cdot \frac{100 - U}{905} \right\} \quad [mm/h]$$

with:

- t = hour mean value of the air temperature (-30°..+60°C)
- G = hour mean value of the global radiation (0..+5000 W/m²)
- v = hour mean value of the wind speed (0..100 m/s)
- h = height of the wind speed pick-up over the ground (0,05..20 m)
- U = hour mean value of the relative humidity (0..100%)

In the case no measurement values of wind speed and relative humidity are available the following approximation is used:

Formula:

$$ETP_2 = (G \cdot 0,36 + C) \cdot \frac{(t+22)}{150 \cdot (t+123)} \quad [mm/h]$$

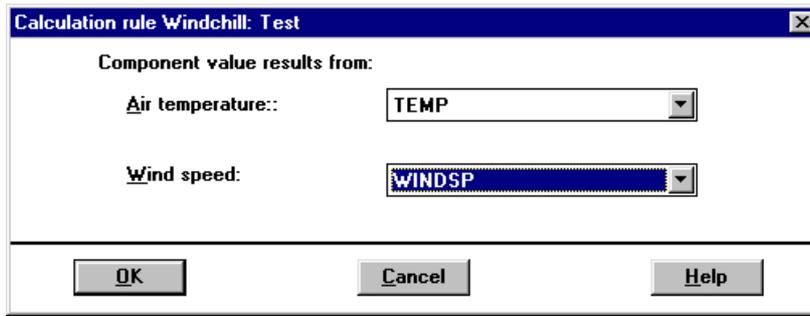
with:

- C = empirical constant (0..100),
in lowland to a height of about 400 m C=8,
in a coast strip with a bright of about 30 km C=5

3.7.1.12. Wind-chill

Wind-chill [W/m²]:

The linked component is calculated of the wind speed and the air temperature.



Formula:

$$H = (\sqrt{100 \cdot V} + 10,45 - V) \cdot (33 - T_1) \cdot 1,163 \quad \left[\frac{W}{m^2} \right]$$

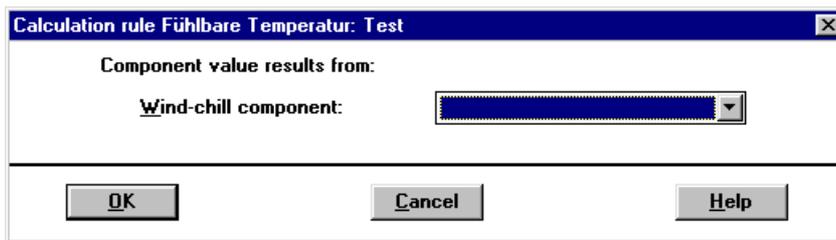
with:

- V = wind speed
- T₁ = air temperature

3.7.1.13. Perceptible temperature

Perceptible temperature [°C]:

The linked component is calculated of the wind chill component (which must be configured beforehand as a component with calculation rule).



Formula:

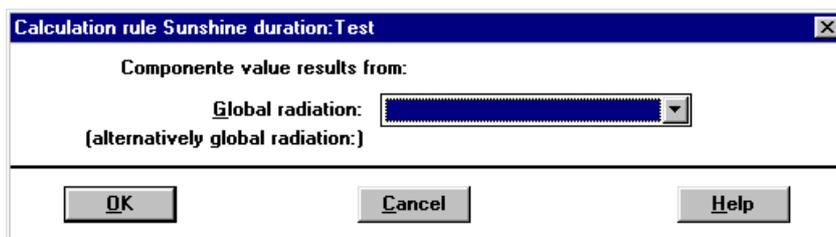
$$T = \left(\frac{-0,0432}{1,163} \cdot H \right) + 31,46 \quad [^{\circ}C]$$

with:

- H = Wind-chill

3.7.1.14. Sunshine duration

Sunshine duration [h]:



The sunshine duration is the sum of hours with a valid mean value of more than 120.0 W/m² global radiation. The precision depends on the basic mean value period. The sunshine duration value is stored as a day mean value and shown in the channel table. It will be calculated when new global radiation values are available. The value is valid if values of global radiation are valid in more than 12 hours a day.

3.7.1.15. Wind speed in a given direction

Wind speed in a given direction:

The linked component is calculated of the wind force, the wind direction and a given angle..

Formula:

$$WV_D = WV \cdot \cos\left(\frac{\pi \cdot (WD - WD_K)}{180}\right) \quad [m/s]$$

with:

- WV = wind force
- WD = wind direction
- WD_K = wind force of the component

3.7.1.16. Day mean value temperature of 4 values

Day mean value temperature (of 4 values):

The day mean value temperature will be calculated in the special meteorological way with the values from 7:30 a.m., 2:30 p.m. and 8:30 p.m. The last value will be added two times (that's why four values).

3.7.1.17. Day mean value of 3 values

Day mean value (of 3 values):

The day mean value will be calculated in the special meteorological way with the values from 7:30 a.m., 2:30 p.m. and 8:30 p.m.

3.7.1.18. Flow at weirs by Swiss rule

Flow at weirs (Swiss rule):

Calculation rule Flow at weirs [Swiss rule]: Test

Componente value results from:

Dam up altitude (in %):

Reference dam up altitude (in m) for 100%:

Width of the weir (in m):

Height of the weir edge (in m):

Gravitational acceleration (in m/s²):

OK Cancel Help

The flow will be calculated with the value of the component for the percental dam up altitude above the weir edge and configured parameters:

$$Q = \frac{2}{3} \cdot \mu \cdot b \cdot h \cdot \sqrt{2 \cdot g \cdot h} \quad \text{in m}^3/\text{s}$$

$$\mu = 0.615 \cdot \left(1 + \frac{1}{1000 \cdot h + 1.6}\right) \cdot \left[1 + 0.5 \cdot \left(\frac{h}{h_0 + h}\right)^2\right]$$

$$h = \frac{h_p \cdot h_{bez}}{100}$$

h_p : percental dam up altitude above the weir edge, correlated to the reference stowage height - input value

h_{bez} : reference dam up altitude (maximal altitude over weir edge, corresponds to 100%) in meter, adjustable

b : width of the weir in meter, adjustable

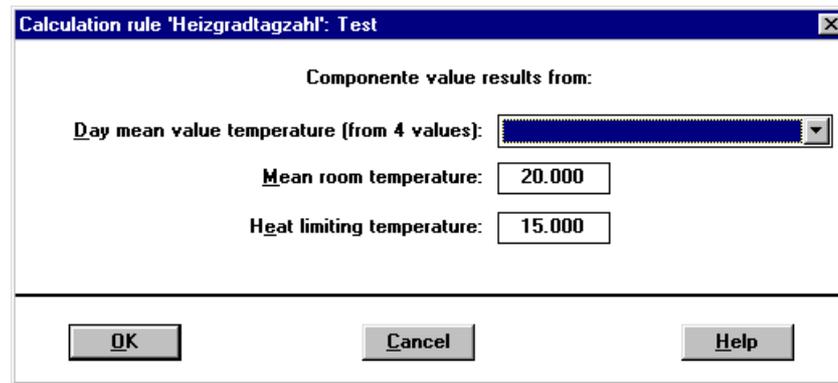
h_0 : height of the weir edge in meter, adjustable

g : gravitational acceleration in m/s², standard 9,80665, adjustable

3.7.1.19. Heizgradtage

Heizgradtagzahl:

The "Heizgradtagzahl (heat grad day number)" for one day is the difference of a given room temperature and the day mean value (calculated with 4 values), if the air temperature falls of a given heating threshold temperature.

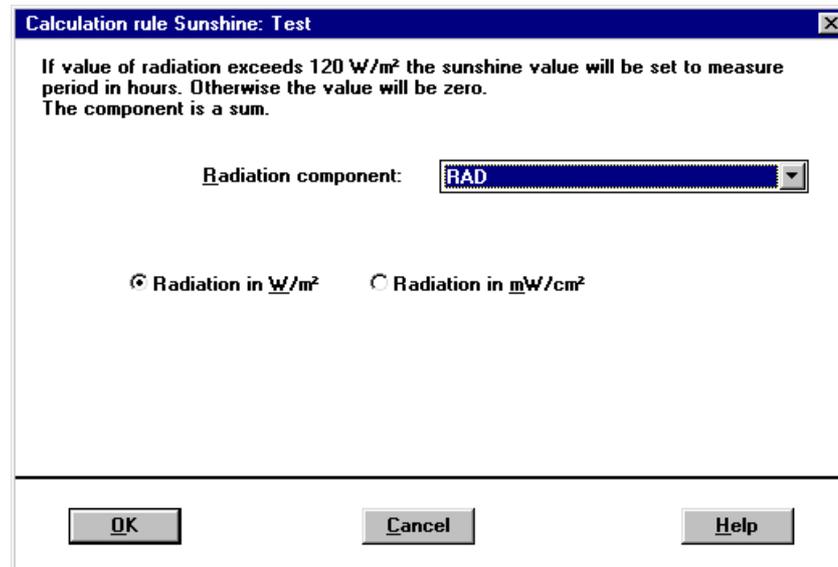


If the day mean value of the air temperature is equal or higher than the heating threshold temperature the value of this number will be set to zero. The component will be configured as sum component. That's why the number for periods longer than one day will be calculated automatically.

3.7.1.20. Sunshine

Sunshine:

There is "sunshine" if the value of the configured radiation exceeds 120 W/m².



The measure of the radiation component has to be set during the configuration.

If the value of radiation exceeds 120 W/m² the sunshine value will be set to the period of the measuring cycle in hours. Otherwise the value will be zero. The component is a sum, so that for greater periods or in 4-in-4 graphics "mean values" are calculated as sums.

For one day the value corresponds to the result of the calculation rule "Sunshine duration in hours".

3.7.1.21. Direct sun radiation

Direct sun radiation:

The direct radiation will be calculated as the difference between the global radiation and the diffuse sky radiation. The diffuse sky radiation is measured by a pyranometer with a shadow ring.

The geographic angle coordinates and the offset time between the time of the zone and UTC are also needed.

Calculation rule Direct sun radiation:

The direct radiation will be calculated with global radiation, diffuse sky radiation, geographic angle coordinates and the time.
The time base has to be the local zone time [e.g. CET]!

Component global radiation:

Component diffuse radiation:

Geographic latitude (in °, <85°):

Geographic longitude (in °):

Offset in [h] (=zone time-UTC):

 The time base of the data logger has to be the local zone time (e.g. CET, offset =1 for Berlin). Data related to another zone will produce wrong values! Negative results will be set to zero.

Input values:

Global radiation E_g (measured by a pyranometer)
Radiation value E_d of the diffuse sky radiation (measured by a pyranometer with shadow ring)

The difference of both radiation values is the value of the direct sun radiation on a horizontal surface:

$$E_s = E_g - E_d$$

The direct sun radiation S results of

$$S = E_s / \sin h_{\odot}$$

The height h_{\odot} of the sun can be calculated by:

$$\sin h_{\odot} = \sin \varphi \sin \delta_{\odot} + \cos \varphi \cos \delta_{\odot} \cos t_{\odot}$$

φ is the geographic latitude of the measuring location. δ_{\odot} is the declination, t_{\odot} the hour angle of the sun.

The value of declination can be approximately calculated in the next years with

$$\sin \delta_{\odot} = \sin 23,44^{\circ} \sin \lambda_{\odot}$$

$$\lambda_{\odot} = L_{\odot} + 1,92^{\circ} \cdot \sin(L_{\odot} + 77,3^{\circ})$$

$$L_{\odot} = 279,3^{\circ} + 0,9856 \cdot N$$

N is the number of the day in the year, for example $N = 1$ for the first of January. N as integer means 12 AM. The daytime can be shown with the decimals, for example 12 PM corresponds to $N+0,5$.

You can calculate N by

$$N = INT(275 \cdot K / 9) - (INT((9 + K) / 12)) \cdot (1 + INT((J + 2 - 4 \cdot INT(J / 4)) / 3)) + I - 30 + UTC / 24$$

In this equation K means the number of the month, I the number of the day in the month and J the number of the year with four digits.

UTC is the Coordinated Universal Time, corresponding to:

$$UTC = MEZ - 1 \text{ h} = MESZ - 2 \text{ h}$$

The hour angle t_{\odot} of the real sun is calculated by:

$$t_{\odot} = 15 \cdot (mZ + Z \pm 12h).$$

The sign is chosen that $0 \leq t_{\odot} \leq 360^{\circ}$

In equation means mZ = mean sun time and Z = equation of time.

You can get the mean sun time mZ from the zone time ZZ at the latitude λ_z with

$$mZ = ZZ + \frac{\lambda - \lambda_z}{15}.$$

For $ZZ = MEZ$ is $\lambda_z = 15^{\circ}$.

The equation of time results of:

$$Z = 0,1644 \cdot \sin 2\lambda_{\odot} - 0,1277 \cdot \sin(L_{\odot} + 77,3^{\circ})$$

The measured value of the sky radiation has to be corrected because the shadow ring covers not only the sun but also a part of the sky. The correction factor can be calculated approximately with the equation

$$f_{ED} = 1,085 + 0,05 \cdot \sin\left((N - 80) \cdot \frac{350}{365}\right).$$

3.7.1.22. Diffuse sky radiation

Diffuse sky radiation:

The diffuse sky radiation will be calculated as the difference between the global radiation and the direct radiation.

Calculation rule Diffuse sky radiation:

The diffuse radiation will be calculated with global radiation, direct radiation, geographic angle coordinates and the time.
The time base has to be the local zone time (e.g. CET)!

Component global radiation:

Component direct radiation:

Geographic latitude (in °, <85°):

Geographic longitude (in °):

Offset in [h] (=zone time-UTC):

The geographic angle coordinates and the offset time between the time of the zone and UTC are also needed. The time base of the data logger has to be the local zone time (e.g. CET, offset =1)!

The time base of the data logger has to be the local zone time (e.g. CET, offset =1 for Berlin).
Data related to another zone will produce wrong values!
Negative results will be set to zero.

3.7.1.23. Sunshine duration by day mean value of radiation

Sunshine duration by day mean value of radiation:

The sunshine duration of the day [in hours] will be calculated with global radiation [in W/m² or mW/cm²], geographic latitude and date.

Calculation rule Sunshine duration by day-mv of radiation: Test

The sunshine duration of the day [in hours] will be calculated with global radiation, geographic latitude and date.

Component global radiation: RAD

Radiation in W/m² Radiation in mW/cm²

Geographic latitude (in °, <85°): 20.000000

OK Cancel Help

 The calculation is unable for locations near the poles (absolute latitude >85°). The calculation follows the rules published in the DWD report No. 181.

$$t_{s, Hg} = t_{s, \max} \cdot \left(a + b \cdot \frac{H_g}{H_{g, wolo}} \right)$$

if ($t_{s, Hg} < 0$), then $t_{s, Hg} = 0$.

$t_{s, Hg}$ = sunshine duration [h]

H_g = measured day sum of radiation [J/cm²]

$H_{g, wolo}$ = parameter depending on location and time (calculation see below)

$t_{s, \max}$ = parameter depending on location and time (calculation see below)

a = -0,24 empirical constant

b = 1,36 empirical constant

Astronomic approximation formula for calculation of the global radiation of the clear sky

Normal values published by COLLMANN (1953/1954) for Hamburg for RAYLEIGH-Atmosphere Approximation with this formula:

$$H_{g, wolo} \approx 3,6 \cdot h_{\odot, \max} \cdot t_{s, \max} \cdot K(N)$$

$H_{g, wolo}$ = daily maximum radiation [J/cm²]

h_{\odot} = sun height [decimal Grad]

t_s = sunshine duration [h]

$K(N)$ = correction factor

For the correction factor can be taken:

$$K(N) = 1,255 - 0,15 \cdot \sin(0,9863 \cdot N - 80,6) - 0,04 \cdot \sin(1,9726 \cdot N - 241)$$

N = day number in the year

$$N = INT(275 \cdot K/9) - (INT((9 + K)/12)) \cdot (1 + INT((J + 2 - 4 \cdot INT(J/4))/3)) + I - 30 + UTC / 24$$

J = year number with 4 digits

K = number of the month

I = day number in the month

UTC = Co-ordinated Universal Time (here always 12 PM, day mean value)

For the maximal sun height is valid:

$$h_{\odot, \max} = 90 - \varphi + \delta_{\odot}$$

φ = geographic latitude

δ_{\odot} = declination of the sun

For the declination of the sun is valid:

$$\sin(\delta_{\odot}) = \sin(23,44^{\circ}) \cdot \sin(\lambda_{\odot})$$

λ_{\odot} = geocentric apparently mean longitude of the sun, oriented to the mean equinoctium of the date

The longitude λ_{\odot} is calculated by:

$$\lambda_{\odot} = 279,3 + 0,9856 \cdot N + 1,92 \cdot \sin(356,6 + 0,9856 \cdot N)$$

The maximal sunshine duration in hours (decimal) is calculated by:

$$t_{s, \max} = \frac{1}{7,5} \cdot \arccos \left(\frac{\sin(-50/60)}{\cos(\varphi) \cdot \cos(\delta_{\odot})} - \tan(\varphi) \cdot \tan(\delta_{\odot}) \right)$$

The sunshine duration component is a sum component, so that for greater periods or in 4-in-4 graphics "mean values" are calculated as sums.

3.7.1.24. Reference evapotranspiration

Defining reference evapotranspiration (ET_o) as the **rate of evapotranspiration from a hypothetical crop with an assumed crop height of 12 cm, a fixed canopy resistance of 70 sm^{-1} and an albedo of 0.23, closely resembling the evapotranspiration from an extensive surface of green grass of uniform height, actively growing, completely shading the ground and not short of water**, the estimation of the ET_o can be determined with the combination formula based on the Penman-Monteith approach. When combining the derivations found for the aerodynamic and radiation terms as presented above, the combination formula can be noted as:

$$ET_o = \frac{0.408 \Delta(R_n - G) + \gamma \frac{900}{T + 273} U_2 (e_a - e_d)}{\Delta + \gamma(1 + 0.34 U_2)}$$

where:

- ET_o : reference crop evapotranspiration [mm d^{-1}]
- R_n : net radiation at crop surface [$\text{MJ m}^{-2} \text{ d}^{-1}$]
- G : soil heat flux [$\text{MJ m}^{-2} \text{ d}^{-1}$]
- T : average temperature [$^{\circ}\text{C}$]
- U_2 : wind speed measured at 2m height [m s^{-1}]

- $(e_a - e_d)$: vapour pressure deficit [kPa]: equation (17)
- Δ : slope vapour pressure curve [kPa °C⁻¹]
- γ : psychrometric constant [kPa °C⁻¹]
- 900 : conversion factor

The Reference evapotranspiration will be calculated imperatively with temperature, relative humidity, wind speed, global radiation [in W/m² or mW/cm²] and geographic latitude. The air pressure can be calculated approximately with the altitude of the measuring location. If there is no component for soil heat flux, it can be set to zero or calculated with the temperature.

There is a set of parameters with their default values, that can be changed in the mevis.ini file under [general]:

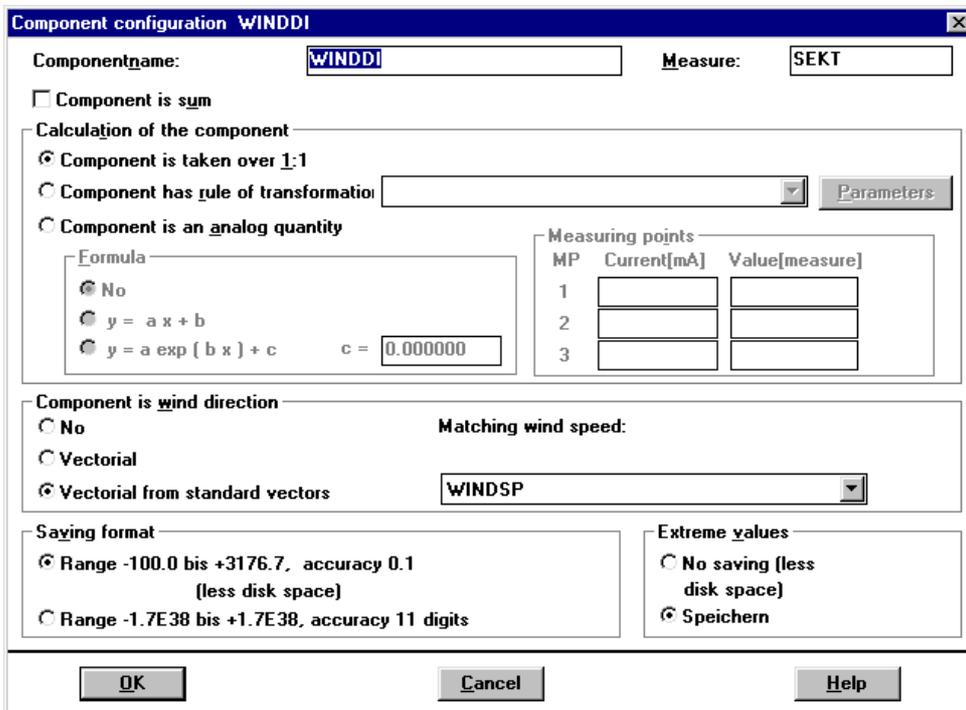
- $\alpha = 0,23$ albedo or canopy reflection coefficient overall average for grass (recommended)
- $a_s = 0,25$ fraction of extraterrestrial radiation on overcast days for average climate
- $b_s = 0,5$ fraction of radiation on clear days ~ 0.75 for average climate
- $a_c + b_c$: cloudiness factor for clear skies [] = 1.0
- $a_c = 1,35$ a_c : ~1.35 (arid) - 1.0 (humid areas)
- $b_c = -0,35$ thus b_c ~ -0.35 - 0.0
- $a_1 = 0,34$ a_1 : correlation coefficient [] ~ 0.34 - 0.44
- $b_1 = -0,14$ b_1 : correlation coefficient [] ~ -0.14 - -0.25

The Reference evapotranspiration component is a sum component, so that for greater periods or in 4-in-4 graphics "mean values" are calculated as sums.

3.7.2. Vectorial averaging of wind components

You can configure more than one wind direction and wind speed component.

There are the wind quantities described in the following text:



If the configured component is a wind direction you can choose the method of calculation of the mean values (either with standard vectors or vectorial with wind speed according to the rule VDI 3786). For calculation with vectors you have to choose imperatively a wind speed component. If there is a chosen wind speed component the maximum of the wind direction results of the direction at the moment with the highest wind speed.

If a wind speed component is configured it is shown, in which way mean values are calculated and which wind direction component is linked. Changes are possible only in the configuration dialogue of wind direction components.

You can configure more than one pair of wind components (for instance for various heights of wind measurements).

Wind direction calculated with standard vectors

The aggregated mean values will be calculated with unified single values.

If there is a related wind speed the maximal value of the wind direction is the value at the moment with the highest wind speed.

If the moment of the maximal value of the wind direction is the same as the moment of maximal wind speed the maximal value of the wind direction is used for the aggregated value.

Otherwise (also if there is no maximal wind speed value) the mean value of wind direction will be used.

Wind direction and wind speed calculated vectorial

The calculation will be done according to the rule VDI 3786, Page 2.

Therefore the assignment of a wind speed to a wind direction is absolutely demanded.

The calculation from **n** single vectors with given quantity **u** and angle **α** follows the rule:

$$x = u \cos \alpha; \quad y = u \sin \alpha;$$

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i; \quad \bar{y} = \frac{1}{n} \sum_{i=1}^n y_i$$

$$\bar{u} = +\sqrt{\bar{x}^2 + \bar{y}^2}; \quad \bar{\alpha}^* = \arctan \left| \frac{\bar{y}}{\bar{x}} \right| \text{ with } \alpha \text{ in } [0^\circ..90^\circ]$$

The position of the direction angle results from the signs of the orthogonal wind vectors:

\bar{x}	+	-	-	+
\bar{y}	+	+	-	-
$\bar{\alpha}$	$\bar{\alpha}^*$	$180^\circ - \bar{\alpha}^*$	$180^\circ + \bar{\alpha}^*$	$360^\circ - \bar{\alpha}^*$

The determination of the maximal values of wind direction corresponds to the calculation of wind direction with standard vectors and related wind speed.

The second component configuration dialogue allows to declare an arbitrary number of wind directions. You can choose the related wind speed component with the configuration of a wind direction.

The wind speed component has to be added before it can be assigned to a wind direction.

After its assignment in the configuration dialogue of a wind speed component the type (vectorial or not) and the related wind direction component are shown.

You cannot edit these options in this dialog. The options will be set in the configuration dialogue of the wind direction.

Wind component options configured with MEVIS versions 1.5 or lower will be adapted to a wind direction with the option "vectorial from standard vectors" and to a related wind speed component.

3.8. Channels ...

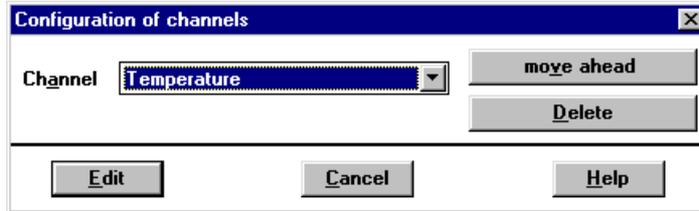
Via two connected dialogue windows you can add and configure one or more channels to the preset station. You can also change the settings of an already existing channel.

MEVIS channels can be seen as a higher level of components and can be understood as a view of the MEVIS database. In its simplest form, a channel is equal to a component.

You can configure up to 99 channels.

Channels differ to components:

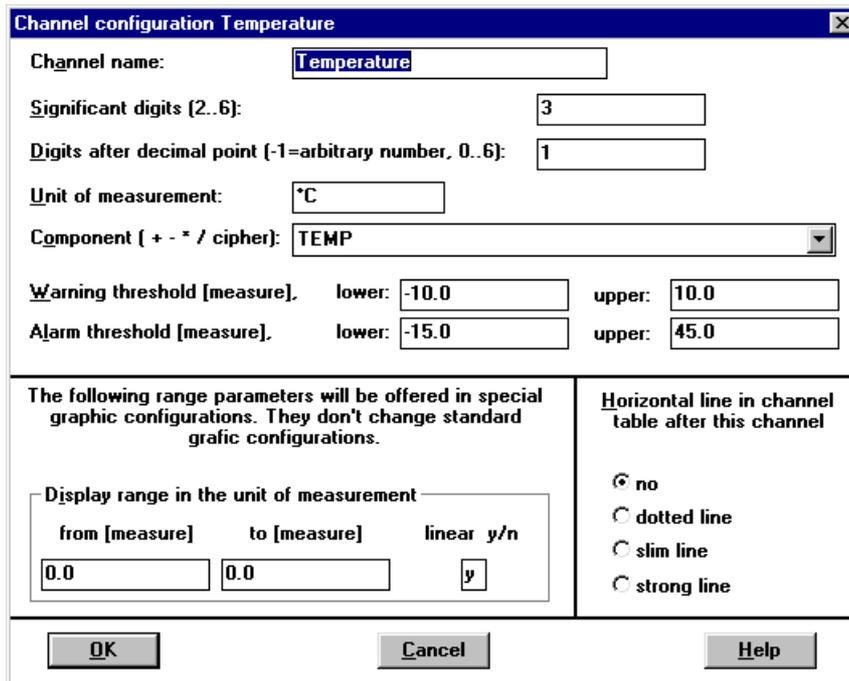
- The component values can be calculated with basic mathematical operations and with up to 9 constants (e.g. for the adaptation of measuring units).
- The sequence of the channels is freely configurable and doesn't depend on the sequence of the components.
- Several channels can base on the same component. Not all components have to be assigned to a channel.
- Warning or alarm thresholds can be declared.
- Only channels can be displayed in tables, graphics, lists or reports.



There is a list of all existing channels with the additional entry "----new----".

- If you want to add a channel, select the entry "----**new**----",
- To delete a channel click on "**Delete**"
- To rearrange the channel chain select a channel and click on "**move ahead**". The selected channel will be moved at the top of the chain.
- To edit an existing channel select its **designator** and click on "**Edit**"

For confirmation please click "OK". The dialogue "Configuration of the channel <designator>" will be opened and you can enter the necessary settings.



Channel Name	Every channel of a station is named by a specific string. You cannot assign the same string to more than one channel.
Significant digits	The values (in the channel table, lists, graphics) can be displayed with 2 to 6 significant digits.
Digits after decimal point	With the default value "-1" you set an automatically adapted number of digits after the decimal point. Additionally the program offers the option to set a defined number of digits (0 to 6 digits) after the decimal point. The value "-2" causes the exponential representation with a 3-digit mantissa.

Measure	The measure is used in all displays describing the channel. It will not be used to convert a physical quantity.
Component	<p>As minimum you have to enter the name of the basic component as Operand1.</p> <p>The channel value will be calculated with the rule: Operand1 [+ - * / Operand2 ... + - * / Operand10]</p> <p>The calculation rule can consist of up to 9 operators and 10 operands, whereby one of the 10 operands has to be a component.</p> <p>The calculation is carried out from left to right and all four fundamental operations of arithmetic's are treated equally. Parentheses cannot be used. Please note that values must not exceed the real number range (-1.7E38...+1.7E38) in the course of a calculation.</p> <p>With this calculation the component values can be transformed to refer to the different measure of the channel.</p>  <p>If there is no given calculation rule, the channel will not be displayed in the channel list and in the dialogues with this channel as parameter (in graphics, diurnal variations, correlation's, lists and data export functions). The channel name is substituted by the term „unused“.</p>
Warning threshold lower/upper	<p>The threshold values will be set here.</p> <p>If any value violates a warning threshold in the channel table (in column "Alert/Warning") the worst case value will be shown or will be actualised. The value in the table and in lists will be marked with a "W".</p> <p>Thresholds have to correspond to the value range of the channel values. The violation of a warning threshold causes the function "Mean value alarm" (see below)</p> <p>If the lower and upper thresholds are equal to "0.0", no warning threshold evaluation will be done for this channel.</p>
Alarm threshold lower/upper	<p>The threshold values will be set here.</p> <p>If any value violates a alarm threshold in the channel table (in column "Alert/Warning") the worst case value will be shown or will be actualised. The value in the table and in lists will be marked with a "W".</p> <p>Thresholds have to correspond to the value range of the channel values. The violation of a warning threshold causes the function "Mean value alarm" (see below)</p> <p>If the lower and upper thresholds are equal to "0.0", no alarm threshold evaluation will be done for this channel.</p>
Display range in the measure	When you create graphics or wind roses the values entered here will be given as default start and end values of the scale. You can change them there.
Horizontal lines in channel table	For a better view in the channel table you can insert dividing lines of different format after arbitrary channels. These lines will be also set in the screens "Thresholds" and "Status".

Function "Mean value alarm"

The following actions are executed, if warning and/or alarm thresholds are set as described above and MEVIS detects a new worst case:

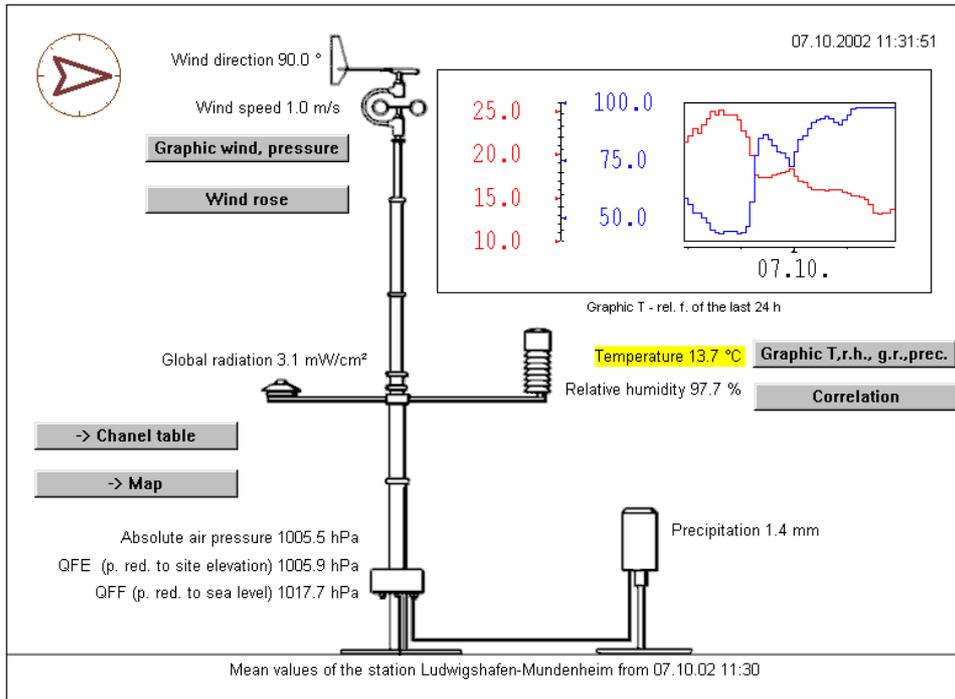
- The advice box "Mean value alarm" will be shown. The operator has to confirm it with "OK",
- The acoustic signal of MEVIS sounds during the advice box is not confirmed and if the acoustic is activated in the configuration menu,
- Relay contacts will switch in a switching unit USEW during the advice box is not confirmed, an USEW is configured and is connected to the PC,
- In the MEVIS logbook an entry will be written with date and time of the worst case and the name of the MEVIS station,
- The value overwrites the fewer one in the right column of the channel table if it is more wrong than the worst case before.

3.9. Object depictions ... (menu not available in the light version)

3.9.1. Object depictions as basic display

Coloured object depictions can be shown in the basic display instead of the channel table. They will be selected in the menu "Screen".

An object depiction consists of a bitmap (file), e.g. a map with the places of the measuring stations or the ground plan of an observed building and the installed measuring places, and display elements. So the meteorological observation can be realised with the presentation of actual measured values as bar, graphic or text display respectively the signalisation of threshold violations by colour changes.



The program system MEVIS offers an object depiction editor to configure the screen matching your wishes. You can arrange object depictions via the menu "Configuration.Object depictions". MEVIS inserts a new menu item for each object depiction in the menu "Screen" designated with its name.

Object depictions are graphical presentations of certain local circumstances in connection with measured values of this area. They are customised basic displays and do not belong to the standard delivery. You can order optionally a user defined design.

If you hold the <Shift> key and additionally click and hold the left mouse button on an element you can see the configuration dialog of the element. You cannot edit the dialog; it is shown for information only.

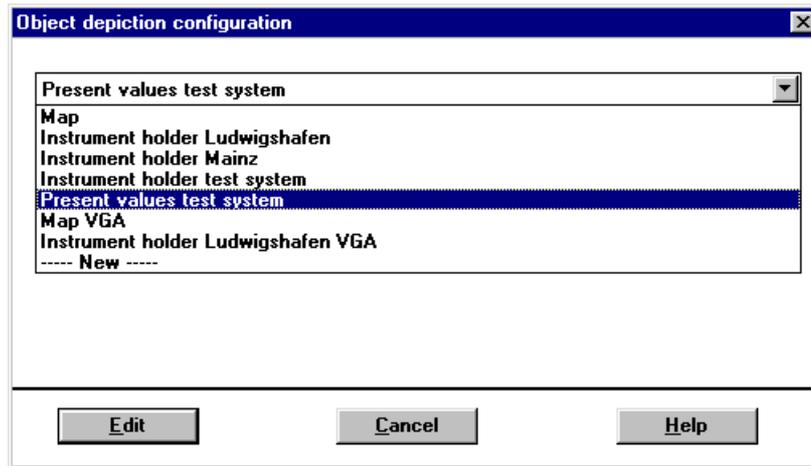
3.9.2. Configuration of object depictions

If the Menu "Configuration.Object depictions..." is selected, after you have entered the general code a dialogue will be opened in which the list of the already configured object depictions is displayed.

Object depictions can be added to a submenu for better overview and selection.

Object depictions of a submenu are shown in the notation "Submenu name -> object depiction name".

If you want to change an existing object depiction, click on it in the list. If you want to configure a new object depiction, select "---New---". Then click "OK" and the window "Configuration object depiction <name>" will be opened in which you can change the settings.

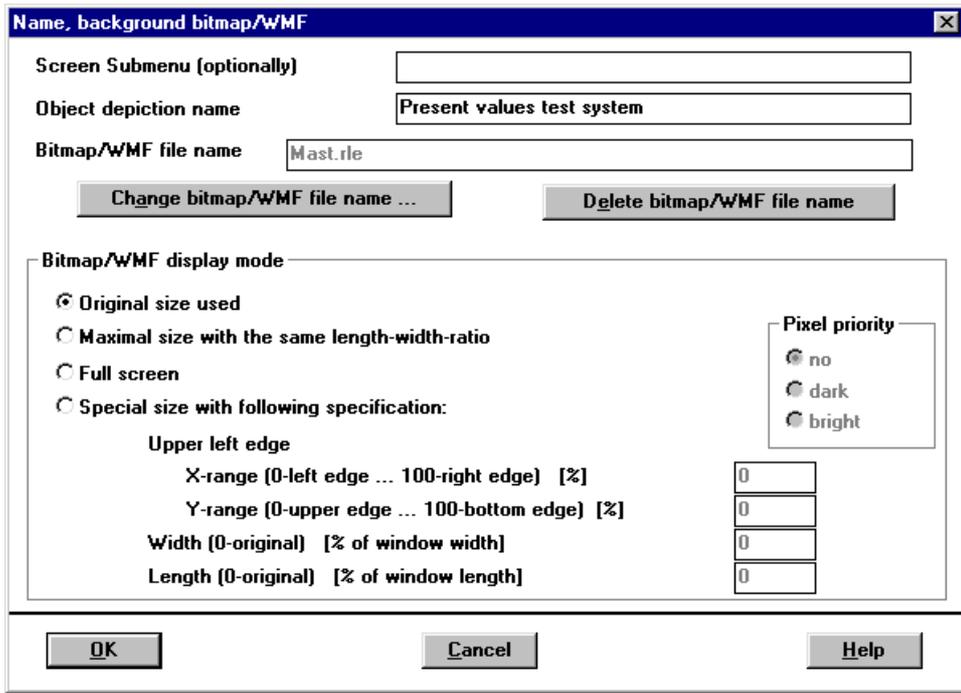


3.9.2.1. Object depiction

An object depiction has a name and consists of a depiction (bitmap) or white background, on which elements (texts, measured values, bars and graphics) can be freely arranged.

You can select the depiction with the menu item "Object depiction.Name,Bitmap/WMF".

Screen submenu	The object depiction can be assigned to a screen submenu to simplify the navigation in the MEVIS menu screen.
Object depiction name	Each object depiction must have a name for identification. This name will be displayed under the menu "Screen".
Bitmap-/WMF file name	Here you can choose the file of the depiction that should serves as background for the elements. If the entry is empty, if the file is not found or if the file does not have a valid bitmap/WMF format, the background will be empty (white). If an error occurs while loading or showing the bitmap/WMF file it will be shown in the "Event window". At run time of MEVIS the message will be written only one time for each file. You can change or delete a bitmap file name by using the corresponding buttons in the dialogue. Attention! A WMF file has to be written in ALDUS format (begins with the hex dump 9A,C6,CD,D7).
Depiction mode of the Bitmap/WMF in the window	A bitmap background can be adapted to different circumstances (i.e. different resolution of the monitor) via "Depiction mode of the bitmap in the window". Please note that the usage of the original size will result the best speed to paint and the highest quality of depiction.
Pixel priority	If a Bitmap is not used in the original size the rounding can be manipulated to prefer dark or bright picture structures.



The changes can be saved during the processing (menu item "Object depiction.Save").

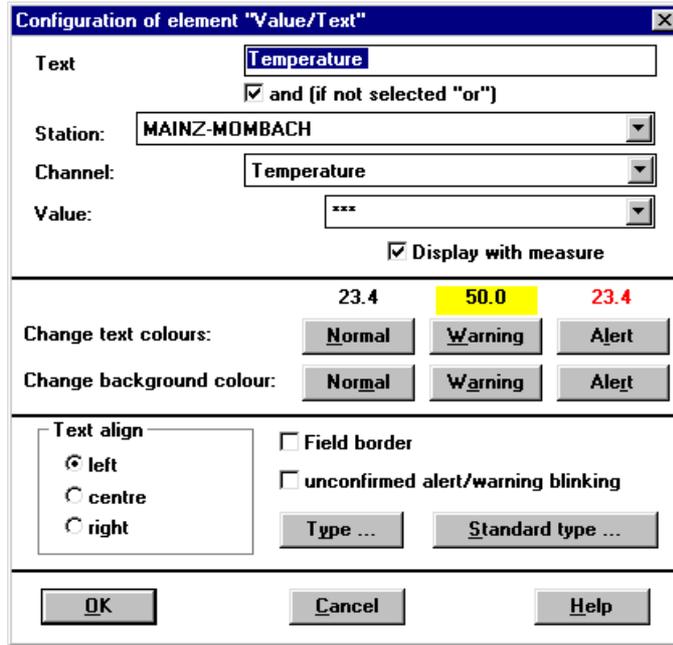
You can quit the configuration of an object depiction by selecting the menu item "Object depiction.Quit". If there were any changes after the object depiction was saved at last, a control query will appear.

3.9.2.2. Element

Creation of the element	You can create an element using the menu items "Element/...". The mouse cursor will change. Now it stylises the element type to create. Move the mouse cursor to the position in the window, where the element should be arranged and click the left mouse button. The new element will be positioned and activated simultaneously. (Double edge!).
Position of the element	You can change the position of an activated element by using the cursor keys of the keyboard (also in connection with the <Shift> key) or the mouse (click on it with the left mouse button and then pull it).
Size of the element	You can change the size of an activated element by using the mouse (Click the edge of the element and pull). You can see the current number, the position and the size of the activated element in the header of the configuration window. This makes it easier to arrange the elements. After a graphic in an object depiction has been changed in size, the menu item "Edit.Actualise screen" should be selected to achieve a correct depiction of the graph (re-establishment of the firm font size).
Contents of the element	You can determine the contents of an activated element in the following specific dialogues, which can be called up with the return key, a double click with the mouse or the menu item "Edit.Attributes".
Activate the element	You can activate an element for further editing by click on it with the mouse (left button) or by the keyboard (TAB key or Shift key). Using the TAB key the elements will be activated in the order of their serial number that is shown in the window title (TAB ascending, Shift-TAB descending)

3.9.2.2.1. Value/Text

Value/Text	Temperature 14.3 °C
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Output text panel	<p>An output text panel can display a text, the measured value of a channel or a combination of both. It is also possible for a measured value to overwrite the text.</p> <p>The text can contain space savers. Space savers can be "{Date}" and "{Time}". At their position the current date in the short date format or the current time in the format hh:mm:ss will be displayed.</p> <p>If a measured value is shown, the display can be added by the measure.</p>
Colours	<p>You can set the colours with the corresponding buttons ("Normal", "Warning", "Alarm") and distinguish between text colour and background colour. Above the buttons you can see the current colour settings. A measured value can correspond to the normal range, the warning range or to the alarm range.</p> <p>Texts without a measured value will be displayed in the colour setting for "Normal".</p>
Text align	<p>The text can be positioned left justified, centred, and right justified. If a text does not fit onto a line, a line break will be carried out.</p>
Field border	<p>The panel can be displayed with or without an edge.</p>
unconfirmed warning/alert blinking	<p>If there are unconfirmed warnings or alerts concerning the chosen value the element can blink.</p>
Font	<p>You can use every font that is installed on your computer. The default font is the Windows standard font.</p> <p>Windows will select a similar font if the demanded font is not available (check menu "Control panel.Fonts"). Don't use an "empty" font because the view can be changed after choosing a font.</p> <p>If the display was changed in the Windows setup (e.g. large fonts <-> small fonts), the size of the Windows standard font can be changed.</p>

3.9.2.2.2. Bar



Station, Channel, Value	In an output bar the measured value of a channel can be displayed graphically as a coloured bar. Its length (horizontal alignment) or height (vertical alignment) depends on the measured value. Depending on the configuration of the channel the bar is displayed linearly or logarithmically.
Bar align	The bar alignment is independent from the selected rectangle (relation of height to width) of the panel.
Bar beginning Bar end	The beginning and the end of the bar are freely configurable. Auto ranging (beginning of bar = end of bar) is not necessary . For logarithmical representation the beginning has to be greater than 0.0.
Text in bar	There can be a text in the bar. It can be the proportional value related to the bar range (also more than 100%), the value of the channel with or without its measure.
Alarm and warning thresholds	The alarm and warning thresholds can be displayed next to the coloured bars, if they are valid and within the depiction range.
Bar border	The bar can be displayed with or without an edge .
unconfirmed warning/alert blinking	If there are unconfirmed warnings or alerts concerning the chosen value the element can blink.
Colours	You can set the colours with the corresponding buttons ("Normal", "Warning", "Alarm") and distinguish between text colour and background colour. Above the buttons you may see the current colour settings, with which a measured value is displayed if it is in the normal range, the warning range or in the alarm range.

3.9.2.2.3. Bitmap/WMF

With this function you can add images or symbols (gauges, positioning element) to an object depiction. In addition to the background depiction, which is always positioned under all elements, bitmaps or ALDUS WMF graphics can be added as elements. They have the same overlap characteristics as all other elements; elements on top may cover other elements partly or totally.

Files with the extension WMF will be interpreted as Windows Meta File; all other will be opened as bitmap. A WMF file has to be written in ALDUS format (begins with the hex dump 9A,C6,CD,D7...), otherwise the scale can be incorrect.

WMF files without background are transparent. They will overlap the object depiction background only with its signs and therefore you can see covered elements (for example bars).

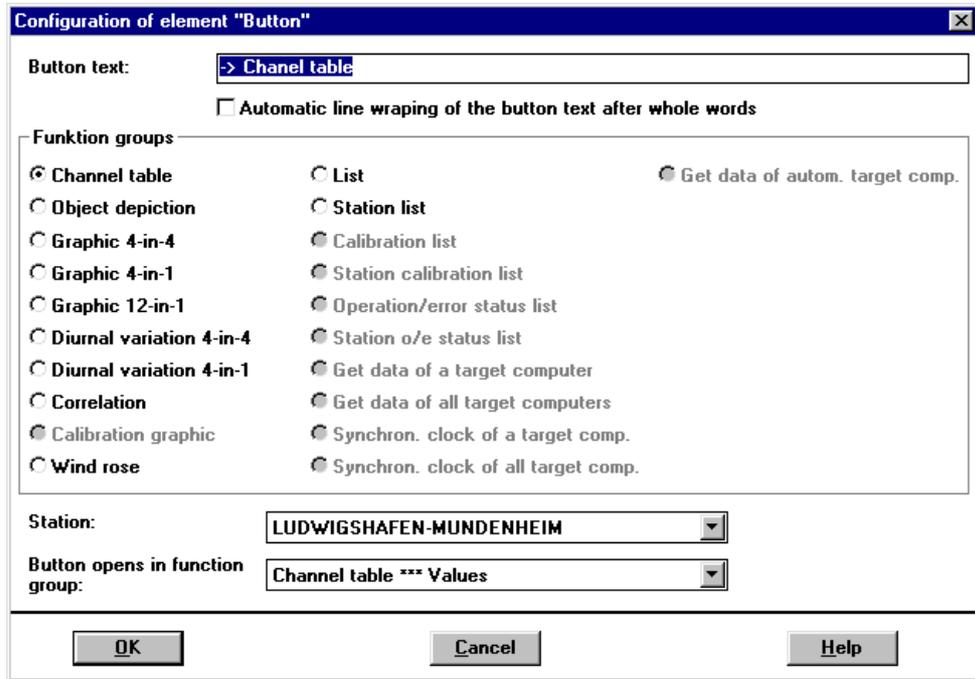
WMF graphics can be drawn faster and zoomed in better quality than bitmap graphics.

If an error occurs loading or showing the bitmap/WMF file it will be shown in the "Event window". At run time of MEVIS the message will be written only one time for each file.

A wrong element will be shown greyed or it will not be shown.

3.9.2.2.4. Button

Button	<div style="border: 1px solid black; padding: 5px; display: inline-block; background-color: #cccccc;">-> Chanel table</div> <p>You can switch between object depiction and other screens or do certain communication tasks by created buttons. The other screen can be a channel table, an object depiction, a graphical standard display or a standard list.</p>
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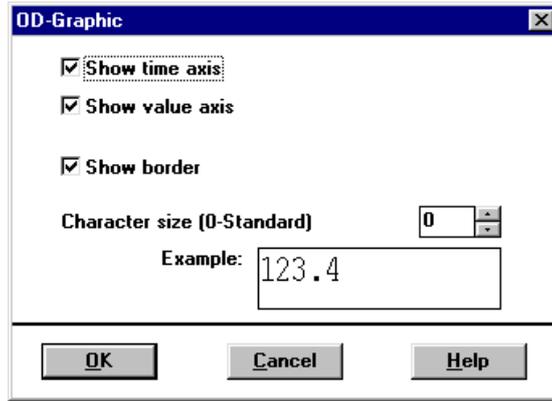


Button text	A button can be assigned to a freely edited text. The button text can have automatic line wrapping after whole words.
Function groups	Choose a reference to an existing channel table, an object depiction, a graphical standard display or a standard list, to which the program has to jump when the button was pressed. Communication tasks are not available in this MEVIS version.
Station	You can choose the related station.

The example picture shows as you can choose the channel table of the measuring station "Ludwigshafen-Mundenheim" by click on the configured button element "-> Channel table".

3.9.2.2.5. Graphic 4-in-1

Graphic 4-in-1	
	The configuration of the graphic in an object depiction is effected with the standard dialogs for configuration of standard graphics (see chapter 3.10). After the editing of these standard dialogs a special dialog has to be filled for adaptation to the depiction.



Depiction of the axes	Contrary to the common graphics, the depiction of the axes (time axis and value axis) can be suppressed with graphics in object depictions. This can be important using small graphics.
Border	The depiction of the border is optional.
Character size	The font size of the axis labels corresponds to the size "0" in full size graphs. Contrary to normal graphs, where the font will be reduced in size when the window will be reduced in size, the font size stays the same in graphics of object depictions to keep the axis labels readable also for small graphics. Additionally you can choose a fix font size that differs from the full screen graphic.

3.9.2.2.6. Weather Vane



The value of a channel is graphically represented by an arrow. It is interpreted as a degree value. Values outside the interval $[0^\circ..360^\circ]$ will not be shown. The 0° arrow points to the top. The arrow turns clockwise with increasing values.

Normally the arrow points in the direction where the wind comes from.

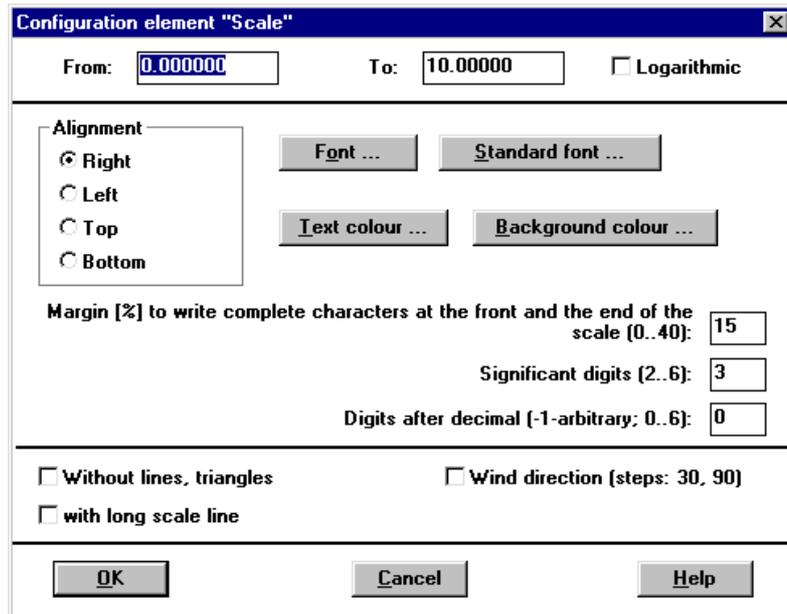
You can choose that it points against this direction.

You should preferably use the vane with wind direction channels.

3.9.2.2.7. Scale



You can use the element scale without restrictions. It can be arranged besides an element bar. For instance, a bar showing temperature values can be inscribed with different measures (Celsius, Fahrenheit). There is not any logical context between the scale and other elements. To get the conformity of the elements choose the corresponding beginning and ending values of the scale.



From:	To:	The range you have to enter here has to match to the settings of the bar. This also involves the logarithmic gradation of the scale.
Alignment		Optional right , left , top and bottom
Font ...		If you do not use the Windows standard font click on the button and choose another font.
Standard font ...		If another font is selected you can reset it to the standard by this button.
Text colour ...		You can choose the colour of the characters and lines of the scale in a dialogue pressing this button.
Background colour ...		Choose the background colour of the scale.
Margin ...		To prevent the cut of the scale inscription you can enter the margin width (in percent of the scale length).
Significant digits and Digits after decimal		With these options the accuracy and the quantity of scale inscriptions will be set related to the range and the logarithmic gradation.
Without lines, triangles with long scale line		If the option is activated the scale will be shown without graduation lines. If the option is activated the scale has a line on the edge chosen with the option "Alignment".
Wind direction		For wind direction channels you can choose an optimal gradation.

3.9.2.3. Edit

Existing elements can be edited with the menu items "Edit/...".

The editing is related to the activated element. If there is no active element the menu items above the separator are inactive.

3.9.2.3.1. Copy

The function copies an activated element. The mouse cursor shows a stylised copy during the copying process. Click the position in the window, where you want to copy the element, with the left mouse button.

3.9.2.3.2. Delete

The function deletes the activated element after a corresponding control query (also with the key of the keyboard).

3.9.2.3.3. Bring element to the surface

The elements are numbered corresponding to the sequence in which they were created and designated in this sequence. If two or more elements overlap, an element of a higher number will cover the element of the

lower number. This command assigns the highest number to the activated element and thus puts it on top of all other elements.

3.9.2.3.4. Attributes

In this dialogue you can change the characteristics of the activated element text, bar, button, graphic (see chapter 3.9.2.2 Element).

3.9.2.3.5. Change element size

The size of the active element (text panel, bar, button graphic) can be changed without the specific dialog (see chapter 3.9.2.2 Element). The edges of the element you can drag with the mouse.

3.9.2.3.6. Actualise bitmap only after command

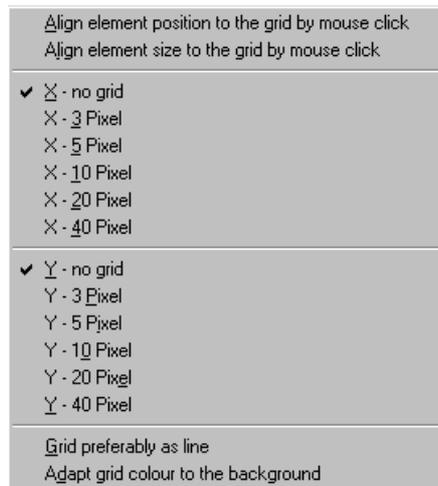
If a bitmap is used it will be updated if necessary. This may effect the editing of other elements. With this switch the automatically update of the bitmap is suppressed.

3.9.2.3.7. Actualise screen

Use this function if "Update bitmap only after command" is switched on or if you have just changed the size or content of a graph.

3.9.2.4. Grid

The grid helps to adjust elements in position and size on the object depiction. If the first options are activated a mouse click will automatically adjust the tagged element.

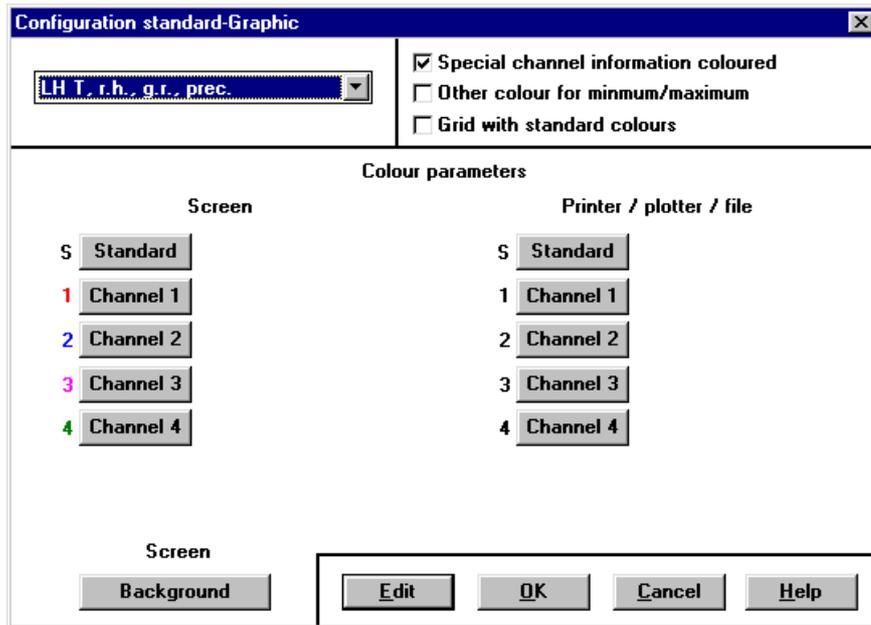


You can choose the spacing of the grid in width and height. The grid can be drawn as lines or points. It is possible to adapt automatically the colour of the grid to the background.

3.10. Standard graphics (menu not available in the light version)

For often-displayed graphics standard parameters can be set. They will be used to create graphics and can save a lot of time.

For each station you can declare up to 16 standard graphics.



Standard graphic	Select the standard graphic for configuration in the list by its name. If a new standard graphic has to be created, then select the entry "-----New-----". A click on "Edit" opens another dialogue in which this standard graphic can be created anew or altered. "OK" confirms the changes and closes the dialog.
Special channel information coloured	In the graphic there are some channel-specific information . These can be depicted either in the standard colour or in the channel-specific colour.
Other colour for minimum/maximum	If necessary the extreme values (usually painted with the same colour like the mean values) can be shown in another colour. This other colour will be chosen automatically.
Colour parameters	There is a common colour configuration for all graphics that you configure in this dialogue window. It contains a standard colour for general texts and lines (time period, inscription of X-axis) and four colours for the maximum of four individual curves. Since the colour reproduction possibilities of the monitor and the printer can differ considerably (colour monitor, black and white printer), different colours can be set for the monitor and the printer. For the monitor you can also set the background colour (white as standard).
Dialogue window colour	First the currently set colour is shown in the dialogue window "colour". It appears in the double colour field "Colour/Basis". At the same time, the position of the colour in the colour-setting field is indicated by a pointer. The brightness of the colour is indicated in the vertical brightness bar code by a triangle. The colours are also represented as numbers. The colour can be changed with a mouse by selection the basic colour, by click the setting of the field for "Setting the Colour" respectively by selection a degree of brightness in the vertical bar code, or by entering numbers that correspond to a colour. Only colours which result in the same colour in the double colour field "Colour/Basis" should be selected.

Name	The name is used to specify the standard graphic and is also shown in the window title. They can be edited and later called up by the name. Minimally it consists of one visible sign. The entry of a name that already exists will be rejected.
Start time	The moment, from which the values will be displayed, is called the start time . If a graphic have not to been displayed from a certain moment but rather the most recent hours or days have to been displayed, then you have to enter a zero for the start time. Such a graphic is always displayed up to the present and it will be updated every time when new values are received, i.e. the graphic will always be kept up to date.
Stop time	The stop time can be entered in two ways: as an end time or as a time period from the start time. To change the options use the button „Stop time“. In the first way you can enter „0“ for the day or month of the stop time to get graphics or lists that reach to the actual time. Such graphics or lists will be actualised when new data arrived. In the other way the stop time is the sum of the start time and the entered time period (stop time = start time + xxx days + xx hours). The period can vary considerably - from one hour to 3.1 years. The time axis (stop time=start time + x days + y hours) can be set in the period since 1-1-1980 to 12-31-2099 12:00 pm.
Used values	A wide variety of mean value periods are available in MEVIS (e.g. 30-minutes, diurnal or annual mean values, "****" means originally measured values). The period that will be used for this graphic you have to choose from the list box.
Show mean values, minimum values, maximum values	Here you can choose the value types that have to been displayed. The selection applies to all channels of the graphic. It can be changed in the menu „Channels“ of the shown graphic.
Show thresholds	If this item is activated thresholds will be displayed. The selection applies to all channels of the graphic. It can be changed in the menu „Thresholds!“ of the shown graphic. The thresholds are painted as lines (dotted for warning, broken for alert thresholds) in the colours of the channels.
Show straight lines	If this item is activated the straight lines are shown for numbered values parallel to the axis. It can be changed in the menu „Grid!“ of the shown graphic.

Additional information	By click on the button "Add. info's" you can configure the output of further information in graphics 4-in-4 like mean values respectively sum (only with sum components), maximum value, minimum value and percentile (using the editable percent value) for the overall time period.
Select station and channel	Four channels can be displayed at the most in one graphic. They need not "belong" to the station this standard graphic is assigned. In the standard graphics of a certain station, channels of arbitrary stations can be displayed. These channels can be selected over "station" and "channel".
Display range	The range of the y-axis has to been entered as the display range. The input "from 0 to 0" means that the depiction range will be selected automatically. The depiction range depends on the measured values that will be displayed and thus it is only useful as an orientation. The depiction range, which was entered when the channel was configured, is preset. The display range can be subdivided linearly or logarithmically .

3.11. Standard graphic (12-in-1) (menu not available in the light version)

Each station, which was configured in MEVIS, has up to 16 standard graphics 12-in-1. Up to twelve channels can be displayed in one graphic. They need not "belong" to the station to which this standard graphic is assigned. For the handling see also in the chapter "Standard graphics".

<p>Channel</p>	<p>Up to twelve channels can be displayed in one graphic. These need not "belong" to the station the standard graphic is assigned. In the standard graphics of a certain station, channels of arbitrary stations can be displayed. These channels can be selected via "station" and "channel". If the measures of the following channels differ to the measure of the first channel a warning will be displayed in the log window (press <Ctrl><Shift><F12> to bring it to the top).</p>
<p>Display range</p>	<p>The range of the y-axis can be entered as the display range of the first channel. The display range configured with the first channel is preset. The given range will be used for all channels! The input "from 0 to 0" means that the display range is selected automatically. Then the display range depends on the measured values of all channels. If there are very different values of the channels the resolution can be unsatisfactory. The preset range is the range that was configured for the first used channel. The display range can be subdivided linearly or logarithmically.</p>

The screenshot shows the 'Graphic [12-in-1]' configuration window. It includes a 'Name' field, 'Start time' (Date: 00.00.0000, hour: 00), and 'Stop time' (Start time + 0 days + 1 hours). There are checkboxes for 'Show mean values', 'Show minima', 'Show maxima', 'Show thresholds', and 'Show straight lines'. A table lists 12 channels with their respective stations and channel names. The 'Display range' is set from 750.0 to 1100.0. The 'Channel' column includes 'Absolute air pressure', 'Air pressure', 'Global radiation', 'Diffuse sky radiation', 'Direct sun radiation', 'Global radiation [W/m²]', 'Global radiation', '03', 'SO2', and '03'. Buttons for 'OK', 'Cancel', and 'Help' are at the bottom.

3.12. Standard frequency curve (menu not available in the light version)

Each station, which was configured in MEVIS, has up to 16 standard frequency curves. For often-displayed frequency curves standard parameters can be set. They are used when graphics are created and save a lot of time. For the handling see also in the chapter "Standard graphics".

In this graphic the numbers of measured values of the chosen time period (y-axis) is shown over the measured value ranges or classes (x-axis).

Configuration standard-Frequency curve

Temperature

Special channel information coloured

Grid with standard colours

Colour parameters

Screen				Printer / plotter / file			
5	Standard			5	Standard		
1	Channel 1	7	Channel 7	1	Channel 1	7	Channel 7
2	Channel 2	8	Channel 8	2	Channel 2	8	Channel 8
3	Channel 3	9	Channel 9	3	Channel 3	9	Channel 9
4	Channel 4	10	Channel 10	4	Channel 4	10	Channel 10
5	Channel 5	11	Channel 11	5	Channel 5	11	Channel 11
6	Channel 6	12	Channel 12	6	Channel 6	12	Channel 12

Screen

Background

Edit OK Cancel Help

Frequency curve

Name: Temperature

Date: 00.00.0000 hour 00

Start time (unless Day=0 --> stop time = time now)

Stop time = Start time + 30 days + 0 hours

Class width [measure]: 1.0

Show straight lines

Used values: 10 minutes

Station: LUDWIGSHAFEN-MUNDENHEIM

Channel: Temperature

Display range: from 0.0 to 40.0 linear (y/n) y

OK Cancel Help

<p>Channel</p>	<p>Up to twelve channels can be displayed in one graphic. They need not "belong" to the station the standard graphic is assigned. In the standard graphics of a certain station, channels of arbitrary stations can be displayed. These channels can be selected via "station" and "channel". If the measures of the following channels differ to the measure of the first channel a warning is displayed in the log window (press <Ctrl><Shift><F12> to bring it to the top).</p>
<p>Display range</p> 	<p>The range of the x-axis can be entered as the display range of the first channel. The display range configured with the first channel is preset. The given range will be used for all channels! The input "from 0 to 0" means that the display range is selected automatically. Then the display range depends on the measured values of all channels. If there are very different values of the channels the resolution can be unsatisfactory. The display range can be subdivided linearly or logarithmically. The graduation of the y-axis depends on the maximal number of values in a class. It will be set automatically.</p>

Class width [measure] If there is a given display range you have to enter a class with (0<width<=display range).

Class number (1...1000) To use auto ranging you have to enter the number of classes intersecting the range.

3.13. Standard diurnal variation (menu not available in the light version)

Each station, which was configured in MEVIS, has 16 standard diurnal variations. For often-displayed diurnal variations standard parameters can be set. They will be used to create diurnal variations and they can save a lot of time.

Four channels can be displayed at the most in one diurnal variation. For the handling see also in the chapter "Standard graphics".

3.14. Standard correlations (menu not available in the light version)

For often-displayed correlations standard parameters can be set. They will be used to create correlations and can save a lot of time.

For each station, which was configured in MEVIS, you can create up to 16 standard correlations.

For the handling see also in the chapter "Standard graphics", but minimum, maximum and threshold values will not be displayed.

Four channels can be displayed at the most in one correlation. These need not "belong" to the station the standard graphic is assigned. In the standard graphics of a certain station, channels of arbitrary stations can be displayed. These channels can be selected via "station" and "channel".

<p>Station for correlation Channel for correlation Filter station Filter channel</p>	<p>You have to choose absolutely the station and channel of correlation. They will be used for representation of the reference channel</p> <p>A further channel of an arbitrary station can be used as filter. That means the values of the depicted channels (i.e. air pollution) of a certain time are only valid and depicted, if the value of the filter channel of this time is within respectively out of a certain range (i.e. wind direction).</p>
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3.15. Standard lists (menu not available in the light version)

In a list up to four channels can be displayed.

For often-displayed lists standard parameters can be set. They can be used to create lists.

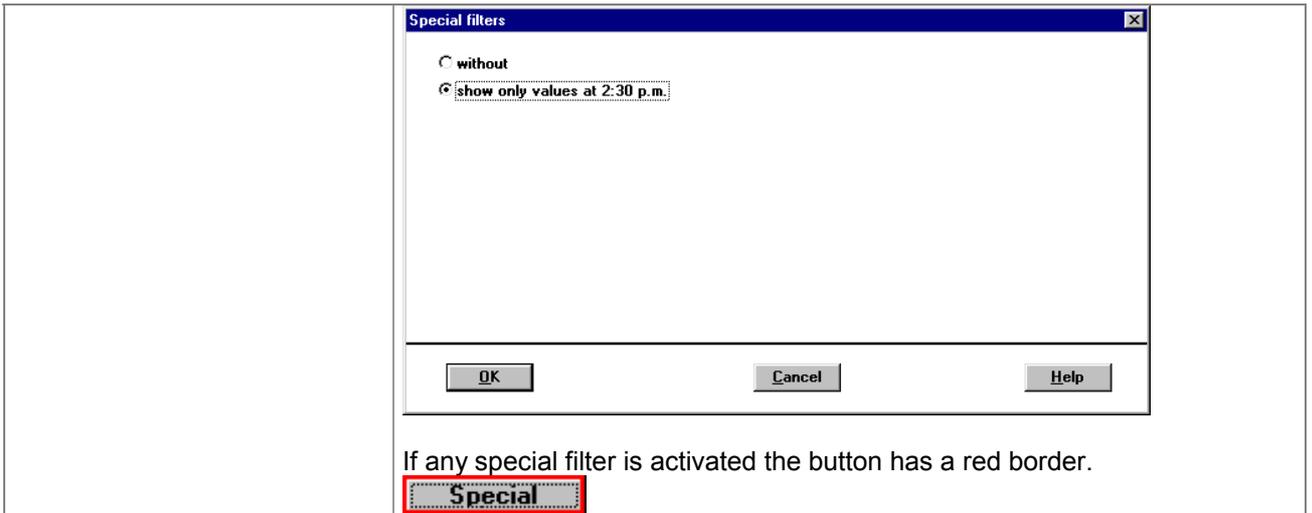
For each station, which was configured in MEVIS, you can create up to 16 standard lists.

Four channels can be displayed in a standard list at the most.

List box

Please choose the standard list that has to be edited from the list. If a new standard list has to be created please select the entry "----New----". A click on "Edit" opens another dialogue window in which this standard list can be created anew or altered. You cannot change any colour for the presentation of the lists.

Name	The name is used to specify the standard list and is also shown in the window title. They can be edited and later called up by the name. Minimally it consists of one visible sign. The entry of a name that already exists will be rejected.
Start time	The moment, from which the values will be displayed, is called the start time . If a list have not to be displayed from a certain moment but rather the most recent hours or days have to be displayed, then you have to enter a zero for the start time. Such a list is always displayed up to the present and it will be updated every time when new values are received, i.e. the list will always be kept up to date.
Stop time	The stop time can be entered in two ways: as an end time or as a time period from the start time. To change the options use the button „Stop time“. In the first way you can enter „0“ for the day or month of the stop time to get lists that reach to the actual time. Such lists will be actualised when new data arrived. In the other way the stop time is the sum of the start time and the entered time period (stop time = start time + xxx days + xx hours). The period can vary considerably - from one hour to 3.1 years. The time axis (stop time=start time + x days + y hours) can be set in the period since 1-1-1980 to 12-31-2099 12:00 pm.
Used values	A wide variety of mean value periods are available in MEVIS (e.g. 30-minutes, diurnal or annual mean values, "****" means originally measured values). The period that will be used for this list you have to choose from the list box.
Mean Values, Minimum Values, Maximum values	Here you can choose the value types that have to be displayed. The selection applies to all channels of the list. It can be changed in the menu „Channels“ of the shown list.
Compress list	If you activate this item "compress list" all lines are removed from the list in which no value is available. If lines are removed a blank line is inserted to detect such a gap.
Select station and channel	Four channels can be displayed at the most in one standard list. They need not "belong" to the station the list is assigned. In the standard lists of a certain station, channels of arbitrary stations can be displayed. These channels can be selected via "station" and "channel".
Special	Via the button "Special" you can activate special filters (for example to show only values at 2:30 PM).



If any special filter is activated the button has a red border.

3.16. Standard station list (menu not available in the light version)

In a station list all channels of the **current station** are displayed. That's why you need not choose any station and channel name.

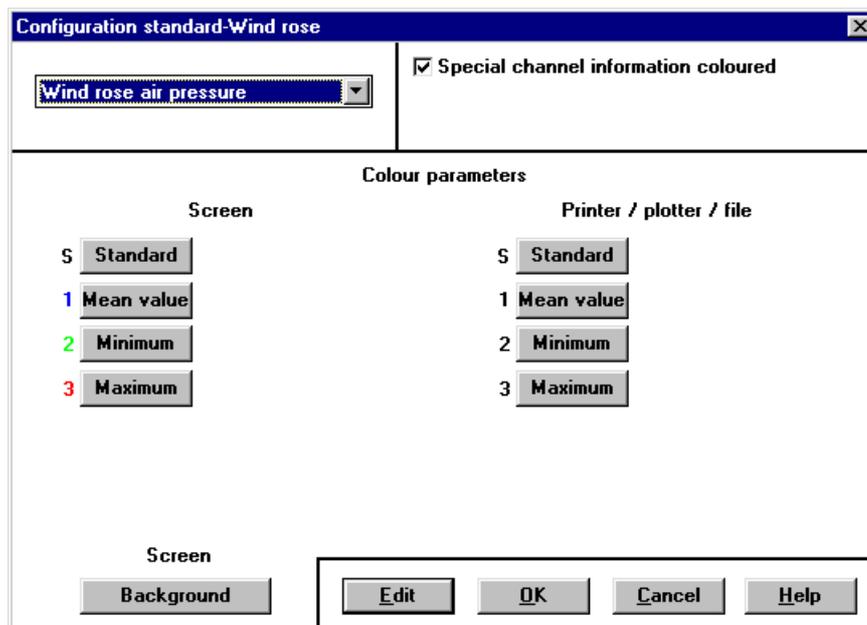
3.17. Standard wind roses (menu not available in the light version)

For often-displayed wind roses standard parameters can be set. They will be used to create wind roses and they can save a lot of time.

For each station, which was configured in MEVIS, you can declare up to 16 standard wind roses.

For the handling see also in chapter "Standard graphics".

Colour parameters	In difference to the configuration of a standard graphic you can choose the colour setting for one channel, but for its mean value, minimum and maximum curve.
--------------------------	--



Wind direction	To make a wind rose a channel based on a "wind direction" component is necessary.
-----------------------	---

	<p>If there is no component declared as wind direction you can already configure a standard wind rose but cannot display this wind rose. All stations with grey font in the station selection list have no wind direction component. All channels with grey font in the channel selection list are not a wind direction channel.</p>
Filter	<p>A further channel of an arbitrary station can be used as filter. That means the values of the depicted channels (e.g. air pollution) of a certain time are only valid and depicted, if the value of the filter channel of this time is within respectively out of a certain range (e.g. wind direction).</p>
8 wind sectors	<p>Wind roses can be displayed with 8 sectors of 45° if this check box is activated. 12 sectors with 30° are shown as standard.</p>

Wind roses cannot be displayed with straight lines.

3.18. End ...

You can leave the program after confirmation in a message box.

C onfiguration	C ontrol	S creen	S tation	G raphics	L ists	D ata import	D ata export	A ccessories	H elp
Q uit alarms+warnings B lock view L oad configuration of used graphics/lists/... at the program start S ave configuration of used graphics/lists/... at the end of program T ime step backwards T ime leap to the history ... T ime step forwards C onfiguration for device(s) via COM2 G et values P olling of instantaneous values ON/OFF S ynchronise clock S end command									

4. Control functions

4.1. Quit alarms+warnings

If the measured values violate a warning thresholds or an alarm threshold these events will be shown or updated (if new, greater violations occur) in the basic display. With this menu item you can delete the warnings and alarms.

To quit only the alarm or warning of one channel please click with the right mouse button on the worst-case value in the right column of the channel table.

4.2. Block view (menu not available in the light version)

To assure a smooth operation, MEVIS will not repeat the code query if a valid viewer code has been entered. If the user leaves the computer without termination of the program, he can block the view for unauthorised persons by this menu item.

You can reverse the block view with any command that requires the viewer code.

4.3. Load configuration of used graphics/lists/... at the program start (menu not available in the light version)

At the start of the program all saved graphics, list ... are shown again automatically. Their saving is performed (if the menu "Save the settings at exiting program ..." is activated) when you exit the program. The saved status is valid until another saving (overwrites the old status).

4.4. Save configuration of used graphics/lists/... at the end of program (menu not available in the light version)

At exiting the program the status of all opened graphics, lists ... is saved. After the next program start they will be shown automatically, if the menu "Load settings at starting program ..." is activated.

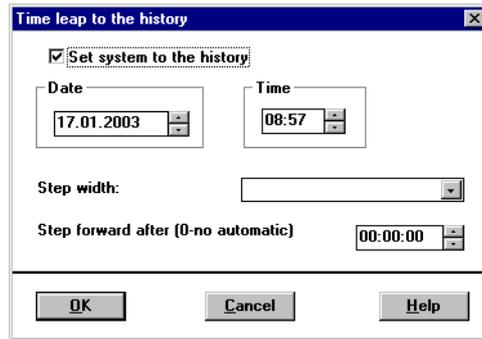
4.5. Time leap to the history (menu available only in the viewer version)

With this menu item you can jump to an arbitrary moment in the history or in the future.

So you can show data of an event or you can set the time of data that will to be shown in the channel table.



This function is available only in the viewer version! (See chapter 13.10).



Set system to the history	After a click on this all dialog items are shown.
Date/Time	Date and time of the moment to jump to.
Step width	The width of the time steps forward.
Step forward after (0-no automatic)	The period after that the values of the next time step will be shown. It simulates the receiving of new data. With "0" you can prevent the renewal of data and the values of the chosen moment will stay all time.

If the function "Time leap to the history" is activated the menu items "Time step backwards" and "Time step forwards" are available. In the main menu the items " \leq " and " \geq " are added. With these items you can do a step to the history or to the future.

 Please note that in lists, graphics and channel tables values will be shown only up to the chosen moment.

4.6. Control functions for the communication with devices (menus not available in the viewer version)

The necessary functions to realise the data transmission are located in the main menu item "control". These functions support the building of a connection, the transmission of data or device parameters or the activating of device functions.

Menu example for direct fetched devices

Configuration for device(s) via COM1
 Get values
 Polling of instantaneous values ON/OFF
 Synchronise clock
 Send command

Menu example for devices fetched via modem

Configuration for device(s) via COM1
 Get values
 Polling of instantaneous values ON/OFF
 Synchronise clock
 Send command
 Break transfer
 Initialise modem

4.6.1. Configuration for device(s) via COMx

4.6.1.1. Choice of device

In this dialogue you can select one of the devices, with which MEVIS can communicate via the COM port designated in the menu item. After a click on "OK" the dialogue window "Device configuration: <designator>" you can edit the necessary settings.

Configuration example for direct fetched devices:

Configuration example for devices fetched via modem:

In the text panel below you can enter the initialisation string the modem requires.

Office	The office string serves for the direct dialling from an extension unit and has to contain at least the letter of the dial type of the telephone unit ("P" for pulse dial or "T" for tone dial) at conventional connections. If your modem is connected to an extension unit, you have to insert a digit "0" and then a letter "W" to instruct the modem to wait for dial tone. At ISDN-connections the dial type letter can be dropped or must correspond to the instructions of the particular device type. See at the guide of your modem, please.
Number of rings	The modem accepts an incoming call only after the set count of rings (min. 1, max. 6). You can use this item, if the phone line is used for normally calls too.
Trials of dial per order	The count of dial trials is used if connections are not accomplished. The period in seconds begins after the error message from the modem to the computer.
Waiting time for CONNECT	The waiting period to CONNECT is the period MEVIS waits after the AT dial order for the CONNECT message or another message (i.e. "Busy") from the modem. The standard value for this period is 60 seconds. That's a suitable value for telephone numbers up to about 12 digits, on pulse dial and with modems connecting up to 28.800 bps. For bad telephone lines or longer telephone numbers you increment the value if necessary. For digital exchanges, generally good lines, ISDN connects or at use of tone dial experienced users can decrement carefully the value.

Waiting time before the next dial trial	The waiting period before the next dial trial begins with the end of a dial trial, at which either the modem puts a message or MEVIS has broken the trial after time-out. The standard value for this time is 32 seconds. In this manner the blocking time of many modems will be bridged over. You can decrement this waiting period for devices without blocking time.
Modem-Init.(ialisation)	The initialisation of the modem depends on the device type. Changes should be done by specialists only. Basically you should know, <ul style="list-style-type: none"> • that the DTR signal is used to cut a connection (&D2), • that the modem should not pick up the receiver himself (S0=0), • that the bit rate to the computer and to the line do not depend on themselves (\J0), • that direct or physical links are not possible (\N2), • that between computer and modem the bi-directional RTS / CTS protocol is used (&K3). The given AT commands are examples and can vary in a wide range or can be unnecessary, if the factory defaults (&F or &F0) are used.

4.6.1.2. Configuration device

The screenshot shows a dialog box titled "Device configuration: TDL15". It has several input fields and checkboxes. The "Name" field contains "TDL15", "Tel. no." contains "1234567", and the "Protocol" dropdown is set to "Thies Clima TDL14/DL15". The "Total value count at" is set to "1". The "Timeout (s)" is set to "150". There is a checkbox for "Values to file" which is unchecked. Under "Automatically get values", there is a radio button for "min" which is selected. There are also checkboxes for "Automatically synchronise clock" and "On". At the bottom, there are "OK", "Cancel", and "Help" buttons.

Name	The name marks the device and can be an arbitrary string. The communication dialogue shows these names in the device list for selection by the operator.
Tel. No.	The telephone number is added to the office code and given to the modem to dial, if the concerning device is chosen for data communication. This field is activated only for devices fetched via modem.
Protocol	You have to set the protocol in accordance to the connected device. The type can be: "Thies Clima TDL14/DL15", "Thies Clima TDL14K", "Thies Clima DL1N Event", and "Thies Clima DL1N Summe".
Total Value count in	To check the data sets MEVIS requires the number of values in the line, also if the logger does not fill all values or MEVIS does not use all values.
Timeout [s]	If a device does not answer within the time-out an advice in the communication window occurs.
Values to file	This check box causes the chronicle of the received data in a file with the name "devxxYY.txt" (xx=ComObj. Nr, yy=device index in ComObj.)
Automatically get values	You can switch on or off in the field automatically get values to poll a device automatically from the data logger or not. You have to adjust the period for devices fetched via modem.

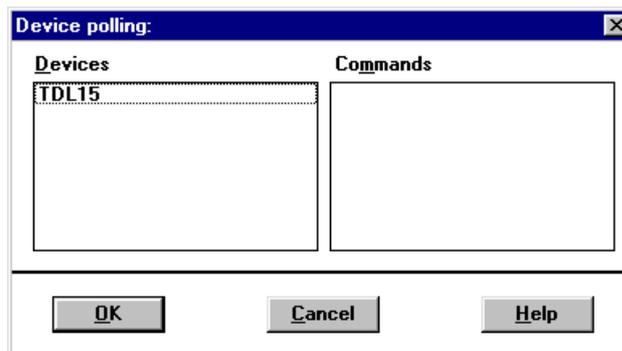
	Period	You can enter the period (in steps of 1...59 minutes, 1...23 hours or 1...31 days). MEVIS calculates the next polling time by the formula $t = (time \text{ div } t_{period} * t_{period}) + t_{period} .$
	offset [min]	The Offset is adding subsequently. In this manner any time is adjustable within a period. $t = t_{period} + t_{offs} , \text{ on the condition } t_{offs} \leq t_{period} - 1 \text{ minute} .$ This condition is checking on entering.
Automatically synchronise clock		The station computer can synchronise the clock of the device automatically in set periods. The automatism can be switched on and off.
	Period [d]	To synchronise the clock of devices with the time of the central in certain periods, you can adjust the period in steps of one day (1 to 31 days). MEVIS calculates the next setting time by the formula $t = (time \text{ div } t_{period} * t_{period}) + t_{period} .$
	offset [min]	The Offset is added subsequently. In this manner any diurnal time is adjustable within a period. $t = t + t_{offs} , \text{ on the condition } t_{offs} < 1440 \text{ minutes} .$ This condition will be checked when it is entered.

4.6.2. Functions of communication

In the menu "Control" you can find several menu items according to the type of connection (fetched direct device, fetched via modem):

- Get values
- Polling of instantaneous values
- Synchronise clock
- Send command
- Break transfer
- Initialise modem

If you choose on of the menu items "Get values", "Polling of instantaneous values", "Synchronise clock" or "Send command", the following dialogue window will be opened. There you have to choose or edit parameters to realise the wished functions.



Devices	Choose a device
Commands	The list of commands is used only at the menu item "Send command". A command is the order sent to the chosen device. The list shows only the available commands.

4.6.2.1. Get values

The operator can get measured values from a device at any time independently of automatic request settings.

MEVIS don't overwrite already collected values at repeated transmissions.

4.6.2.2. Polling of instantaneous values

The submenu item for direct fetched devices gets a hook, if the function is switched on, and gets no hook otherwise. No dialogue is used.

A dialogue to choose the device will be opened at device fetches via modem.

When the polling of instantaneous values is on, MEVIS gets a momentary value data set from the logger once a second (direct connected) or once a double second (connected via modem). It is shown in the momentary value channel table.

If a time to get mean values is reached MEVIS interrupts polling of instantaneous values and inserts a mean value polling.

 If the polling of instantaneous values is on in a modem system with several loggers the dial-up connection is held. **That prevents automatic mean value requests from other loggers** and causes higher costs at public telephone networks.

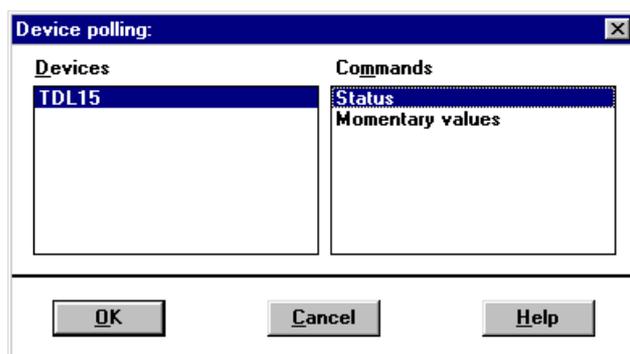
4.6.2.3. Synchronise clock

Choose a device and quit with "OK". The clock of the device will be synchronised with the PC clock.

4.6.2.4. Send command

Choose a device and a command and quit with "OK". The right list shows the available orders. You can choose one order only.

The command will be transmitted to the device and there it will be carried out (for example Status – the status values of the device are polled).



The instantaneous value polling is performed with a detailed protocol in a single answer.

4.6.2.5. Break transfer

This menu option has an effect only if a transfer is running.

After a confirmation query, if you really want to cancel, the transfer will be finished correctly, i.e. the data logger will be informed about the break.

4.6.2.6. Initialise modem

The AT command string from the MEVIS.INI file will be sent to the modem.

4.7. Data transmission between computers (menu not available in the light and viewer versions)

MEVIS enables to build complete measuring networks. One MEVIS data central works with the measuring devices, does the data acquisition, stores the data and realises the processing of this information.

Additional computers can be visualisation places or measuring network centrals. They are able to call data in compressed format from the data central via local networks as well as via switched connections like the telephone network.

The use of these transmission channels requires in each case special hardware interfaces between the data central and the transmission channel (modem or interface converter) and software protocols (=communication object) in MEVIS. The user specific system draft for the information processing of the measure values has to consider this hardware. The functions for the data transmission are placed additionally at the main menu item "Control".

These functions support dial-up, data or parameter transmission and exchange of messages or files between two computers.

There are two fundamental communication object types to use in MEVIS:

Type 1: Data transmission at a telephone network via dial connections by modems using an AT order set. It is unimportant if you use a public network, an in-house network or a combination of both. Further it is no problem to use the digital ISDN lines via a terminal adapter. This makes possible high transmission rates.

Type 2: Data transmission via switched lines. Following possibilities exist:

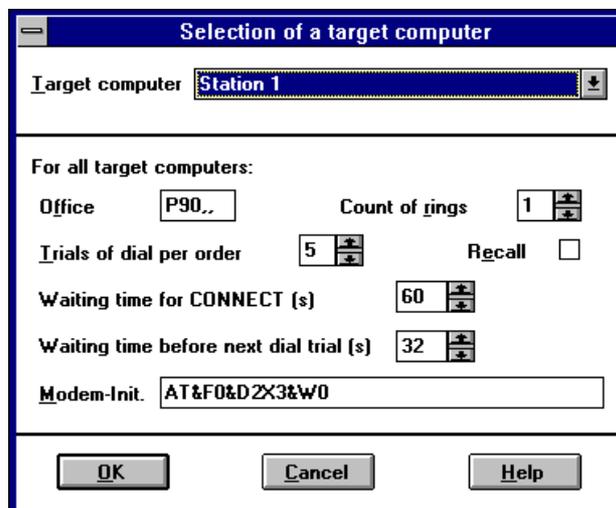
- Point-to-point connection. Two MEVIS computers are connected via a leased line with their COM ports. The used interface can be: zero modem cable (RS-232 interface), leased line modems, interface drivers (e.g. RS-422 converters),
- RS-485 bus connections. Several MEVIS computers (up to 32) can be connected via special interface converters. One MEVIS computer has to work as master and all other as slaves to avoid bus conflicts. Slaves cannot send alerts (deactivate the dialogue switch).

One MEVIS application can have several communication objects of both types.

4.7.1. Configuration for target computers (TC) via COMx

In this dialogue you can select one of the target computers (TC), with which MEVIS communicates via the COM port described in the menu item. After a click on "OK" the dialogue window "TC configuration: <designator>" makes it possible to do the corresponding settings.

For transmissions to all target computers via a telephone network (type 1) you can make settings at the lower segment of the dialogue. For direct coupling (type 2) these settings are deactivated.



Target computer	The list box shows all target computers, which are pre-configured during the system configuration.
Office	The office string serves for the direct dialling from an extension unit and has to contain at least the letter of the dial type of the telephone unit ("P" for pulse dial or "T" for tone dial) for conventional connections. If your modem is connected to an extension unit you have to insert a digit "0" and then a letter "W" to instruct the modem to wait for dial tone. At ISDN lines the dial type letter can be dropped or must correspond to the instructions of the particular terminal adapter. This element is disabled if the data transfer type 2 is used.

Count of rings	The modem accepts an incoming call only after the adjusted count of rings (min. 1, max. 6). You can use this item if the line is used for normally calls. This element is disabled if the data transfer type 2 is used.
Trials of dial per order	The count of dial trials is used if connections are not accomplished. The period in seconds begins after the error message of the modem. This element is disabled if the data transfer type 2 is used.
Recall	If the switch "Recall" is deactivated a data request is answered in the same connection. If the switch is on, the computer hangs up after the request and the mean value transmitter builds up a new connection. This element is disabled if the data transfer type 2 is used.
Waiting time for CONNECT	The waiting time for CONNECT is the period MEVIS waits after the AT dial order for the CONNECT message or after another message (e.g. "Busy") from the modem. The standard value for this period is 60 seconds. That's a suitable value for telephone numbers up to about 12 digits, on pulse dial and with modems connecting up to 28.800 bps. For bad telephone lines or longer telephone numbers you increment the value if necessary. For digital exchanges, generally good lines, ISDN lines or using tone dial experienced users can decrement carefully the value. This element is disabled if the data transfer type 2 is used.
Waiting time before next dial trial	The waiting period before the next dial trial begins with the end of a dial trial, at which either the modem puts a message or MEVIS has broken the trial after time-out. The standard value for this time is 32 seconds. In this manner the blocking time of many modems is bridged over. You can decrement this waiting period for devices without blocking time. This element is disabled if the data transfer type 2 is used.
Modem-Init.	The initialisation string of the modem depends on the device type. Changes should be done by specialists only. Basically you should know, <ul style="list-style-type: none"> • that the DTR signal is used to cut a connection (&D2), • that the modem should not pick up the receiver himself (S0=0), • that the bit rate to the computer and to the line do not depend on themselves (\J0), • that direct or physical links are not possible (N2), • that between computer and modem the bi-directional RTS/CTS protocol is used (&K3). The given AT commands are examples and can vary in a wide range or can be unnecessary, if the factory defaults (&F or &F0) are used. This element is disabled if the data transfer type 2 is used.

TC Configuration: Station 1

Name: Station 1

Tel. no.: 12345678

Type: Mean value receive

Stations: Storage 1, North area

Automatically get values / Alarm message On

Period (h): 0.5 + offset (min): 0

Automatically synchronise clock On

Period (d): 1 + offset (min): 0

OK Cancel Help

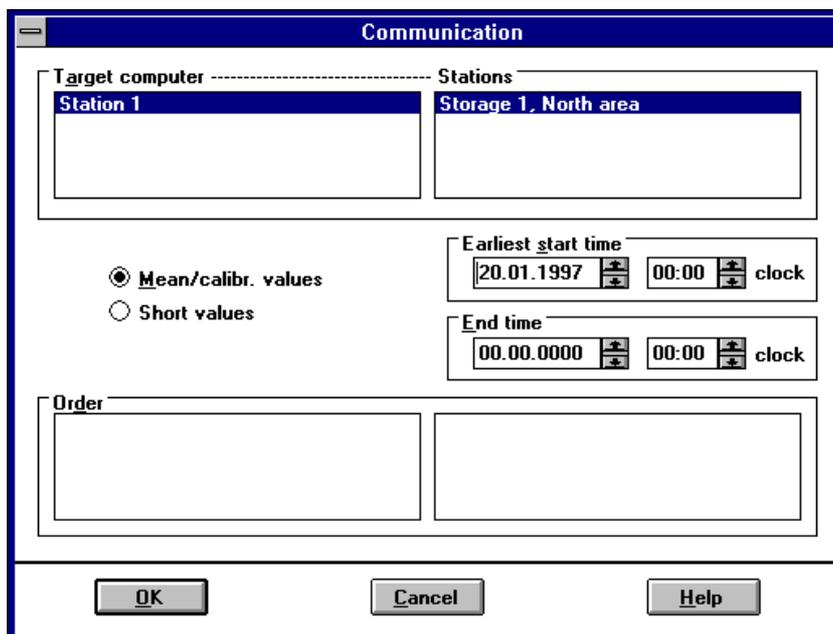
Name	The name describes the target computers and can be an arbitrary string. The communication dialogue shows these names in the target computer list for the selection by the operator.	
Telephone number	The program appends the telephone number to the string registered as "office" and sends it to the modem for dialling, if the concerning target computer is selected. This element is disabled if the data transfer type 2 is used.	
Type	The type can be "Mean value sender" (e.g. a station computer) or "Mean value receiver" (a central). The setting is pre-configured and a modification will be ignored here.	
Stations	On the target computer stations exist which correspond to the stations shown in this list. They are pre-configured. With the initial call of the configuration dialogue all stations in the list are selected. That causes the data fetch from each station. The operator can exclude respectively include certain stations from the automatic data fetch by another selection.	
Automatically get values / Alarm message	For mean value receiver you can switch on the automatic mean value fetch and adjust the time period. If the item is activated mean value transmitter sends the mean values after an alert (threshold violation).	
	Period [h]	If MEVIS have to poll automatically subordinated target computers you can enter the period (in steps of minimal 30 minutes). MEVIS calculates the next getting time by the formula: $t = (time \text{ div } t_{period} * t_{period}) + t_{period}$
	Offset [min]	The Offset is added subsequently. In this manner any time is adjustable within a period. $t = t_{period} + t_{offs}$, on the condition $t_{offs} \leq t_{period} - 1 \text{ minute}$ This condition will be checked if it is entered. If this time is later than the current time MEVIS will abate the result with one period.
		With the automatic polling you get mean values, calibration values (if exist) and configuration data (if changed) only (no short time measure values)! Start time is the time of the latest mean values of the polled station and stop time is the actual time. Only stations, which are selected in the list, are interrogated.
Automatically synchronise clock automatically	The computers can synchronise their PC clock between themselves automatically in preset periods. The automatism can be switched on and off.	
	Period [d]	If MEVIS has to synchronise automatically the clocks of other target computers you can enter the period in steps of one day (1 to 31 days). MEVIS calculates the next setting time by the formula: $t = (time \text{ div } t_{period} * t_{period}) + t_{period}$
	Offset [min]	The offset is added subsequently. In this manner any diurnal time is adjustable within a period. $t = t_{period} + t_{offs}$, on the condition $t_{offs} < 1440 \text{ minutes}$. This condition will be checked if the offset value is entered. If this time is later than the current time MEVIS will abate the result with one period.

4.7.2. Functions of communication

Depending on the configuration and the purpose of a MEVIS version there are various menus:

- Get values
- Synchronise clock
- Send command
- Send notice
- File transfer
- Break transfer
- Initialise modem

If you choose one of them a dialogue window will be opened. There you have to choose or edit parameters to realise the wished functions. Irrelevant options are not active and not eligible. Data transfer tasks starts after a click on "OK".



Target computer	In this list the available computers are shown. Choose the wished target computer in the list.
Stations	In this list the station names of the just operated central are shown, which get their data from with the target computer linked data loggers.
Mean/calibr. values Short values	Choose the wished value type (in this version only mean values available).
Earliest start time End time	The operator can fetch data from a station at any time. The start time will be preset to the oldest time of the last values of all chosen stations and the end time will be preset to „0“ (for the present time). New received data cannot overwrite existing data sets at the same time.
Order	The listed commands can be sent to the station to control the measuring device..
Left side	You can choose one of the orders in the left side list.
Right side	For certain orders the components of the target station are shown in the list on the right side. You can choose one or more of the components. Please use the <Ctrl> and >shift> keys like in the file manager.

4.7.2.1. Get values

Choose a target computer, linked stations, value type and adjust the start and end time, then press the "OK" button. The values are fetched from the target computer and, if they are new, inserted into the MEVIS database.

MEVIS shows automatically the time of the last stored mean values as earliest start time. It uses the oldest time of all chosen stations. The end time 0 as default means the actual time. The operator can change this time.

MEVIS don't overwrite already collected values at repeated transmissions.

If the "automatically get values" function is switched on MEVIS transmits the mean values and if necessary configuration data. The start time is identical with the time of the last saved mean values and the end time is the current time.

4.7.2.2. Synchronise clock

Choose a target computer and enter "OK". The target computer gets date and time of the sender and MEVIS adjusts the system clock of this computer.

Settings for distance and offset are used, if the automatic clock synchronisation for a measuring station is configured.

4.7.2.3. Send command

The dialog shows on the right side the available commands and on the left side the components of the station. This is used to calibrate special devices at the measuring station.

4.7.2.4. Send notice

Choose a target computer and enter "OK". After that the standard window for pick up a file is shown. Choose a prepared text file. MEVIS transmits it to the target computer.

The text is shown there in a separate window.

For quick and easy file editing add an editor with file parameter in the dialogue window "Accessories.Change entries" in a free command line (e.g. "notepad c:\mevis\notiz.txt") and enter the menu name (e.g. "Notice") in the menu text field.

After that you can edit a message via the "Notice" menu every time.

After the first transfer of this file MEVIS stores the file name. For the next transfer MEVIS will offer it automatically.

4.7.2.5. File transfer

Choose a target computer and enter "OK". After that the standard window for pick up a file is shown. You can enter or choose the file name of the file to transfer. MEVIS transmits the file to the target computer and places it in its own directory with the name "FILEn" (n = number of the communication object of the receiver).

4.7.2.6. Break transfer

This menu option has an effect only if a transfer is running.

After a confirmation question the transfer will be finished correctly, i.e. the outstation will be informed about the break.

4.7.2.7. Initialise modem

The configured AT command string will be sent to the modem.

Configuration	Control	Screen	Station	Graphics	Lists	Data import	Data export	Accessories	Help
		Channel table ***values							
		Channel table Present values							
		Object depiction							
		Thresholds							
		Communication							
		Event window							

5. Menu item screen

The MEVIS basic display is the screen that will be shown after program start automatically. It can be a channel table, an overview screen or a used defined object depiction.

With the <Tab> respectively <Shift><Tab> you can browse forwards respectively backwards in the sequence of chosen object depictions and channel lists. A beep will signalise the last recorded screen. If you enter <Backspace> in a channel list you can reach the last chosen object depiction.



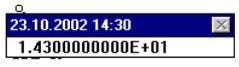
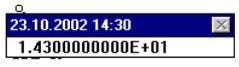
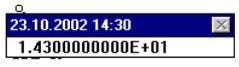
Normally the presentation of values refers to a chosen station. The name of it is written in the title bar of the window.

5.1. Channel table with *** values

The *** values are the mean values of the standard mean time period. It is a table with the latest mean values of the selected station and the corresponding time.

MemAvail=267846912 User-Res=51% GDI-Res=56% Stack=97% (76%)		23.10.2002 14:15:37	
Mean values from 23.10.02 14:00			
Channel	Mean value	Alert / Warning	
Wind speed	1.3 m/s		
Wind direction	150.0 °		
Temperature	14.3 °C	W	W 14.3
Relative humidity	98.0 %		
Air pressure	1004.2 hPa		
Global radiation	10.3 mW/cm ²		
Diffuse sky radiation	6.0 mW/cm ²		
Direct sun radiation	6.2 mW/cm ²		
Global radiation [W/m ²]	103.0 W/m ²		
Precipitation	0.4 mm		
O3	37.0 µg/m ³		

 **If the program receives new values, the table will be updated.**

First column	The first column contains the names of the channels (linked with a component) of the current station.																																					
Second column	<p>It shows the youngest values of the channels with its measure. The value will be displayed with the accuracy chosen in the channel configuration dialogue. The value is invalid and will be crossed out if a mean value results from too few sampled values. If the time of the displayed value of a channel differs too much to the time behind "Mean values from" above the values will be shown greyed. The time tolerance to show the values as current value (black font) can be set by the system supervisor. If no value exists this column item will be empty. With a mouse click on the value a small window will be displayed. The window contains date and time of the youngest value and its most precise logarithmic notation.</p> <table border="1" data-bbox="550 667 1444 1086"> <thead> <tr> <th>Channel</th> <th>Mean value</th> </tr> </thead> <tbody> <tr> <td>Wind speed</td> <td>1.7 m/s</td> </tr> <tr> <td>Wind direction</td> <td>150.0 °</td> </tr> <tr> <td>Temperature</td> <td>14.3 °C W</td> </tr> <tr> <td>Relative humidity</td> <td>98.3 %</td> </tr> <tr> <td>Air pressure</td> <td>1004.0 </td> </tr> <tr> <td>Global radiation</td> <td>8.8 mW/cm²</td> </tr> <tr> <td>Diffuse sky radiation</td> <td>5.3 mW/cm²</td> </tr> <tr> <td>Direct sun radiation</td> <td>5.3 mW/cm²</td> </tr> <tr> <td>Global radiation [W/m²]</td> <td>88.0 W/m²</td> </tr> <tr> <td>Precipitation</td> <td>0.2 mm</td> </tr> <tr> <td>O3</td> <td>39.0 µg/m³</td> </tr> </tbody> </table> <p>If a value violates a threshold for a warning or an alarm, it will be marked with a "W" or an "A" behind the measured variable.</p>		Channel	Mean value	Wind speed	1.7 m/s	Wind direction	150.0 °	Temperature	14.3 °C W	Relative humidity	98.3 %	Air pressure	1004.0 	Global radiation	8.8 mW/cm²	Diffuse sky radiation	5.3 mW/cm²	Direct sun radiation	5.3 mW/cm²	Global radiation [W/m²]	88.0 W/m²	Precipitation	0.2 mm	O3	39.0 µg/m³												
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O3	39.0 µg/m³																																					
Third column	<p>The third column contains alarms and warnings. In the left part of this column the values, which has violated the lower warning or alarm thresholds, are displayed. In the right part the values, which has violated the upper warning or alarm thresholds, are displayed. They will stay there until they will be overwritten by more unfavourable values, the user deletes them or the program will be terminated. You can confirm and quit an alert or a warning by click with the right mouse button on the value. The value will be crossed out if it does not meet the conditions for a valid mean value.</p> <table border="1" data-bbox="550 1505 1444 1780"> <thead> <tr> <th>Channel</th> <th>Mean value</th> <th>Alert / Warning</th> </tr> </thead> <tbody> <tr> <td>Wind speed</td> <td>1.7 m/s</td> <td></td> </tr> <tr> <td>Wind direction</td> <td>150.0 °</td> <td></td> </tr> <tr> <td>Temperature</td> <td>14.3 °C W</td> <td>W 14.3</td> </tr> <tr> <td>Relative humidity</td> <td>98.3 %</td> <td></td> </tr> <tr> <td>Air pressure</td> <td>1004.0 hPa</td> <td></td> </tr> <tr> <td>Global radiation</td> <td>8.8 mW/cm²</td> <td></td> </tr> <tr> <td>Diffuse sky radiation</td> <td>5.3 mW/cm²</td> <td></td> </tr> <tr> <td>Direct sun radiation</td> <td>5.3 mW/cm²</td> <td></td> </tr> <tr> <td>Global radiation [W/m²]</td> <td>88.0 W/m²</td> <td></td> </tr> <tr> <td>Precipitation</td> <td>0.2 mm</td> <td></td> </tr> <tr> <td>O3</td> <td>39.0 µg/m³</td> <td></td> </tr> </tbody> </table> 		Channel	Mean value	Alert / Warning	Wind speed	1.7 m/s		Wind direction	150.0 °		Temperature	14.3 °C W	W 14.3	Relative humidity	98.3 %		Air pressure	1004.0 hPa		Global radiation	8.8 mW/cm²		Diffuse sky radiation	5.3 mW/cm²		Direct sun radiation	5.3 mW/cm²		Global radiation [W/m²]	88.0 W/m²		Precipitation	0.2 mm		O3	39.0 µg/m³	
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Precipitation	0.2 mm																																					
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5.2. Channel table Present Values (not available in the viewer version)

This table shows the present values polled from a THIES data logger in periods of one to two seconds. The values will be actualised immediately after the reception of data. Date and time with seconds on the top and (if necessary) on the bottom of the table refer to the youngest change.

This table has the same construction like the channel table, but the script colour is blue.

Alerts and warnings will be displayed in red.

There has to be a data communication connection with the data logger. The polling of present values will be interrupted to fetch the mean and extreme values (see chapter 4.6.2.2).

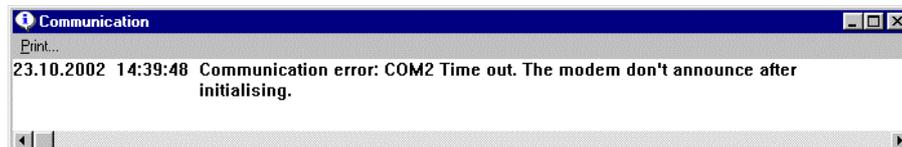
5.3. Special windows thresholds, communication, event window

Incoming mean values will be compared with warning and alarm thresholds. You can check the current settings in effect for the active station in a **thresholds window**.

Alert (min)	Warn. (min)	Warn. (max)	Alert (max)	Channel
-1.0	-1.0	5.0	7.0	1 Wind speed
-1.0	-1.0	1000.0	1000.0	2 Wind direction
-25.0	-20.0	10.0	50.0	3 Temperature
-1.0	-1.0	111.0	111.0	4 Relative humidity
-1.0	-1.0	1.11E+06	1.11E+06	5 Air pressure
-1.0	-1.0	1.11E+06	1.11E+06	6 Global radiation
-1.0	-1.0	1.11E+06	1.11E+06	7 Diffuse sky radiation
-1.0	-1.0	1.11E+06	1.11E+06	8 Direct sun radiation
-1.0	-1.0	1.11E+06	1.11E+06	9 Global radiation [W/m²]
-1.0	-1.0	5.0	7.0	10 Precipitation
-1.0	-1.0	120.0	160.0	11 O3

The states and errors of the data transfer are shown in a **communication window**. All events are coupled with date, time and number of the causing serial port. They will be shown after initialisation and termination of a transfer task, and also when a communication error occurs.

It has a scroll bar, if there are more text lines than matching in the window. The number of lines is limited to 50. If there are more messages the oldest lines will be shifted out of the window.



The **event window** contains a message from the program start. Other relevant events like alerts or warnings will be displayed when they are detected. Usually the window will be opened and brought to the top at the same time.

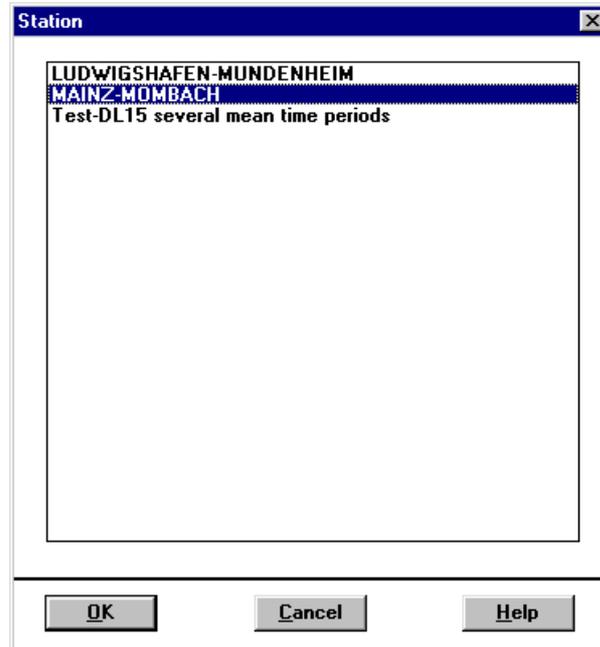
If there are more than the shown lines in the window a scroll bar is available.

The number of lines is limited at 1250. Newer lines will shift out the oldest lines.

The entries are completed with date, time, designation of the event, port number or object number.



6. Menu item station



The basic system MEVIS can control up to 99 various stations and in the light version up to 5 stations. By this menu item you select an available station.

The actual mean values are depicted after that.

For the selected station the settings are affected in the menu Configuration for the components, channels and the standard graphics, correlations, lists and wind roses.

If you want to change a configuration for this station (components, channels,...) you have to choose this station in this dialog before.

The standard visualisations (graphics, lists) also depend on the station. That's why the chosen station determines the pre-settings in the dialogs for graphics and lists.

- Graphic 4-in-4 ...
- Graphic 4-in-1 ...
- Graphic 12-in-1 ...
- Frequency curve ...
- Diurnal variation 4-in-4 ...
- Diurnal variation 4-in-1 ...
- Correlation ...
- Graphics rearrange
- Wind rose ...

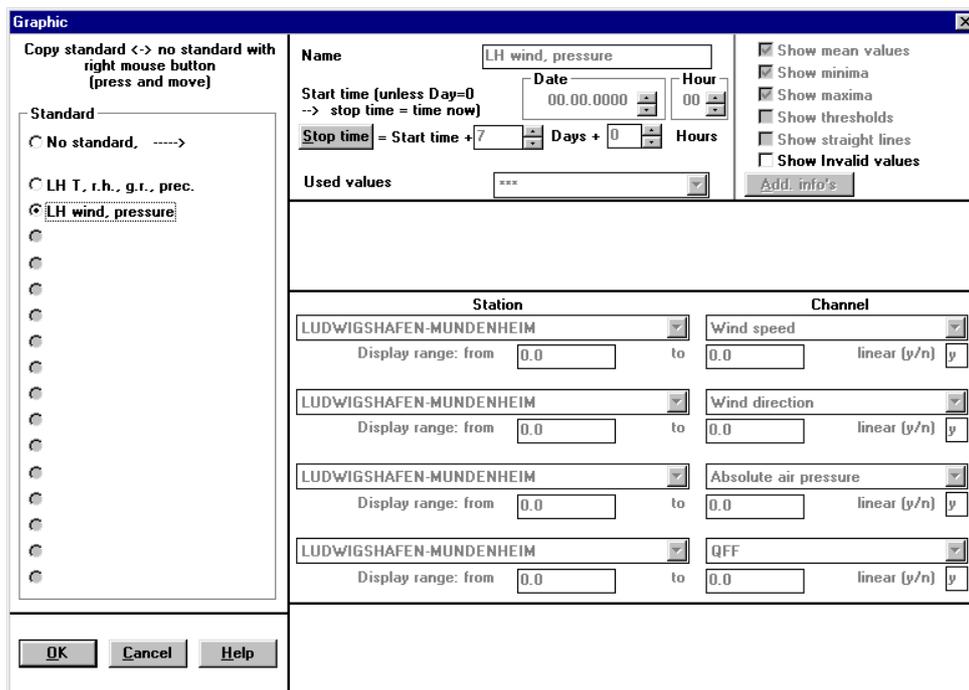
7. Menu item graphics

7.1. Graphic 4-in-4

The graphics 4-in-4 are curve graphics. It is possible to display the mean values of up to four different channels in four single diagrams.

The colour settings (chosen via menu item "Configuration.Standard graphics") are also valid for this window.

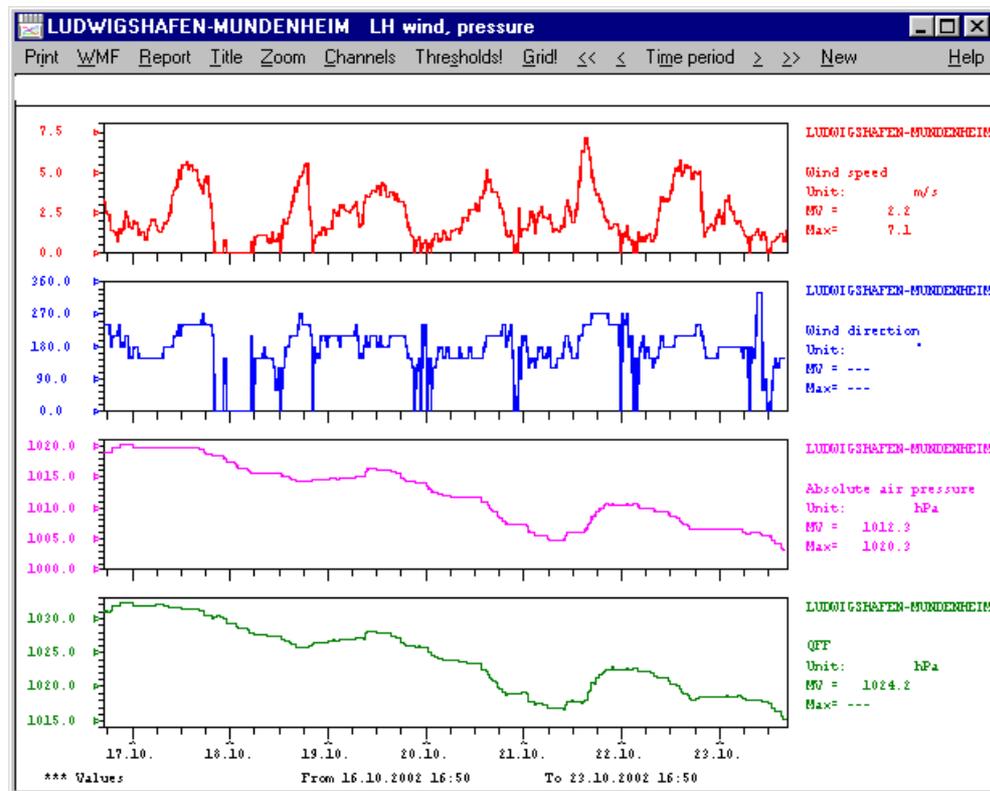
Dialogue window	Select graphic	The values of a standard graphic of the current station or freely eligible values can be used as parameters for a graphic. You can select a standard graphic from the box "Standard". The values connected to this graphic are displayed in grey and cannot be changed. If the graphic "No standard --->" is selected, arbitrary parameters can be entered. The input corresponds to the configuration of a standard graphic.
	Show invalid values	This item is set for the current graphic only. It will be reset for every new graphic.



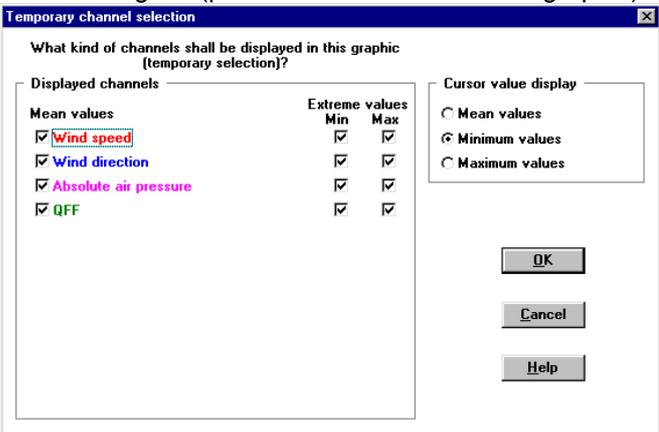
	Copy graphic	The parameters of a standard graphic can be copied by click and hold the right mouse button (cursor changes) on the selected standard graphic/non-standard graphic in the box "standard". A standard graphic can be copied onto a non-standard graphic; a non-standard graphic can be copied onto an already existing or the first empty standard graphic. Do this by moving the mouse until it strikes the corresponding graphic and then release the right mouse button. Equal names of different standard graphics are not accepted. Before the program overwrites an already existing standard graphic, it will carry out a confirmation query.
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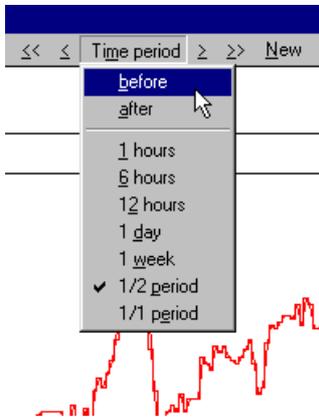
	Delete graphic	You can delete a selected standard graphic using the key. The program will ask you to confirm.
--	-----------------------	--

You can interrupt the generation of a graphic (hourglass rotates) if you hold the <ESC> key until a beep will sound.



Graphic window	Graphic 4-in-4	The title line of the window contains the name of the station, a name of the graphic given by the user and possibly a zoom note. MEVIS adds the name of the station automatically. The graphic name can be entered in the parameter dialogue. If the title should show a fix string you can enter it via a menu item.
Menu		The menu is used for the output of the displayed graphic (printing, plotting, saving as WMF) and for display control (zooming selected curve cuts, switch on/off of channels, extreme values). If the entire window of a graphic is reduced in size, the menu will be suppressed for the sake of a better depiction of the graphics. It reappears when the keys <Shift><M> will be pressed.
	Print	To print out graphics the printer is set automatically for horizontal format (if you have not changed the printer option). Some printer drivers (esp., with 9-pin printers) are not able to correctly evaluate the existing paper size, i.e. the graphics might not fit onto the page. You can solve this problem by reducing the length as well as the width of the sheet for about 10 percent in the print manager. Please note that the colour settings (menus "Configuration.Standard Graphics", "Configuration.Standard correlations") for the printout have to correspond to the possibilities of your printer, since otherwise some curves or texts might not be printed out. If you use a black-and-white printer, you should use only black and white as colours. You can increase the curve line width for printing. Please enter the parameter PrintPenWidthAdd=4 (0...250, standard 0) in the section [General] of the file MEVIS.INI. A number greater than zero causes curves wider line width.
	WMF	The output of graphics, correlations and wind roses into a Windows Meta-File offers the possibility to copy them into other Windows applications (e.g.

		<p>Word for Windows) and to edit them. This pasting is generally also possible with the Windows clipboard, but the quality as well as the editing possibilities is better with a Windows Meta-File.</p>
	Report	You can enter a string with a length up to eight characters for the storage of the graphic parameters to use them in a report.
	WinWord File	see cap. 13.6 Export of all graphic types
	Title	The title line of the window contains the name of the station, a name of the graphic (or correlation, wind rose and list) given by the user and possibly a zoom note. MEVIS adds the name of the station automatically. The graphic name can be edited in this dialogue.
	Zoom	<p>You can drag a zoom rectangle that selects interested curve segments (if you keep the left mouse button depressed and pull the mouse away at an angle). If you click on "Zoom" a new graphic with only the zoomed area will be shown.</p> <p>Zoomed graphics are marked in the title line (for instance "->> Zoom 1"). The number represented the serial number of the zoom in the primary graphic.</p> <p>If you zoom a zoomed graphic another number will be shown, representing the zoom level.</p> <p>If you delete a graphic or a zoomed graphic all their child zooms will be also closed.</p> <p>The item "Zoom tree close" closes the original graphic and all child zooms. This item you can also reach in all zoomed graphics.</p> <p>Icons of zoomed graphics will be put on the parent graphic.</p>
	Channels	<p>In this dialogue window you can decide individually for each channel whether mean values, minimal and maximal values should be displayed or suppressed.</p> <p>This function is useful when several graphic lines overlap, making it impossible to clearly assign them. In the lower part of the dialogue you can set which values (mean values, minimum and maximum values) should be displayed as a reading aid (position of the mouse in the graphic).</p> 
		<p>The figure of the mouse-cursor shows you the mode of the magnifier (help for data-reading):</p> <ul style="list-style-type: none"> • Mean values vertical line with dotted horizontal line • Minimum vertical line with dotted horizontal line and a double arrow pointing downwards • Maximum vertical line with dotted horizontal line and a double arrow pointing upwards <p>This setting can also be changed by using the left mouse button.</p>
	Thresholds!	<p>You can switch on or off that thresholds will be shown. The selection applies to all channels of the graphic.</p> <p>The thresholds are painted as lines (dotted for warning, broken for alert thresholds) in the colours of the channels.</p>
	Grid!	You can switch on or off that straight lines will be shown for numbered values parallel to the axis. It can be changed in the menu „Grid!“ of the

		shown graphic.
	Change Values	see cap. 13.2 Hints for post processing of MEVIS data (not available in the light and viewer versions)
(menu not available in the light version)	< <<	The time axis will be scrolled for 1/2 shown time period to the past. The time axis will be scrolled for 1/1 shown time period to the past.
	Time period	The course of the graphic can be scrolled before or after corresponding to the adjusted time period. Besides the time period can be changed. 
	> >>	The time axis will be scrolled for 1/2 shown time period to the future. The time axis will be scrolled for 1/1 shown time period to the future.
	New 	With that dialogue it is possible to change the settings out of a graphic. The parameters in the dialogue are taken from the graphic (except item: show invalid values) and can be changed. It is also available for graphics, which are built as standard. If you enter OK, the old graphic will be deleted and a new graphic corresponding to the new settings will be built. If you use that function from a zoomed graphic a new graphic will be displayed and the zoom tree will be closed.
Figure		
	Channel information	The most important details (station, channel, measure, colour bar, additional Information) are shown in this area of the window for a maximum of four channels (at wind roses only one channel).
	Measured value line	If you move the mouse over the curves, the mean values of the curves are read and displayed in this line (mouse cursor as vertical line and with horizontal points). If you press the right mouse button permanently, the cursor changes and the absolute values of the depicted point in correspondence to the measurement scales are displayed instead of the values that were read from the channel. If you press shortly the left mouse button (without to move the mouse), the mouse cursor is supplied by a direction arrow that indicates that minima are read. When the left button is pressed again, the maximums are read and if you press the button a third time, the program will read again the mean values. If you use mean values, which are smaller or equal to a day, the time of the individual extreme values will be displayed before the minima/maximums.
	Measurement scale	These scales on the left from top to down are positioned in the same sequence like the channel information. They can be either linear or logarithmic, depending on the user's choice. The limits of the ranges can be set either by the user (input of a number for the upper and lower limit) or can be automatically set by MEVIS (when 0.0 is entered as an upper and lower limit).
	Curve window	In this area the mean value curves respectively the correlation points of intersection are depicted. If you keep the left mouse button depressed and pull the mouse away at an angle, a rectangle will appear in the curve display. If you use the menu item "Zoom", the area within the rectangle is enlarged to the full size of the

		depiction range both horizontally and vertically. Zooming can be repeated several times in this display and in the new, zoomed window. The zoomed level is shown in the window title.
	Time axis	The division on this axis depends on the selected mean value period and the period of time to be depicted. Below this the date and start time as well as the date and time of the ending are shown. The included total time period is written out under the scale.

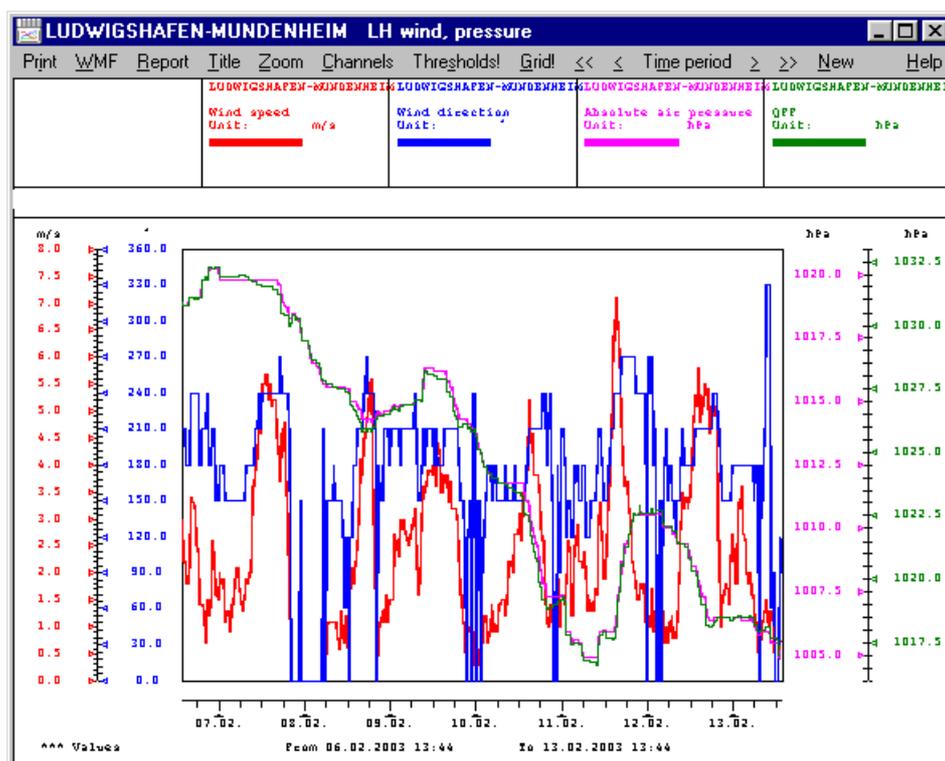
7.2. Graphic 4-in-1

The graphics 4-in-1 are curve graphics. It is possible to display the mean values of up to four different channels in one single diagram. For better optical differentiation, the user can assign a different colour to each channel via the menu item "Configuration.Standard Graphics ..." which is used for all the curves of the that channel.

The configuration of the parameters is analogous to the specification of the standard graphics.

Dialogue window		Analogous to the specification of the graphic 4-in-4
------------------------	--	--

You can interrupt the generation of a graphic (hourglass rotates) if you hold the <ESC> key until a beep is going to sound.



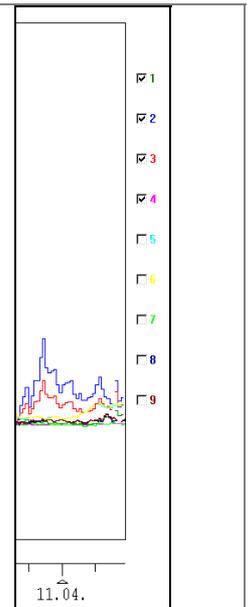
Graphics window Graphic 4-in-1		Analogous to the specification of the graphic 4-in-4
	Header	In this area of the window the most important details (station, channel, measure, colour bar) are shown for a maximum of four channels.
	Measurement scales	These scales on both sides of the curves are positioned in the same sequence like the channel information. They can be either linear or logarithmic, depending on the user's choice. The limits of the ranges can be set either by the user (input of a number for the upper and lower limit) or be automatically set by MEVIS (when 0.0 is entered as an upper and lower limit).

7.3. Graphic 12-in-1 (menu not available in the light version)

The graphics 12-in-1 are curve graphics. It is possible to display the mean values of up to 12 different channels in one single diagram.

For better optical differentiation, the user can assign a different colour to each channel via the menu item "Configuration.Standard Graphics (12-in-1)..." which is used for all the curves of that channel.

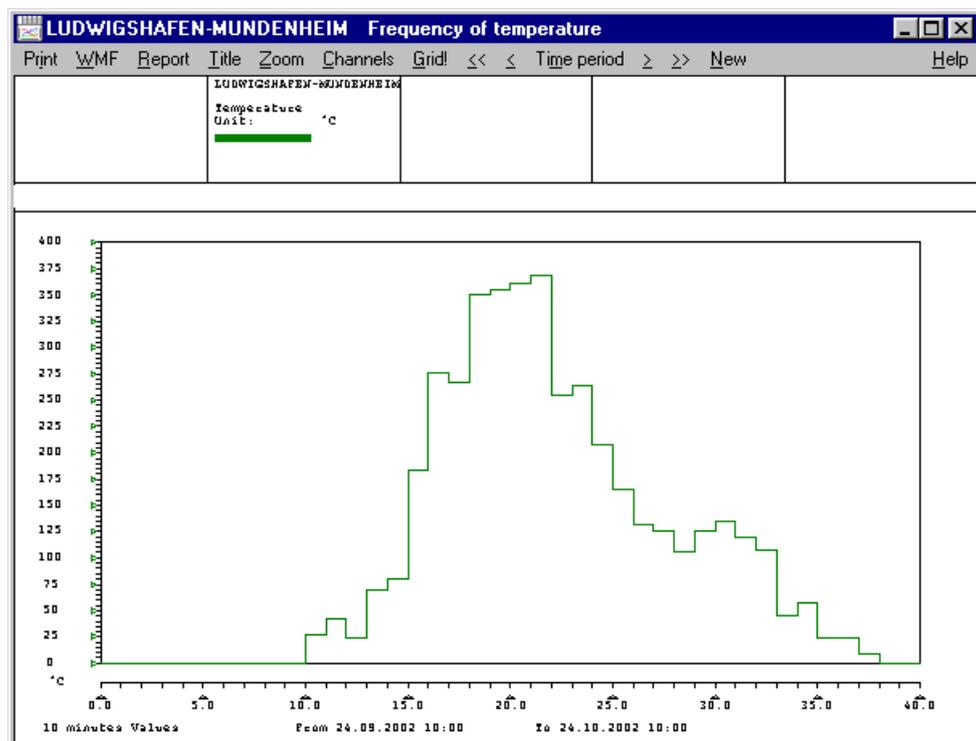
The operator has to choose up to four channels because information of only four channels can be displayed on the top of the diagram. Therefore you can use the checkboxes on the right side of the graphic (see the zoom in the right column).



7.4. Frequency curve (menu not available in the light version)

It is possible to display the frequency curves of up to 12 different channels in one single diagram. Please chose parameters analogous to chapter 3.12.

You can interrupt the generation of a graphic (hourglass rotates) if you hold the <ESC> key until a beep is going to sound.



The operator has to choose up to four channels because information of only four channels can be displayed on the top of the diagram.

The checkboxes for channel selection are available on the right side of the graphic only in the full screen mode.

7.5. Diurnal variation 4-in-4

In a diurnal variation the measured values of a selected period of time of a channel are determined and displayed at the same time of day (e.g. 30 min mean values). A diurnal variation 4-in-4 displays the curves of up to four channels in four single diagrams.

Dialogue window		Analogous to the specification of the graphic 4-in-4
		When the universal time (***) and the free recording times are selected as a mean value time for the desired depiction, generally 10 min mean values are formed and displayed out of the saved, possibly different mean value times of the channels. This is done to allow a comparison with the used channels - also from different stations - or after you have changed the mean value time in the station.
Graphics window Diurnal variation 4-in-4		Analogous to the specification of the graphic 4-in-4
	Time axis	In diurnal variations the time is always 24 hours. The included total time period is written out under the scale.

7.6. Diurnal variation 4-in-1

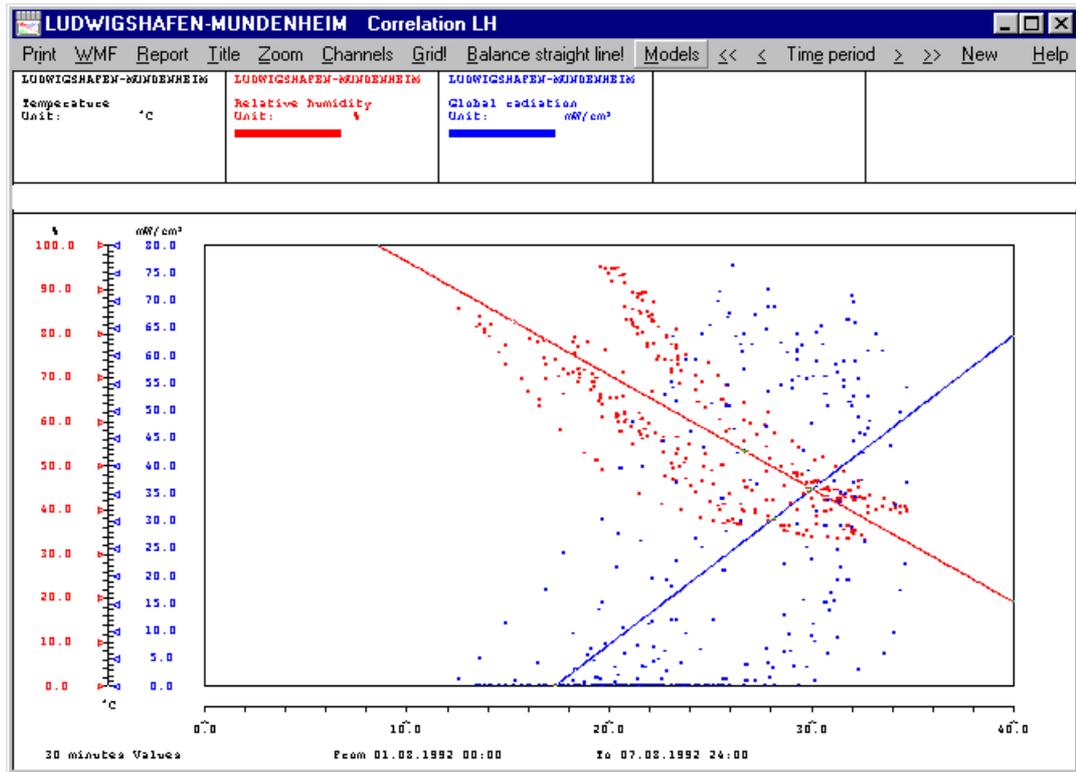
In a diurnal variation the measured values of a selected period of time of a channel are determined and displayed at the same time of day (e.g. 30 min mean values). A diurnal variation 4-in-1 displays the curves of up to four channels in one diagram.

Dialogue window		Analogous to the specification of the graphic 4-in-1
		When the universal time (***) and the free recording times are selected as a mean value time for the desired depiction, generally 10 min mean values are formed and displayed out of the saved, possibly different mean value times of the channels. This is done to allow a comparison with the used channels - also from different stations - or after you have changed the mean value time in the station.
Graphics window Diurnal variation 4-in-1		Analogous to the specification of the graphic 4-in-1
	Time axis	In diurnal variations the time is always 24 hours. The included total time period is written out under the scale.

7.7. Correlation (menu not available in the light version)

Dialogue window		Analogous to the specification of the graphic 4-in-1. In difference to the graphic 4-in-1 maximum, minimum, thresholds and additional information will not be shown.
		When the universal time (***) and the free recording times are selected as a mean value time for the desired depiction, generally 10 min mean values are formed and displayed out of the saved, possibly different mean value times of the channels. This is done to allow a comparison with the used channels - also from different stations - or after you have changed the mean value time in the station.
	Correlation channel	You have to enter absolutely the station and channel of correlation. They will be used for representation of the reference channel
	Filter	A further channel of an arbitrary station can used as filter. That means the values of the depicted channels (e.g. air pollution) of a certain time are only

valid and depicted, if the value of the filter channel of this time is within respectively out of a certain range (e.g. wind direction).



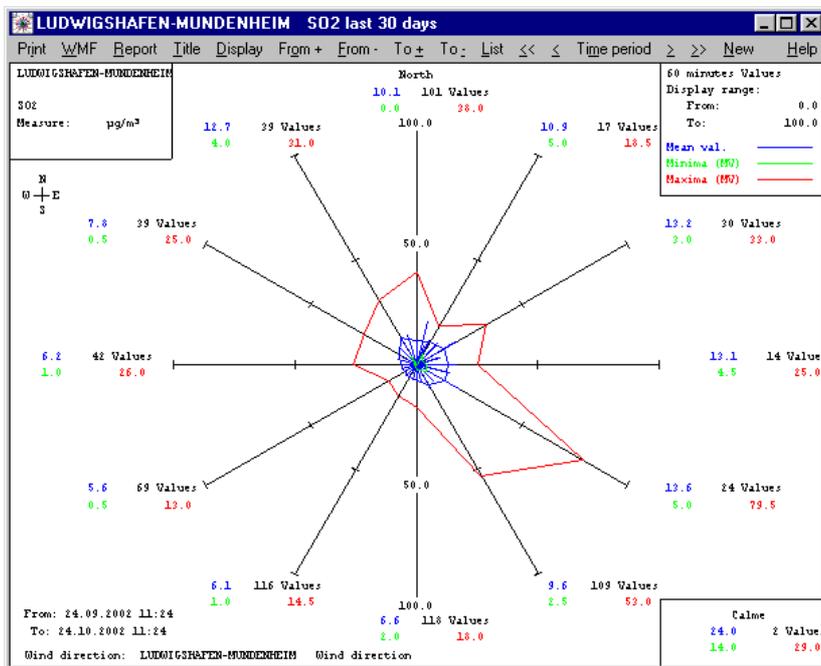
Graphic window correlation		Analogous to the specification of the graphic 4-in-1
	Header	The most important details (station, channel, measure, colour bar) are shown in this area of the window for a maximum of four channels. The correlation channel is depicted on the left as additional fifth channel (without colour bar).
	Measured value line	If you press the right mouse button permanently , the cursor changes and the absolute values of the depicted point in correspondence to the measurement scales are displayed instead of the values that were read from the channel.
	Measurement scales	These scales are positioned in the same sequence like the channel information. They can be either linear or logarithmic, depending on the user's choice. The limits of the ranges can be set either by the user (input of a number for the upper and lower limit) or be automatically set by MEVIS (when 0.0 is entered as an upper and lower limit).
	Curve window	In a correlation diagram a channel is mathematically linked with maximally 4 other channels and is displayed as a pixel graphic. The created model and the correlation coefficient can be faded in into another window (menu item "Models"). <div data-bbox="683 1646 1396 1780" data-label="Code-Block"> <pre> Models Channel Corr-coeff. formula Relative humidity -0.762990 y = -2.575068 * x + 122.1134 Global radiation 0.604360 y = 2.809861 * x - 48.54641 </pre> </div> <p>Now MEVIS can draw a balancing line whose slope contains information for the correlation into the diagram (menu item "Balance" straight line!).</p> <p>If you keep the left mouse button depressed and pull the mouse away at an angle, a rectangle will appear in the curve display. If you use the menu item "Zoom", the area within the rectangle is enlarged to the full size of the depiction range both horizontally and vertically. Zooming can be repeated several times in this display and in the new, zoomed window. The zoomed level is shown in the window title.</p>

	Measurement scale for the correlation channel	They can be either linear or logarithmic, depending on the user's choice. The limits of the ranges can be set either by the user (input of a number for the upper and lower limit) or be automatically set by MEVIS (when 0.0 is entered as an upper and lower limit).
--	--	--

7.8. Wind rose

Wind roses show an overview of the quantity distribution around a measuring point that depends on the wind direction. That is a sensible function for the environmental control monitoring. Therefore the current registration of the wind direction is necessary during the measurement of meteorological parameters. The values of a standard wind rose of the current station or freely eligible values can be used as parameters for a wind rose.

Dialogue window		Analogous to the specification of the standard wind rose
	Wind direction	To make a wind rose a component "wind direction" of this station is necessary. All stations with grew font in the station selection list have no wind direction component. All channels with grew font in the channel selection list are not a wind direction channel.
	Channel	If as channel a wind direction channel is selected the percental frequency of wind direction will be shown.
	Filter	A further channel of an arbitrary station can used as filter. That means the values of the depicted channels (e.g. air pollution) of a certain time are only valid and depicted, if the value of the filter channel of this time is within respectively out of a certain range (e.g. precipitation).
	8 Wind sectors	Wind roses can be displayed with 8 sectors of 45° if this check box is activated. 12 sectors with 30° are shown as standard.

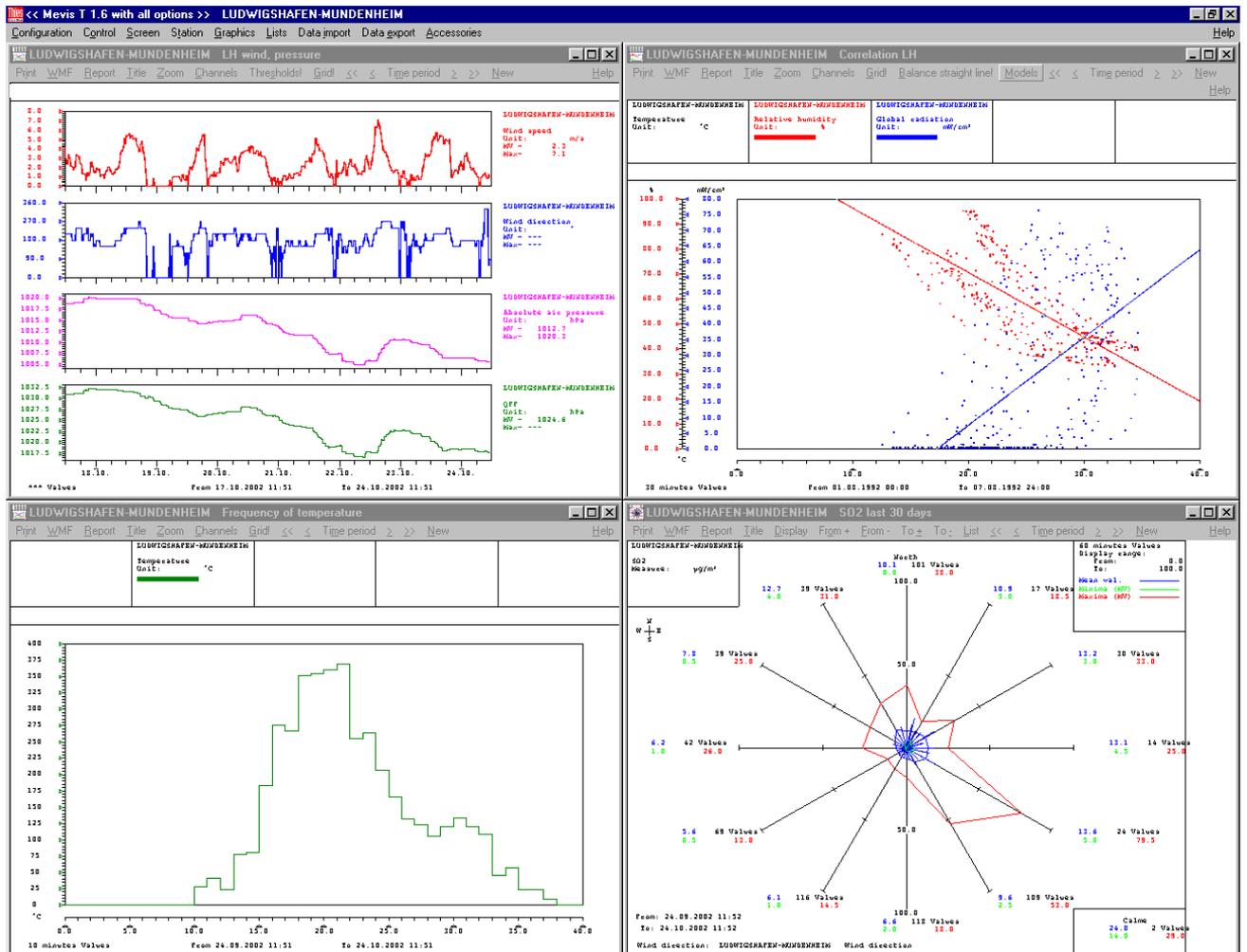


Graphics window wind rose		Analogous to the specification of the graphic 4-in-1
	Header	The channel linked with the wind direction is depicted on the left in the header. In the right you will see the parameters and the legend of the extreme values.
	Wind rose	The wind distribution of mean, maximum and minimum values is displayed as described in colour in the right part of the header window. The curves can be

		<p>switched on and off over the menu. Mean values of a small angle range can be displayed as rays. For this, the mean values within a one-degree sector are averaged and displayed as a vector.</p> <p>The axis labels can be turned on or off. They are either linear or logarithmic. The axes are labelled as follows:</p> <ul style="list-style-type: none"> • upper left - mean of all values in the sector in the corresponding colour • upper right - number of mean values in the sector • lower left - smallest mean value in the sector in the corresponding colour • lower right - highest mean value in the sector in the corresponding colour <p>The values will be turned on and off together with the curves.</p> <p>Additionally you can show the results in a list via the menu item "List". In the list the sector notation (complies to VDI 3786), the frequency (in minutes and percent) and the chosen values (mean value, maximum, minimum) are written.</p> <p>If the wind rose was produced in relation to the wind speed the wind path is also shown in the list.</p>
	<p>Calm</p>	<p>Mean values taken at calm.</p> <ul style="list-style-type: none"> • upper left mean of all values in the sector in the corresponding colour • upper right number of mean values in the sector • lower left smallest mean value in the sector in the corresponding colour • lower right highest mean value in the sector in the corresponding colour.

7.9. Arranging graphics / wind roses

In this menu item you can arrange up to 15 opened graphic windows, diurnal variation windows, correlation windows and wind rose windows of equal size if you use the space provided under the main menu. This menu item does not open windows that are iconised.



8. Menu item lists

8.1. 4-channel-list

The values of a standard list of the current station or freely eligible values can be used as parameters for a list.

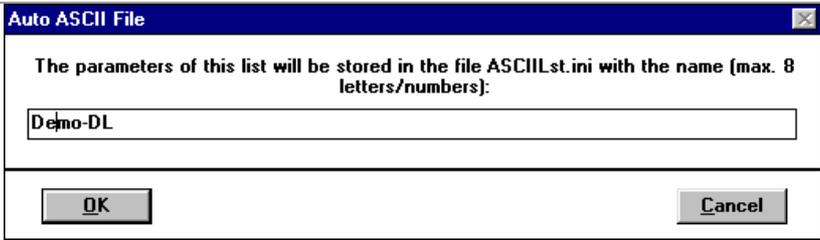
You can select a standard list from the box "Standard". The values connected to this list are displayed in grey and cannot be changed.

Dialogue window		
	Select	When the list "No standard --->" is selected, arbitrary parameters can be entered. The input corresponds to the configuration of a standard list.
	Copy	The values can be copied pressing the right mouse button (cursor changes) in the selected standard list/non-standard list in the box "standard". A standard list can be copied onto a non-standard list; a non-standard list can be copied onto an already existing or the first free standard list. Do this by moving the mouse until it strikes the corresponding list and then releases the right mouse button. You cannot assign the same name string to different standard lists. Before the program overwrites an already existing standard list, it will carry out a control query.
	Delete	You can delete a selected standard list by the key. The program will ask you to confirm.

You can interrupt the generation of a graphic (hourglass rotates) if you hold the <ESC> key until beep is going to sound.

LUDWIGSHAFEN-MUNDENHEIM Global radiation		
LUDWIGSHAFEN-MUNDENHEIM MAINZ-MOMBACH Test-DL15 several mean time periods		
Global radiation	Global radiation	Global radiation
Measure: mW/cm ²	Measure: mW/cm ²	Measure: W/m ²
22.10.02 12:08		28.0
22.10.02 12:10		22.0
22.10.02 12:12		21.0
22.10.02 12:14		28.0
22.10.02 12:16		26.0
22.10.02 12:18		25.0
22.10.02 12:20		28.0
22.10.02 12:22		28.0
22.10.02 12:24		28.0
22.10.02 12:26		28.0
22.10.02 12:28		30.0
22.10.02 12:30	7.8	15.4
22.10.02 12:32		25.0
22.10.02 12:34		30.0
22.10.02 12:36		30.0
22.10.02 12:38		30.0
22.10.02 12:40		32.0
22.10.02 12:42		27.0
22.10.02 12:44		29.0
22.10.02 12:46		35.0
22.10.02 12:48		31.0
22.10.02 12:50		30.0
22.10.02 12:52		36.0
22.10.02 12:54		35.0
22.10.02 12:56		36.0
22.10.02 12:58		36.0
22.10.02 13:00	11.0	15.7

List window 4-channel-list		You can enter a wished string as title of the list.
Figure		<p>A list will display the mean values of up to four channels at a time as a table (for the queried time period). Since the lists are usually too long for the screen to hold, there is a scroll bar on the right that can be used to display all the data of the list.</p> <p>The rolling within the station list is also possible with the keyboard. Horizontally: <Shift> Cursor right/left Vertically: Cursor up/down, Page up/down, Home, End</p> <p>If the mean values and the extremes (maximum and/or minimum) are chosen to display the date and the time will be shown only in front of the first coupled values. Minimums will be marked with "-" behind the value, maximums are followed by "+". Mean values stand alone.</p>
		<p>Behind the value string the following letters can be written: "A": value violates an alarm threshold "W": value violates an warning threshold</p> <p>Wind direction values will be shown with an additional direction abbreviation in brackets such as "(N)" for north or "(SW)" southwest.</p>
		If you click with the left mouse button on the value a box with date, time and the value in scientific notation (11 digits) will be shown.
		The size of a list is limited to about 13.000 lines. The limit depends on resolution of the screen and the adjusted character degree. If the list cannot contain the line of the requested time period, it will limit to the first values. A limitation of this sort can detected when scrolling to the end of the list. If the last value line reaches the bottom of the screen (or exceeds it), the list is cut; otherwise there are some empty lines at the bottom of the screen.
Menu	Print	To print a list please use the upright format. The list name and the page number are printed on all pages.
	Title	The title line of the window contains the name of the station and a name that was declared in the list configuration dialog. MEVIS adds automatically the name of the station. You can edit the title of a list.
	ASCII-File	<p>Via the item "ASCII file" you can store lists as TXT file (formatted like the lines on the screen with spaces) or as CSV/ASC file (values separated with the EXCEL delimiter for easy data base import).</p> <p>There is a legend (number, station and channel names, measure) for all channels at the top of the TXT list and the columns are marked with the corresponding number. The lines with the values are similar to the screen. The interspaces be between values consist of spaces, not of tabulator characters.</p> <p>In CSV- and ASC-Files the separation of columns is the same as configured in WINDOWS. In this files the names of stations, channels and measures are written in the first three lines. The strings of station and channel name and measure are the same as the names configured in MEVIS. From the fourth line dates and times are written in the first column. The measuring values will be shown in the even columns with the decimal point configured in the WINDOWS system. If the character for separator is equal to the decimal point a semicolon will be used for column separation.</p> <p>Only in CSV-Files invalid values marked with brackets.</p> <p>Odd columns right behind the values: - In CSV-Files you can find information about alerts ("A") and warnings ("W").</p>

		<p>- In ASC-Files are written (with spaces separated):</p> <ul style="list-style-type: none"> • the mean time period (in minutes) without leading zeroes, • information about validity as hex string (0000 valid, 0001 no value, 0002 invalid) <p>Please note:</p> <p>In CSV files original values (***) values) will be written only if there is a data set for one channel at least (the set can be marked with the status "no value").</p> <p>That's why you cannot recognize the time period of values after "gaps". Therefore in systems with regular measuring intervals lists should be opened with the time period of this measuring interval and without the option "Compress list".</p> <p>If CSV or ASC files will not be opened correctly formatted by mouse click you have to change the options of the registered file type in the WINDOWS Explorer.</p> <p>Please use the menu "Folder Options.File Types" (in Windows 95 or NT 4.0 via "View", otherwise via "Tools". Choose „MS EXCEL comma separated...“ and click "Advanced". Choose and edit the Action "Open". Please activate "use DDE" and set DDE message to "[opentext("%1")]".</p>
(function not available in the light version)	AutoASCII-File	 <p>Using the menu Auto ASCII file you can store the parameters of the list under a name (analogous to a graphic name for reports). The parameters can be used for the automatic list generation.</p>
(menus not available in the light version)	<	The time axis will be scrolled for 1/2 shown time period to the past
	<<	The time axis will be scrolled for 1/1 shown time period to the past
	Period	You can shift the period of the shown data via the menu „Time period“. The course of the list can be scrolled before or after corresponding to the adjusted time period. Besides the time period can be changed.
>	The time axis will be scrolled for 1/2 shown time period to the future	
>>	The time axis will be scrolled for 1/1 shown time period to the future	
	New	<p>Choose the menu „New“ if you want to change any parameter of the list. The parameters in the dialogue are taken from the list and can be changed. You can also use lists, which are built as standard. The standard settings keep unchanged.</p> <p>If you enter OK, the old list will be deleted and a new list corresponding the new settings will be built.</p>

8.2. Station list

The values of a standard list of the current station or freely eligible values can be used as parameters for a list.

Dialogue window		
	Select	All channels of the active station are depicted in the list. The selection of the station and the channel is not available.

LUDWIGSHAFEN-MUNDENHEIM 8/92 24h						
Print	Title	ASCI	Me	Auto	ASCI	File
LUDWIGSHAFEN-MUNDENHEIM LUDWIGSHAFEN-MUNDENHEIM LUDWIGSHAFEN-MUNDENHEIM LUDWIGSHAFEN-MUNDENHEIM						
Temperature		Relative humidity		Global radiation		Wind speed
Measure: °C		Measure: %		Measure: mW/cm²		Measure: m/s
01.08.92 24:00	25.9	W	65.4	19.2	2.0	
02.08.92 24:00	26.5	W	61.4	18.5	2.1	
03.08.92 24:00	25.1	W	66.8	14.9	2.5	
04.08.92 24:00	22.2	W	52.1	24.1	2.0	
05.08.92 24:00	21.8	W	55.9	25.6	0.8	
06.08.92 24:00	24.5	W	52.8	23.9	0.7	
07.08.92 24:00	26.7	W	55.9	18.5	0.7	
08.08.92 24:00	28.8	W	61.2	20.8	0.9	
09.08.92 24:00	29.2	W	57.6	22.2	1.1	
10.08.92 24:00	21.1	W	67.0	8.8	3.3	
11.08.92 24:00	19.7	W	67.7	16.5	2.5	
12.08.92 24:00	20.7	W	64.4	18.8	3.1	
13.08.92 24:00	17.2	W	79.4	4.2	3.4	
14.08.92 24:00	17.2	W	79.9	7.9	3.0	
15.08.92 24:00	16.8	W	66.7	20.3	1.2	
16.08.92 24:00	18.4	W	65.0	18.0	1.0	
17.08.92 24:00	20.3	W	71.0	7.2	2.3	
18.08.92 24:00	24.2	W	67.6	17.5	1.0	
19.08.92 24:00	25.3	W	68.6	17.3	1.6	
20.08.92 24:00	23.4	W	75.2	14.1	1.0	
21.08.92 24:00	21.8	W	69.9	12.5	1.1	
22.08.92 24:00	21.9	W	70.8	15.4	1.3	
23.08.92 24:00	19.0	W	76.1	10.2	2.2	
24.08.92 24:00	17.6	W	81.1	2.6	2.0	
25.08.92 24:00	23.8	W	65.8	20.1	2.6	
26.08.92 24:00	23.1	W	69.9	10.1	1.5	
27.08.92 24:00	24.1	W	62.7	15.2	2.6	

List window stations list		
	Figure	<p>Since the lists are usually too long for the screen to hold, there is a scroll bar on the right and on the bottom that can be used to display all the data of the list.</p> <p>The scrolling within the station list is possible with the keyboard also.</p> <p>Horizontally: <Shift> Cursor right/left</p> <p>Vertically: Cursor up/down, Page up/down, Home, End</p> <p>If you scroll horizontally date and time will be fixed on the left side.</p> <p>If you scroll vertically the channel information ahead will be fixed.</p>
	Print	<p>Use the upright format to print a list. The list name and the number are printed on all pages.</p> <p>The operator can change the printing font size. Therefore he has to enter the parameter <code>SListPrintKanalspalten=3</code> (3...12, standard 8) in the section [General] of the file MEVIS.INI.</p>

dBase	
ASCII	▶ Parameter
Read file IMPORT.CSV	Read data

9. Data import (menu not available in the light and viewer versions)

In addition to measured data capture functions based on PC-Measuring-Cards, using data loggers or getting values via data transfer from other computers MEVIS can read data from dBase databases and/or regularly ASCII structures.

9.1. dBase

MEVIS can import data from dBase IV data base files, which contains at least one field panel of the type "Numeric" or "Floating point".

You have to edit two dialogues.

First dialog	Set the path and select an existing file name in the dialogue window "Reading Data bank from". This dialogue window immediately displays the selection of the menu item "Data import.dBase".
Reading dBase data bank	Before any import of data, the user has to declare the field structure of the data base file that was selected. Now the user has to assign and connect the components of the stations, which are available in MEVIS, to the fields with the measured values.

Read dBase data bank

File: D:\UMAD\TH_DEMO\STATION3.D Structure: station3_read

No. of fields: 8
No. of data records: 6

Fields of data bank:

TEMP RF STR WV WR

Type: F F F F F

Temperature rel. hum. Radiation Wind speed

Values: 8/8

Connected with Not connected

Station: LUDWIGSHAFEN-MUNDENHEIM
MAINZ-MOMBACH
Test-DL15 several mean time periods

Component: Temperature
rel. hum.
Radiation
Wind speed
Wind direction

Type: Date Hours Minutes Mean val. Max Min Status Number

Start date: 29.09.2002 Mean val. period: 5 minutes
Start time: 00:00 clock 6 minutes
10 minutes

OK Cancel Help

Create a linking structure	
1.	Select a non-connected field (field of the data base) by click on one of the five horizontally arranged fields so that the button "not connected" is activated. If only connected fields are displayed, you will have to scroll the field display horizontally by using the "<" or ">" buttons. The activated field will always remain in the same position.
2.	Select the type of value by clicking one of the fields behind "value type", corresponding to the type of data bank field.
3.	If the type of value is "mean value", "Max", "Min", "Status" or "Number": select the station in the list marked with "Station".

4.	If the type of value is "mean value", "Max", "Min", "Status" or "Number": select the station in the list marked with "Channel".
5.	Establish the connection by clicking "Connected with".
6.	Repeat the steps 1 - 5 until the connection structure is complete.
7.	If the data bank does not have a data field "Date" or the data field is not assigned to the value type "Date", set the "Start date".
8.	If the data bank does not have a data field "Hours" or the data field is not assigned to the value type "Hours", set the "Start time".
9.	If the data bank does not have a data field "Minutes" or the data field is not assigned to the value type "Minutes", set the "Start time" (second entry field). At the same time, MEVIS will read the first sets of data from the data bank, calculate the probable mean value time and select them from the list marked accordingly. The start time minutes have to correspond to the mean value time. This means that the minutes of the start time set can be divided by the mean value time without a remainder or are zero.
10.	Set the "Mean value time" by selecting the list marked accordingly, if they were not already established by MEVIS.
11.	Enter the name of the "structure" (arbitrary name with a maximum of 15 characters).
12.	Click "OK".
13.	Answer the correction query; if you answer "No" the program will return into the dialogue.

The completed structure will be saved with its description and will always be available from now on. It can be selected later using the "Structure" list when data will be exported to a database.

Editing an existing structure	
1.	Select the "Structure" in the list. If the edited structure is to be added to the list rather than replace the old one, the selected structure must be selected again. This will cancel the selection, but the connections will remain. The designation should be changed. Press OK to register the new structure.
2.	Add new connections in empty, not yet connected fields (steps 1-8 of structure creation, see above).
3.	Edit existing connections: <ul style="list-style-type: none"> • Select the relevant field ("Fields of the Data Bank"), • Undo connection by selecting "Not connected", • Execute change (edit field name and/or length, change selection of station and/or channel, change the data type) • Connect by pressing "Connected to"
4.	Correction of starting time and/or date, time period and mean value recording time can be carried out directly before pressing OK.

9.2. ASCII import into MEVIS

If you choose the menu "Data import.ASCII.Format" or "Data import.ASCII.Read data" a dialog will be opened to configure or to start the import of ASCII data into the MEVIS database.

The program MevASCII.exe contains the code for configuration.

This program **has to be found** in the folder with the MEVIS configuration files (e.g. MEVIS.INI) because it will be started and (if necessary) terminated autonomous by MEVIS. MEVIS and MevASCII interchange information for configuration.

Files with ASCII tables, which contain measured values of a certain moment in one line per data set, can be used for the import of data. The format of the ASCII table has to be defined before the first reading is done. This declaration represents the logical description of the file structure (see chapter 9.2.1).

In a second step you have to declare, which measured values from their specific position in the line (the "columns") will be assigned to which MEVIS component. The imported data will be stored for these chosen components (see chapter 9.2.2).

In a last step you have to enter the name and the folder of the ASCII file (see chapter 9.2.3).

If you close the dialog with "OK" the configuration will be stored for further usage, but an import will not be done.

If you leave the dialog with "Cancel" you will lose all changes since the last start of MevASCII.

9.2.1. Formats of ASCII files

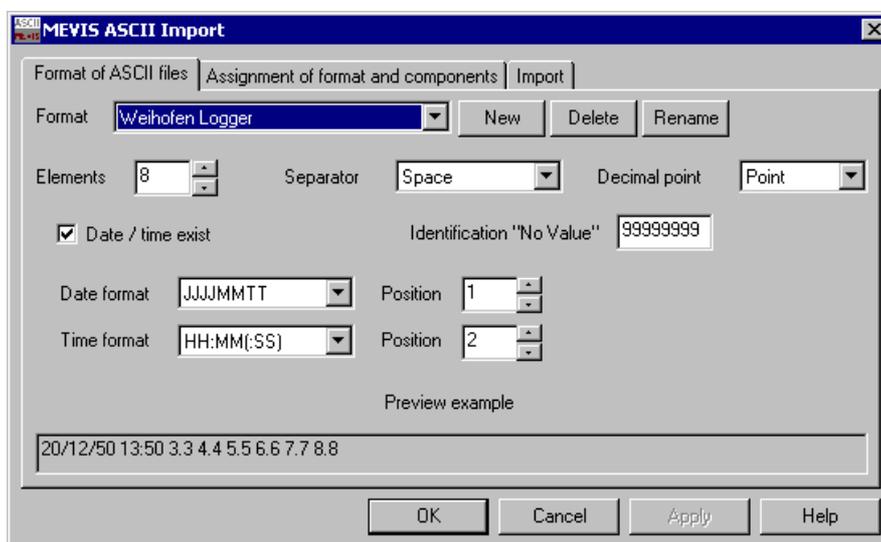
Here you have to describe the structure of the ASCII file that should be imported.

You can declare an unlimited number of formats. Every format has to be designated with a different and describing name.

It is necessary that the ASCII file consist of lines with fields, which are filled with measured values and (sometimes) a time stamp. Every line can be closed with CRLF, CR or LF only.

The time stamp (date and time) has not to be present definitely. But if there is a time stamp it has to contain both date and time.

If there is no declared format this dialog will be shown in any case.



Format	This combo box shows the names of the declared formats. For changes please choose the desired format name and edit the other parameters in the dialogue. To declare a new format click the button "New". Enter a describing Name in the shown dialogue. It will appear in the combo box. The format description for the data logger DL15 of THIES CLIMA is preset for a new format. You can remove unnecessary formats with click on the button "Delete". The removing will be done after confirmation with "OK". To rename the chosen format please click the button "Rename".
Elements	Please enter the total number of elements in a data set line. You have to count also date and time or other strings, which are separated by the separator.
Separator	Here you can choose the character that separates the elements in the line. Please note that only one separator character is allowed to be set between two elements (as exception more than one <Space> characters can be written). That's why there cannot exist any "empty" element.
Decimal point	You can select colon or comma. That means the decimal point in floating point numbers. e.g. "12.345". In German notation a colon is used, e.g. "12,345".
Identification "No Value"	Enter a string if there is absolutely no value for the component in the data line. The string can consists not more then 8 characters. The separator is not allowed
Date / time exist	Please activate the check box if the data set contains a time stamp. Date and time have to be used always together. Deactivate the box if there is only the time or the date alone.

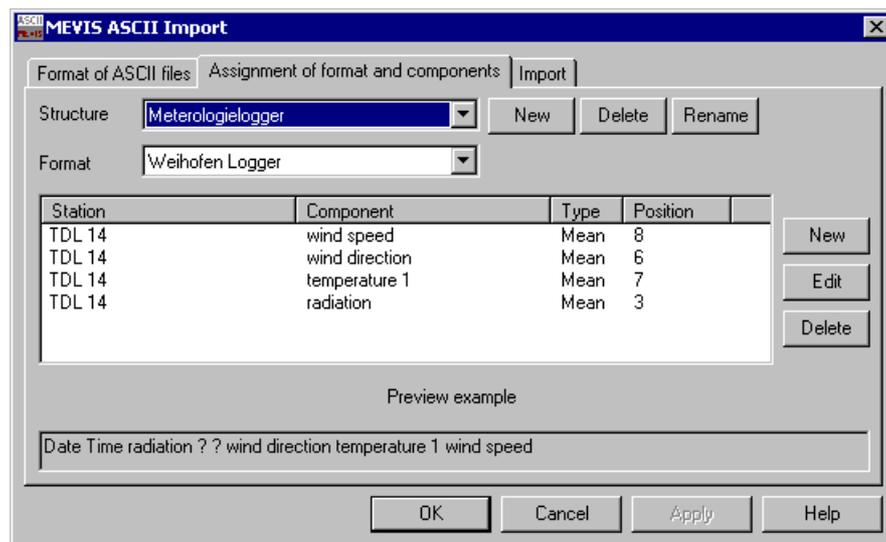
Date format	Here you can choose the notation of the date in the ASCII file. Enter the position of the date in the line. The notations with one-digit day and month also accept two-digit numbers.
Time format	Here you can choose the notation of the time in the ASCII file. Enter the position of the time in the line. The notations with one-digit hour also accept two-digit numbers.
Preview example	MevASCII shows a data set line in the configured format.

9.2.2. Assignment of format an components

An assignment structure links a pre-configured format with the given MEVIS configuration (stations and components).

The number of defined structures is not restricted.

In every structure you can declare up to 100 assignments to MEVIS components.



Structure	This list shows the names of existing structures. To edit a structure please choose it and adept the other parameters of the dialog. Click at the "New" button to generate a new structure. Enter a specific name that will be shown in the list. You can remove unnecessary structures with click on the button "Delete". The removing will be done after confirmation with "OK".
Format	Please choose the matching format from this list.
Column list	This table shows the assignments to the components of the MEVIS system. Initially the list is empty. You can configure the list using the buttons "New", "Edit" an "Delete" on the right side.
Preview example	Here a data set line that uses the configured parameters in accordance to the chosen format. Positions without assignment are marked with question mark "?".

The following dialogue will be used to edit an assignment in the column list.

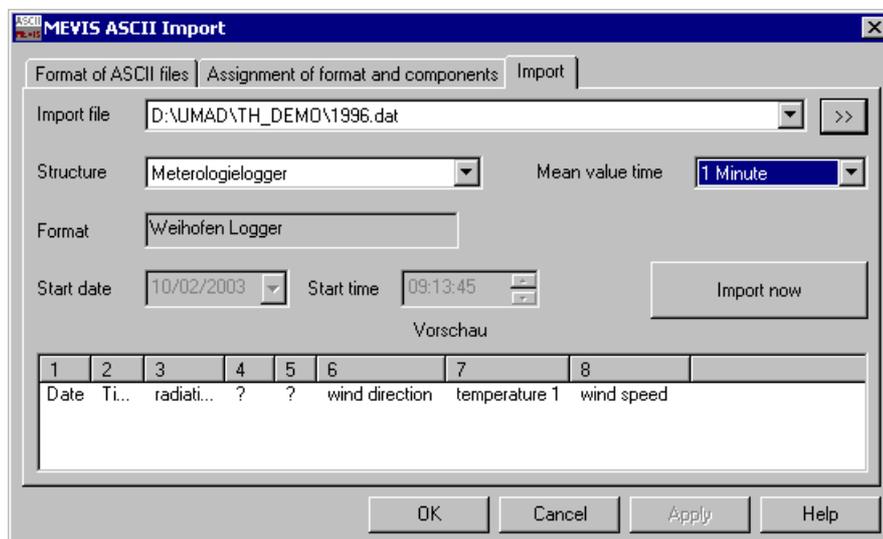


Station	List with MEVIS stations
Components	List with the components of the station
Type	Here you can choose the type of values: mean value, maximum, minimum
Position	Position of the value in the data set line. You have to count every element indifferent to its meaning.

9.2.3. Import

Here you can choose the requested ASCII file and link it with a declared structure (and in that way with a format). You have to select the mean value time period and the start date and time (if there are no time stamps in the data set lines). The mean value period you have to set to a known value or you have to calculate as the time-difference of following data set lines.

If all parameters are set press the button "Import now". MEVIS will start the import and will use the settings of the dialogue.



Import file	The list shows the names of used ASCII files. Choose the file from the list or click the button ">>" and navigate to the path with the requested file.
Structure	The list shows the names of the declared structures. Choose the structure matching the ASCII file.
Format	The item shows the format selected to the chosen structure.
Mean value time	Here you can choose a period that is compatible with the MEVIS database and that correspond to your ASCII file.
Start date and start time	<p>If you have to import data sets without time stamp here you can enter the start moment. MEVIS will calculate the time stamp for every line using the mean value time period. Please notice, that in this case "gaps" (absent data set lines) are not allowed. Otherwise the values will be stored for an incorrect moment.</p> <p>If you import data from the years 1980 to 1999 and the time stamps have a two-digit year (80 to 99) MEVIS will add 1900 automatically. For the years 00 to 79 it will add 2000.</p>
Import now	Press the button if all parameters are set and MEVIS should begin the import.
Preview	Here MevASCII shows a data set line with the current settings. You can verify the correctness of your setting. Positions that are not assigned are displayed with a question mark "?".

9.3. Read file IMPORT.CSV

This option allows to edit and to insert data to the MEVIS database via CSV files.

- The export of the data, which have to been corrected, should be implemented via the menu point "list" or "station list" with *** values or (if gaps are to be filled) with a mean value period used as a standard in the system (e.g. 30 minute value) **without extreme values**.
- Values of channels, whose initial components are offset with a correction factors (e.g. components *1000, set in the channel configuration), will be rewritten only if the basic component is the first operand in the offset rule (to prevent calculation problems). Otherwise, a warning will follow. Before the export, if required, new channels have to been declared **without** offset rule, or the calculation rule has to been reduced to the single initial component for the time of the preparation of lists.

	A	B	C	D	E
1	Station:	Waldberg		Waldberg	
2	Kanal:	SO2		NO	
3	Maßeinheit:	µg/m³		µg/m³	
4	01.03.92 00:30	1,2		0	
5	01.03.92 01:00	2,3		0	
6	01.03.92 01:30	3	B	0	
7	01.03.92 02:00	4,6		0	
8	01.03.92 02:30	[5,5]		0	
9	01.03.92 03:00	6,6		0	

In the EXCEL File that has been generated, the station designation stands in the even columns of the first line, in the second line the channel designations and in the third line the measures. The strings of the station and the channel names are decisive for the recognition of the configuration. Therefore they have to be equal to the name strings declared in MEVIS! The measure serves only for information and has no effect to the values.

From the fourth line, the date and the time stand in the first column. The date has to correspond with the shortened date format, which is set at the time of import to the computer (e.g. dd.mm.yy). "British" date entries cannot be read into a "German" system.

In the even columns, there are the mean values for the above-mentioned channel, and in the following column there are operating and error status signs, as well as alarm and warning information. "A" and "W" in the odd columns are not evaluated, but the columns may not be removed alone!

- Values can be corrected in EXCEL and omitted values can be added. Values are made invalid by the use of brackets with "[..]" (see cell B8 in the figure). Character strings which cannot be interpreted or which cannot be interpreted, as decimal numbers cause "no value available".
- If values for omitted moments have to be added, the list should be prepared with the mean time period that is used in the system (e.g. 30 minutes) and not as *** values. Otherwise, when cells are inserted the date and time specification are to be effected exactly in the format as in the original lines!
- If EXCEL links are used, the results have to be converted into values.
- Both columns of non-changed channels can be deleted, in order to accelerate the importing process.
- The **first column** may **never** be deleted, and an **even column** may only be deleted **together with the following column** assigned to the same channel.
- CSV files, which have been corrected, always have to be stored as IMPORT.CSV file in the main path of MEVIS (there MEVIS.INI can be found).
- The Import will be started via the menu item "Data import.Read file IMPORT.CSV" and requires the entry of the special code for the post-processing of data.
- At the beginning of the file or following "gaps", an attempt will be made to determine the mean value time period from CSV files in the following order:
 1. The time period is equal to the time difference to the following value.
 2. The mean time period used before the gap is used again.
 3. An attempt is made to use the half-hourly mean value.

4. An attempt is made to use 10-minute mean values.
5. Values are stored as 1-minute values.

- If CSV data have other mean value time periods than the original values in the MEVIS database, a warning will be shown.
The import process can be interrupted.
Otherwise, the values are overwritten with the mean value time period of the CSV data.
- If the mean value time periods correspond, a check is carried out to determine whether a change in value took place.
That only works if the output format (significant and places following the decimal point) of the channels during import corresponds with the original list on CSV file export.
When no change in value is recognised, the mean value, the extreme values and, if appropriate, the extreme value time are retained with complete accuracy from the MEVIS database.

If the mean value times do not correspond, the mean value of the CSV file is used for the extreme values and the accuracy **for the unchanged value too** corresponds only to the display format on channel output. This is, with maximally 6 significant digits, less than in the original MEVIS database.
As mean values from MEVIS are calculated from the 6-byte real values, changes may appear following CSV file import, which influence aggregated values more than the corrected values!
- If several channels relate to the same components, the data for the components will be overwritten with the value for the channel that stands at the most extreme right in the EXCEL table.
- The values of calculated components (e.g. floating mean values) will not be calculated automatically during the import and should be corrected in EXCEL too or subsequently calculated with the service option.
- Day mean values will be calculated automatically after CSV file import.

<u>C</u> onfiguration	<u>C</u> ontrol	<u>S</u> creen	<u>S</u> tation	<u>G</u> raphics	<u>L</u> ists	<u>D</u> ata <u>i</u> mport	<u>D</u> ata <u>e</u> xport	<u>A</u> ccessories	<u>H</u> elp
							dBase		
							DYWK		
							Report		
							Make ExpDB files		

10. Menu item Data export

10.1. dBase

MEVIS can write its data sets to a dBase IV compatible data base file. You can easily define the necessary structures in a special dialogue.

It is possible to prepare an unlimited number of data bank structures, e.g. for recurring tasks. They can be selected in the dialogue box „Write dBase data bank“ to adjust the corresponding time and to output it to arbitrary files.

The structure of data records also needs general information that will be put in the file header and that is necessary for writing or reading the file. This information consists of the following:

- Field name (10 characters, capital letters, numbers, underscore)
- Field type (1 character, F=floating point value, D=Date, N=Numerical, L=Boolean expression)
- Field length (Number of digits, for types F and N <20, for D=8 and L=1)
- Decimal places (digits to the right of the decimal point, for type F and N <18, for D and L =0)

The user has to complete this construction at the appropriate places; the other operations are computed by the program.

Data records can have 64 fields at most.

The number of data records depends on the number of days and the mean value period specified by the user.

$$\text{Number of Data entries} = \frac{\text{Export period}}{\text{mean value period}}$$

The arrangement of fields within a structure is completely arbitrary. The structure of a data record in MEVIS can be created using the following field types:

- Date, 8-digit field of dBase type "D",
- Hours, 2-digit field of dBase type "N",
- Minutes, 2-digit field of dBase type "N",
- Mean value of a channel, 9 to 17-digit field of dBase type "F",
- Maximum value of a channel, 9 to 17-digit field of dBase type "F",
- Minimum value of a channel, 9 to 17-digit field of dBase type "F",
- Status of the mean values of a channel means, 1-digit field of dBase type "L",
- Number of measured values that make up the mean values of a channel, 10-digit field of dBase type "N".

Dialogue "Write dBase data bank "	
1.	Enter a field name, arbitrary description of up to 10 characters (A..Z, 0..9,_)
2.	Enter the field size ("Field length"). If the data type "date", "hour", "minute", "status" or "number" is selected, MEVIS will set this parameter automatically, otherwise it has to be among 9 and 17. The decimal places are only relevant for mean and extreme values and correspond to the significant digits of the measured value. They are calculated from the entered field length using the formula: decimal places = field length - 6. There will be at least 3 and at most 11 significant digits.
3.	Select an empty, not yet connected field ("Fields of the data bank") by selecting one of the five horizontally oriented fields so that the "Not connected" button is activated. If there are only connected fields in the display, the field display must be scrolled sideways (use the "<" and ">" buttons). The activated field area is always at the same position.
4.	Select a station in the list labelled "Station" (except for data types date, hours, minutes)
5.	Select a channel in the list labelled "Channel" (except for data types date, hours, minutes)
6.	Select a data type that is listed beside "Type" <ul style="list-style-type: none"> • Date (results in field type Data, length 8), • Hours (results in field type Number, length 2), • Minutes (results in field type Number, length 2), • Mean values of a channel (results in field type Floating Point, length 9..17), • Maximum values of a channel (results in field type Floating Point, length 9..17), • Minimum values of a channel (results in field type Floating Point, length 9..17), • Status of a channel's mean values, i.e. valid/invalid (results in field type BOOLEAN, length 1) • Number of values that make up the mean value of a channel (results in field type Number, length 10).

7.	Complete the connection by selection "Connected to"
8.	Repeat steps 1-7 until the structure is completed
9.	Set the "Starting date" (0 in day and/or month also influences the time setting and corresponds to time from the data bank output counted backwards) and "Starting time"
10.	Set the "Time period" the data bank should hold, in days and hours (minimum 1 hour, maximum 365*3.1 days)
11.	Set the "Mean value period"
12.	Enter the structure description (arbitrary string, at most 15 characters)
13.	Press "OK"
Further steps	
1.	Set the output path and enter or select the filename in the dialogue window "Save data bank as". This window will be opened automatically.
2.	Press "OK". The data bank will created.
Editing an existing structure	
1.	Select the "Structure" in the list. If the edited structure has to been added to the list, you have to select the chosen structure again. This will cancel the selection, but the connections will remain. The name string of the edited structure should be changed. Press "OK" to register the new structure.
2.	Add new connections in empty, not yet connected fields (steps 1-8 of structure creation, see above)
3.	Edit existing connections: <ul style="list-style-type: none"> • Select the relevant field ("Fields of the data bank"), • Undo connection by selecting "Not connected", • Execute change (edit field name and/or length, change selection of station and/or channel, change the data type) • Connect by pressing "Connected to"
4.	Correction of starting time and/or date, time period and mean value recording time can carried out directly before pressing OK.

10.2. DVWK

With this function MEVIS data from a channel of a station (preferably a precipitation channel) can be exported to a file in DVWK format (in accordance with the combined rules of the German Weather Service, States Water Authority, German Union for Water Economy (Deutscher Wetterdienst, Länderarbeitsgemeinschaft Wasser, Deutscher Verband für Wasserwirtschaft und Kulturbau e.V. and the Abwassertechnische Vereinigung e.V.).

Required are entries of **channel**, **starting date** and time, **recording length**, the values used, as well as **path and filename** of the file to write to. In case this file already exists, a confirmation request will appear asking whether it should be overwritten.

The **record structure** (first record with field information, further records with clearly defined points) requires information not available in MEVIS. It must be entered by the user in the middle of the dialogue window. The record position (in parentheses) is next to the description of the input field (position in 80 digit entry).

The **geographical coordinates** can be used (select "Use co-ordinates"); otherwise they will be left out. If co-ordinates are used, they can be entered, otherwise the corresponding input fields are unavailable (displayed in grey).

Finally the measuring unit indicating how the values saved by MEVIS are to be interpreted must be specified in the lower right hand corner of the window. Please note whether the component was configured as sum component or not.

10.3. Report (menu not available in the light version)

There is an integrated report function in MEVIS that uses the text-processing program MS WORD for WINDOWS. You can use it to automate recurring tasks of editing of information.

The report files are created using a report mask file. The masks can be generated by the system setter or the user later on. The lot of options to declare your own reports or to modify given masks are described in the following chapters.

The report mask file has to be stored in the RTF format (file with RTF extension, i.e. MASK.RTF). The resulting reports will be saved in the same RTF format filled out with the desired data, although under a different name (e.g. REPORT.RTF). The files can be red, edited and printed using WORD for Windows.



It doesn't suffice to rename DOC files with the extension RTF!

10.3.1. Create the report mask file

To create the report mask file use **WORD for WINDOWS** (WINWORD, version 2 or higher).

Open a file in RTF format using the given MEVIS.DOT file. This file was copied during the installation routine. You should copy this file from the MEVIS installation path to the WINWORD path (version 2) respectively the user document template path before (most times in ...Microsoft Office\Templates).

Choose „Hidden text“ and „Field functions“ with the menu „Extras.Options.View...“.

All imported data will be inserted in the text instead of data fields. To declare these fields in the mask file use the menu „Insert.Field...“ and insert a „data field“ (version 2) respectively a „serial printing field“ (version 6) or „merge field“ (version 9).

You have to enter a name for the „field function“ respectively „field name“.

If you have copied and edited such a field enter the key „F9“ to actualise it.

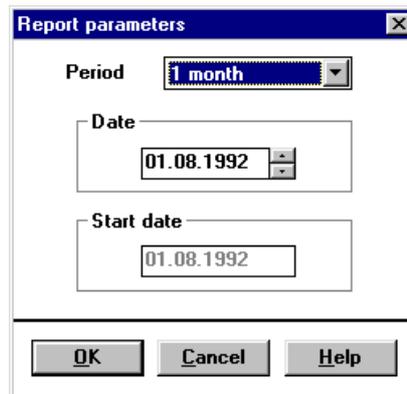
Given field names	Contents	Example
VANFTAG	First day of the report period. You can add an offset. Therefore enter “+” or “-” and the number of offset days without spaces (e.g. {MERGEFIELD VANFTAG+1} writes the date of the second day of the report period.	{MERGEFIELD VANFTAG}
VMONAT	Name of the month of the report period (e.g. „July“)	{MERGEFIELD VMONAT}
VMONATNr	Month of the report period as number (e.g. “7”)	{MERGEFIELD VMONATNr}
VMONATNrXX	Month of the report period as two digit number (e.g. “07”)	{MERGEFIELD VMONATNrXX}
VJAHR	Year of the report period (e.g. „1995“)	{MERGEFIELD VJAHR}
VJAHRXX	Year of the report period as two digit number (e.g. “98”)	{MERGEFIELD VJAHRXX}
VZEITR	Dates of the report period (i.e. "01.06.1995 - 30.06.1995")	{MERGEFIELD VZEITR}
VERSTELTAG	Day of report creation (dd.mm.yy)	{MERGEFIELD VERSTELTAG}
EDITSTUNDE	Hour of report creation	{MERGEFIELD EDITSTUNDE}
W(station name,channel name,data type, SSt,NkSt)	Stations and channel names In the names you have to use „hard“ spaces, entered with the keys CRTL+SHIFT+SPACE  Please pay attention to capital and small letters! In the names you have to use no comma!	{MERGEFIELD W(Station 1,SO2,MW)}
Data types	MW mean value with measure MWOM mean value without measure MWEX mean value in exponential notation without measure MWMAX Maximum of the mean values in the report period without measure MWMAXEX Maximum in exponential notation without measure MWMIN Minimum of the mean values in the report period without measure MWMINEX Minimum in exponential notation without measure The mean values (MW, MWOM, MWEX)	

Given field names	Contents	Example
	<p>and the extremes ([MW]MAX[EX] or [MW]MIN[EX]) of the given channel will be calculated with all original values. For sum components the overall sum is used.</p> <p>MAX Maximum of the maximal values with measure</p> <p>MIN Minimum of the maximal values with measure</p> <p>MAXOM Maximum of the maximal values without measure</p> <p>MINOM Minimum of the maximal values without measure</p> <p>MAXEX Maximum of the maximal values without measure in exponential notation</p> <p>MINEX Minimum of the maximal values without measure in exponential notation</p> <p>12M floating mean value of 12 months with measure. The mean value period starts one year before the report end time.</p> <p>Verf Availability The ratio of valid to invalid values will be shown as percentage without “%” character. You can write the “%” character in the mask.</p> <p>Varianz Variance s^2 The variance of valid values of the report period will be calculated by the formula</p> $s^2 = \frac{1}{n-1} \cdot \sum_{i=1}^n (x_i - \bar{x})^2$ <p>with n as number of valid original (***) values and \bar{x} as mean value of the report period. It will be written without measure. The measure (e.g. K² for temperature channels) can be added in the mask text.</p>	
	<p>Validate The moment (date and time) of the newest validated data of the given station (validated via the menu „ Validate... „). At least one character (no space) has to be written for the channel name!</p>	{MERGEFIELD W(Station 1,*,Validate)}
Data parameter	<p>SSt Number of significant digits (if number < 30)</p> <p>NkSt Number of digits following the decimal point (if number < 30). If the parameters "Sst" and/or "NkSt" are not set the settings of the channel configuration will be used.</p>	<p>{MERGEFIELD W(Station 1,SO2,WM,3,1)}</p> <p>{MERGEFIELD W(Station 1,SO2,WM,,1)}</p>
G(graphic name)	<p>Name that was declared in the menu „Report“ of the graphic mask. The name has to be different to the name from the selected graphic (diurnal variation, correlation, wind rose). The graphic will be done with the configured parameters (channels, scaling of the y-axis, straight lines, thresholds, additional information...). The time period will be adapted to the report period (day, week, month...).</p> <p>The graphic will be reworked in WINWORD. It will be zoomed to the distance between the right and the left indentation.</p>	{MERGEFIELD G(G4IN1)}

Given field names	Contents	Example
	Size of the built graphic and its place on the page you have to configure with the format of the line with the MERGEFIELD and the page set-up (for instance landscape, Indentation) in the mask file. The zoom to the indentation will not change the height-to-width ratio. Please save enough space on the page below the parameter line.	
GK(graphic name)	For this "corrected" graphic the shown period will be adapted. The period will be equal to the period that was configured in the graphic template. The period ends with the report end time. In a day report for the 5 th of march a graphic template with a period of 3 days causes a graphic from the beginning of the 3 rd to the end of the 5 th of march.	{MERGEFIELD GK(G4IN1)}
L(list number)	Number of the list that will be used to fill a table. You have to write it in the upper left table cell. The declaration of the list type will be done by the system setter. It depends on the version.	{MERGEFIELD L(2)}
LU(list number)	Number of the universal type list that is used to fill a table. You have to write it in the upper left table cell. It has to been declared with parameters in the REPDAT.INI file (see chapter 13.11).	{MERGEFIELD LU(1)}

10.3.2. Create report

You have to pass three dialogue windows to create a report.



First dialogue		
	Period of time	You can select the period of time.
	Date of entry	You can enter the report date.
	Start date	Corresponding to the set period of time the display will be updated to the real date of beginning. This date of beginning will be saved and entered as a date of entry after the next opening of the dialogue window.
Second dialogue		The standard dialogue window „Open file“ allows you to select the report mask file in a Windows typical way. You have the opportunity to enter an arbitrary path and file name as well as an arbitrary drive. You have to use the "Rich Text Format" *.RTF as the file format.
Third dialogue		The standard dialogue window „Save as“ allows you to select the file name of the report in a Windows typical way. You have the opportunity to enter an arbitrary path and file name as well as an arbitrary drive. You have to use the "Rich Text Format" *.RTF as the file format.

10.3.3. Edit the report file

Open the report file in the RTF format using WORD for WINDOWS. If you work with the given MEVIS.DOT you can start the post processing for graphics and tables.

The graphics generated for the report can be shown on the screen for a moment.

After processing, graphics will be are embedded in the report file and independent of the WMF files.

If you see in your report file error messages instead the expected data or graphics, please check first your entries of the data field names.

Error messages	
V???	Incorrect time variable
W???	Incorrect value variable
G???	Incorrect graphic name
L???	Incorrect list number
S???	Incorrect special value number
???	Unknown data field

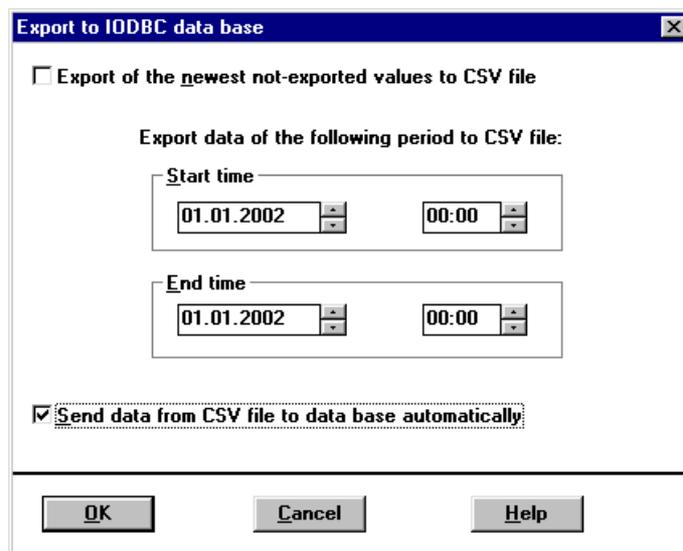
A long "beep" during the report creation will sound if a certain graphic could not be opened because too many graphics are already open. In the report file you can find the message „G????“. Close open graphics and create the report again.

If there are invalid values their digits will be stroked out.

10.4. Make ExpDB files (menu not available in the light version)

With this function of MEVIS you can write data to a comma separated (CSV) file. It is possible to export the newest not automatically exported values or values of a time period edited in the dialogue.

More information for the export of MEVIS data to a MS ACCESS 7.0 database you can get in chapter 13.5.



- Printout log file
- Editor
- Calculator
- Paint
- Readme
- ... Change entries

11. Menu item Accessories (menu not available in the light version)

11.1. Printout log files

This function enables an easy printout of the log file content. You can choose the time period of the printed entries.

The previous day is preset.

11.2. ... Change entries

Arbitrary DOS and Windows programs, which are added to the menu "Accessories", can be executed easily via the MEVIS menu. They can be added in a dialogue that will be opened by click on the menu "Accessories. Change entries". DOS programs should be called-up through a PIF-file. Up to 16 programs can be entered; entries without menu-text will be ignored.

Menu text	Command for program request (incl. parameters)	Menu text	Command for program request (incl. parameters)
Editor	notepad		
Calculator	calc		
Paint	pbrush		
Readme	notepad Readme.txt		

Menu text	In the column "Menu text" you can enter the string that will be added as menu item. A sign "&" in front of a character underlines it in the menu and it can be used as a hot key in Windows. Only programs with a menu text can be called up.
Command for program request	The column "Command for program request" contains the file name and the path, if the concerning path of this file is not in the PATH environment of Windows. (Examples: "Clock"- "CLOCK.EXE" or "APP"- "C:\MYPATH.EXE")
Search file	You can also select this over the button "Search file" in the dialogue window. You have to enter the panel in which the entry has to be done.

<u>C</u> onfiguration	<u>C</u> ontrol	<u>S</u> creen	<u>S</u> tation	<u>G</u> raphics	<u>L</u> ists	<u>D</u> ata <u>i</u> mport	<u>D</u> ata <u>e</u> xport	<u>A</u> ccessories	<u>H</u> elp	
									<u>C</u> ontext	F1
									<u>I</u> ndex	
									<u>H</u> elp on help	
									<u>A</u> bout	

12. Menu item Help

12.1. Context sensitive help

In this menu item you get a context sensitive help window. The same you get if you press the key F1 or choose the help buttons in the dialogues.

12.2. Index

You have chosen the base window of the MEVIS help. From here you can get into the themes specifically.

12.3. Help on help

If you worked never with help within WINDOWS, you can get into the operation through the standard help of WINDOWS.

12.4. About...

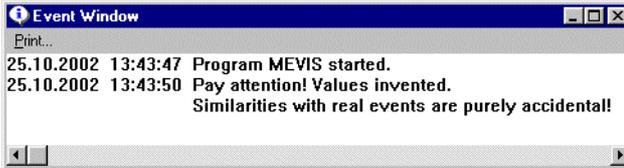
In a window you can see the logo of the development company and the release date of the software version.

13. Program functions without menu item

13.1. Use of hot keys

You can also choose functions of the base menu through hot keys. As standard the following combination is defined:

Hot key	Function	Description
CTRL+SHIFT+F12	Open event window	The event window lists the program start and messages of critical errors, alerts or warnings.



Optional additionally hot keys can insert for user specific applications by arrangement with the development company, for example to open status window or other.

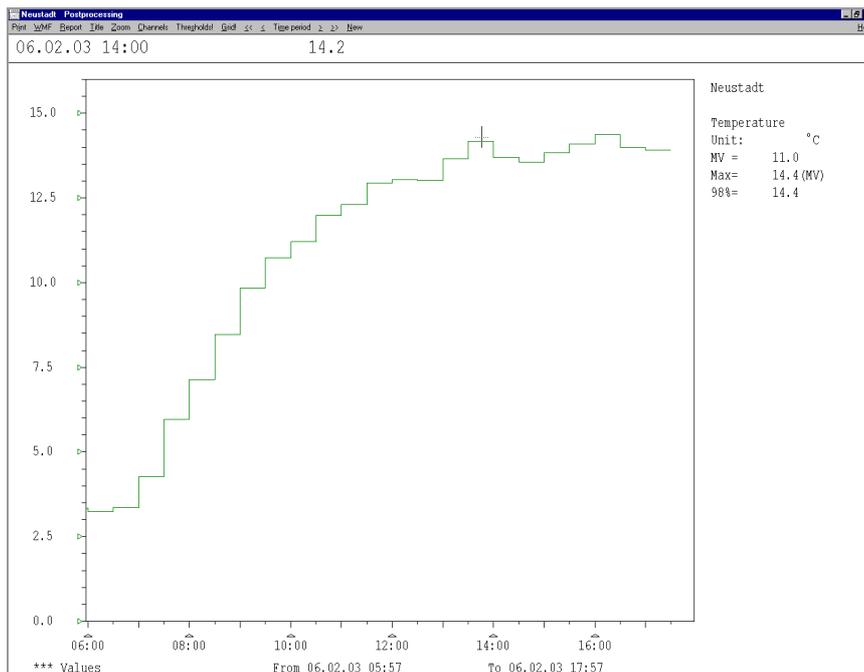
13.2. Hints for post processing of MEVIS data (not available in the light and viewer versions)

The unauthorized modification of data sets can cause falsified data.

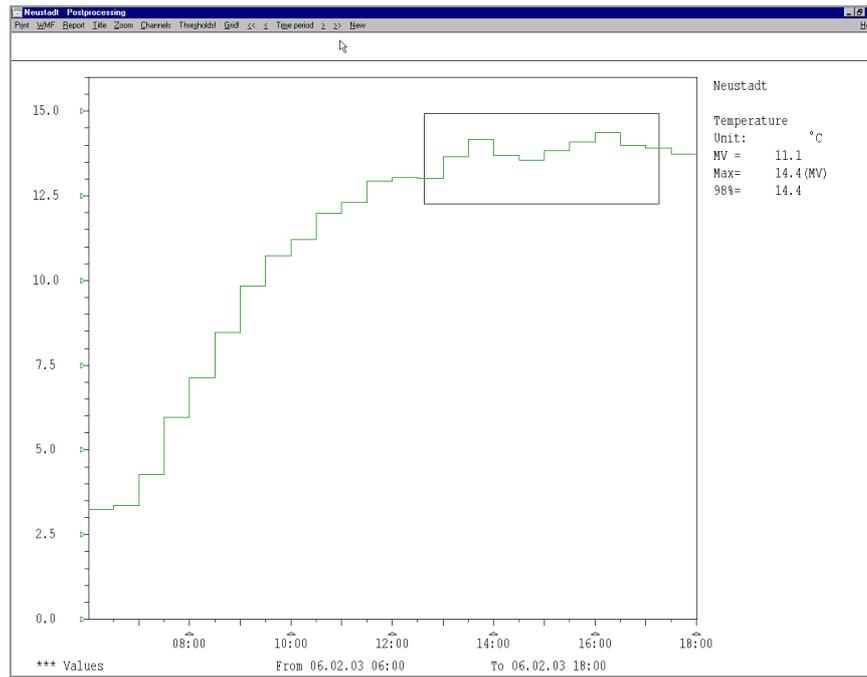
That's why you have to enter the "Special Code" before modification.

To modify the validity and/ore the value of one data set:

- Make a graphic 4-in-4 with the channel to modify. Choose original (***) values and a period as small as possible.
- Bring the mouse cursor on the value of the requested channel, which has to been changed. Its moment and its value should be shown in the line above the diagrams..



- Alternatively drag a zoom rectangle to the section of the curve that should be modified.



- Enter the capital letter "C" (for "correction") on the keyboard or click on "Change Values" in the menu. A dialogue demands to enter the "Special Code".
- For modification of **one data set** another dialogue will be shown with information about
 - . the source **component** of the selected channel,
 - . the picked out moment,
 - . the validity and values of the data set.

Change a component record

Value is based on component

Temperatur

Changes modify other channels basing on this component!

Time: 06.02.03 14:00

<input checked="" type="checkbox"/> Mean value valid	Mean value: 14.1674
<input checked="" type="checkbox"/> Maximum valid	Maximum: 15.0470
<input checked="" type="checkbox"/> Minimum valid	Minimum: 13.3020

Previous value:	Next value:
13.6570	13.6929

- For modification of **a curve section** another dialogue will be shown with information about
 - . the source **component** of the selected channel,
 - . the options of modification.

Please note:

- The **component values** can differ to the values, which are shown for the **channel** (if a transformation rule was entered in the channel configuration dialogue).
 - The modification of component data will alter the values of other channels, which depend on this component.
 - Linked components with a processed source component will not be modified automatically.
- You can choose the modification option with a click on the corresponding line. Without mouse you can select it using the <TAB> key and <SPACE> key for alteration.
 - To edit values choose the matching input label and enter the requested value. The focus will stay there if errors occur (e.g. "," as decimal point).
 - Confirm the modification with "OK" or reject it with "Cancel".
 - After confirmation the original data of the component will be changed. The day values will be calculated automatically for the affected period. After that you can check the altered values in the graphic.
 - You can repeat the procedure of modification as often as necessary.

The modification of a data set will be marked with a hidden status flag.

The UMAD GmbH can evaluate this information and make it available to the user to verify unauthorized manipulations.

There is no online help for this feature to prevent manipulations.

13.3. Service option for subsequent calculation of components and day values **(not available in the light version)**

If original values of source components are modified or are imported later on the values of linked components have to be calculated again for the implicated period.

Furthermore sometimes the day values have to be actualised (e.g. because of changed wind component types).

Therefore you can open a service dialogue pressing the <Ctrl><Shift><S> keys simultaneously. You have to enter the "Special Code".

Dialog elements, which are not required for calculation of day values, will be hid.

For the present moment you can enter "0" for the end date.

After the calculation of linked or aggregated components their day values will be calculated automatically.



At first you have to calculate components, which are source for linked components.

13.4. Automatic functions **(not available in the light and viewer versions)**

The function of AUTOMATIC is to control tasks, for which the time parameter is not critical; such as reports, database relocations etc.

After the program has started (about one minute following program to prevent interferences with the MEVIS start up) a test is made to establish whether jobs have to be executed.

Current features are:

1. the automatic output of AutoASCII files,
2. the mirroring of MEVIS data on other (network) paths,
3. start a command line,
4. the data export to bring in a data base (see also chapter 13.5) and
5. the building of reports.

For the first feature you have to enter a mask name via the list menu point "AutoASCII file" to store the parameters of the list (analogous to allocating a graphics name for reports).

The mask names, channel selection, the mean value type and the options (compression, extremes) are stored in "ASCIIIST.INI".

Program functions

The time period is modified during the automatic list generation, depending on the parameters described below.

All information and parameters needed for job control are located in the AUTOMAT.INI file in the MEVIS main path.

All times and time periods are given in double seconds (universal time) and can be calculated with the aid of the service dialogue via <F12> key. Time periods can be entered as times after 1.1.80. Example for 1 day: Input 2.1.80 0:00 h -> 43200 double seconds.

Job types:

- [AutoList] - automatic generation of lists.
- [DatPathCopy] - automatic mirroring of the MEVIS data on another (network) path
- [ExecCmdLine] - automatic execution of command lines
- [ExpDB] - data export to bring in a data base
- [Reports] - automatically ports

The numbers of the jobs per type are given under [General] in AUTOMAT.INI as

AutoListNrMax=

DatPathCopyMax=

CmdLineMax=

ExpDBMax=

ReportMax=

In addition, in the [General] section the parameter "BreakTime=" declares a minimum interval for the execution of a job (standard: 10 minutes).

Under [<Jobtype >] the indexed parameters are to be found:

NextTime(1)=272164530

Universal time for the next execution of the job (in this case, No. 1), is updated by the program

Mask(1)=Test

Masks or document name for report masks, documents for automatic lists/WMF-graphics.

With DatPathCopy

D stands for original (***) values (all files in month paths) - standard

T stands for daily mean value (files in year paths)

I stands for INI-files in the MEVIS main path,

the possible string is Mask(1)=DTI or an appropriate combination and array of them.

For ExDB you can enter the number of the ExpDB file here.

DestPath(1)=C:\MEVIS

Target path for job product (list, report), the standard is the MEVIS main path

With DatPathCopy, the DestPath is used as the data path, which has the year (and this month sub-path). INI files are written in the sub-path DestPath\INI.

If with DatPathCopy no DestPath is specified, the year path and, if appropriate, the INI-path is created as the sub-paths of the MEVIS-path.

This is not necessary with ExecCmdLine.

For ExpDB without significance.

DestFName(1)=Testlst

Target (file)name (up to 8 characters) for job product,

Standard for AutoList: List<i> (i=Job number); e.g. List1

Special form: station (two-digit <SS> and date mask <SS>YYMMDD or <SS>YYMM

Example daily station list from station1 for 1.11.97: 01971101.*,

Monthly station list November: 019711.*

For DatPathCopy an entry has no effect - all files for month or year or INI-files of the GlobalPath that do not have a length of 0, are copied.

This is not necessary with ExecCmdLine.

For ExpDB without significance because it is declared in ExpDB.INI!

Ext(1)=txt

Target file name extension, with AutoList: txt for text file and (as standard) csv for EXEL text file

For DatPathCopy and ExecCmdLine, an entry has no effect.

Program functions

UMAREP(1)=c:\mevis\umarep.exe

Only for special reports: File name of the program used to fill the report with WMF graphics and lists. No entry (standard): The WORD.EXE declared in REPDAT.INI is used. UMAREP(n)=none: No program will be started.

JobPeriod(1)=43200

Time period for which the job will be executed (report time period, time period of the output value for list) in universal time (double seconds), in the example 1 day.

Standard 0 -> no result is produced

Warning! Only in the time periods normal for MEVIS (1,10,30,60 minutes, 2,3,4,6,8,12,24 hours, 1 week), from 1 month use the symbol times ut_month=1339200, ut_quarter=4017600 and ut_year =15811200!

This is not necessary with ExecCmdLine.

JobOffset(1)=13500

Offset for the time period in double seconds from a usual time period, in order, for example, as in this case, to prepare daily reports from 7:30 h on.

Standard: 0

This is not necessary with ExecCmdLine.

LastJobTime(1)=272164530

End of the last-processed job time period (e.g. report time period), is updated by MEVIS.

On the first occasion, it is set to the rounded time, a job period in advance of the current time, and with DatPathCopy to the preceding month.

With DatPathCopy, it is set to the present time before completed copying. Only newer files will be copied next time!

This is not necessary with ExecCmdLine.

RunPeriod(1)=900

Repeat time periods in double seconds, after the job has been executed once more. Standard: ut_Tag (43200 – one day)

Warning! Only use in time periods that are normal for MEVIS! See job period!

RunOffset(1)=60

Offset of job execution from a normal time point in double seconds, in order to execute the processing; for example in this case 2 minutes, in each case, after the half hour.

Typ(1)=1

Entry of special types,

0: Standard, job is executed for the completed time period at the time for execution (e.g. daily reports up to including the preceding day)

1: Job is also executed for the time period in which the execution time lies (e.g. daily report from the present day)

For DatPathCopy and ExecCmdLine an entry has no effect.

DependsOnStat(1)=1,2,3,4

Declared, depending on which stations (maximally 4) the job depends.

For AutoLists, the numbers of the stations are entered which are used for the document lists and which are stored with "AutoASCIIFile" for the mask.

From this station, a control is made of up to which time data are available.

The lists are prepared in a cycle for a time period (e.g. day) in which this time lies, until new data are available after this time period.

In this way, the completeness of the exported data is ensured.

If not all stations used in the list fail, the failed ones can be removed in order to reach the current data of the functioning ones.

For DatPathCopy and ExecCmdLinehat, an entry has no effect.

CmdLine(1)=notepad.exe test.txt

Only for ExecCmdLine, the command line which is to be executed.

The program is searched for in the given, current, WINDOWS- and WINDOWS-System path and in the paths set in the environment variables PATH.

Warning! DOS applications should always be started by calling up a suitably configured PIF file. Otherwise, amongst others, the properties of the program window described below cannot be set.

CmdShow(1)=9

Only for ExecCmdLine display mode for windows of the application which has been started. The standard is 5. Additional values:

Program functions

- 0 Conceals the window and hands over activation to another window.
- 1 Activates a window and displays it. If the window has been reduced or increased in size, it will be restored in its original size and position. (as for 9).
- 2 Activates a window and displays it as a symbol.
- 3 Activates the window and displays it as an enlarged window.
- 4 Displays the window in the most recent size/position. Currently active window remains active.
- 5 Activates a window and displays it in its current size and position
- 6 Minimises the window and hands over the activation to the uppermost window in the system list.
- 7 Displays the window as a symbol. The currently active window remains active.
- 8 Displays the current window in its current state. The currently active window remains active.
- 9 Activates a window and displays it. If the window has been reduced or increased in size, it will be restored in its original size and position (as for 1).

MevisDBCPath=d:\MevisDBC

Path name for ODBC database, standard: C:\MEVISDBC

DBInsert=DBInsert.Ink

Link to start the data transfer to ODBC.MDB

Standard .PIF for Win95, for NT 4.0 enter DBInsert.Ink

13.5. Export of MEVIS data into a MS-ACCESS 7.0 data base (not available in the light and viewer versions)

In order to be able to access data from the MEVIS database without retroactive effects using SQL commands, tools were developed for the automatic storing of selected data into a MS-ACCESS 7.0 database.

For this purpose, a corresponding environment has to be installed in the host computer:



The installation by administrator is strongly recommended.

13.5.1. ODBC Environment

Prerequisites

The following or comparable ODBC drivers must be installed:

- Microsoft Access drivers (*.mdb) Version 3.5

- Microsoft Text drivers (*.asc) Version 3.5

If not available, these can be obtained for example from the Microsoft FTP server

<ftp://ftp.microsoft.com/Softlib/MSLFILES/>

(01/22/97 4.471.905 S20434 WX1350.EXE (ODBC Desktop Database Drivers 3.5)

13.5.1.1. Installation

Copy from the disk which has been supplied or from the archive the complete file \MEVISDBC the desired drive or install the following directory structure.

The target drive can be a suitable drive released for writing (a linked network drive is also a possibility).

For the **target drive** %MevDbDrv% is given in the following (in example C:),

for the **target directory** %MevDbDir% (in the example C:\MEVISDBC):

%MevDbDir%\

Target directory

%MevDbDir%\Daten

.ASC files exported from MEVIS

Program functions

The following files must be available in the directory:

%MevDbDir%\MevisDBC.exe	
%MevDbDir%\ MevisDBC.ini	
%MevDbDir%\IoDbC.mdb	Access 7.0 database file
%MevDbDir%\Daten\schema.ini	Structure of the files to be read in
%MevDbDir%\Daten\Expdb1.csv	Test record
%MevDbDir%\Beispiel\Expdb1.csv	Example records 1.-3.03.92

Then you can enter the environment variables (not necessary if MEVISDBC path is declared).

For **Windows 95** ...

... insert the following lines in the file c:\Autoexec.bat:
SET MevDbDir=C:\MEVISDBC

For **Windows NT/2000**...

... define the following system variables under "terminal/properties/environment":
(Windows 2000:..Control Panel/System/Advanced/Environment Variables)

Variable	Value
MevDbDir	C:\MEVISDBC

Open the data source administration "32-Bit-ODBC" in the system control (in Windows 2000 via "Control Panel/Administrative Tools/Data Sources (ODBC)") and create the following ODBC data sources (via "system DSN"):

ODBC driver:	Microsoft Access driver (*.mdb)
(Data source) Name:	NV import
Description:	imported data
Database (via "select "):	%MevOdbc%\IoDbC.mdb
System database:	none

and

ODBC driver:	Microsoft Text driver (*.asc)
(Data source) Name:	NVexport
Description:	exported data
Database (via "select directory "):	%MevOdbc%\data

In order to check the correct IODBC installation, you can execute the program „MevisDBC.exe".
A test record from data\Expdb1.csv will be read into the ACCESS database.

In order to look at the read-in data in the ACCESS database IODBC.MDB, you can - without using ACCESS - either

- start IODBC.EXE,
- enter the command lines: 1>select * from nvdaten
 and 2>go

The content will be outputted on the screen

- To end IODBC.EXE enter: 1>quit.

or (if with MS Office components installed)

- call up Msqry32.exe (Office 2000: usually in the path "c:\program files\microsoft office\office", otherwise in c:\program files\shared files\microsoft shared\MSQuery)
- press the symbol "New query" on the left, select the data source "MS Access 7.0 database " and select the file %MevOdbc%\IoDbC.mdb,
- select "NVData" at "add table " and close "add table ",
- in the window "NVData" click twice on the desired columns ("*" for all).

In order to delete the records in IODBC.MDB without ACCESS you can proceed as follows:

- start IODBC.EXE,
- enter the command lines: 1>delete * from nvdata
 and 2>go.
- To end IODBC.EXE enter: 1>quit.

or (if with MS Office components installed)

- call up Msqry32.exe,

Program functions

- choose "Enable editing" in the menu "Data sets"
- mark the data sets to delete with the mouse (left grey panel in the table view)
- press key and confirm the query

If you want to test the transfer of a large number of output records, you can copy the file %MevOdbc%\Beispiel\Expdb1.csv in the path %MevOdbc%\Data and analogous to the test record inserting in the database by starting the program "MevisDbc" for your operating system.

13.5.1.2. Adaptation of MevisDBC

The configuration of MevisDbc is assigned in the MevisDbc.ini file.

Entries:

[General]

LogFileLevel=	0	Only if errors occur (default)
	1	Enhanced protocol
	3	Additional output of data sets, marked if exported to the data base (1) or almost existing there (0).
LogDataEnable=	0	No data protocol (default)
	<>0	output of SQL MevisDbc.bindat
DebugOutput=	0	Log output not via OutputDebugStr (default)
	<>0	Log output additionally via OutputDebugStr
Verbose=	0	Standard output
	1	Data set output to stdout
ReportError=	0	Show no message box if errors occur (default)
	1	Show message box if errors occur
CmdShow=	0	App-Window hide (default)
	1	Normal
	2	minimised
DestroyPrevious Instance	<>0	Close previous instance with DestroyWindow (default: 0)

[Database]

DstDSN	Data source name for destination data base (default=NVImport)
DstTbl	Destination table name (default=NVDaten)
SrcDSN	Data source name for source data base (default=NVExport)
SrcTbl	Source table name (default=ExpDb1.csv)
ExtremWerte	0: minimised data base (without extremes) (default) 1: data base with extremes

Call MevisDBC :

MevisDbcv [CsvDateiPfad]

If the path <CsvDateiPfad> is given:

- File SCHEMA.INI in the path <CsvDateiPfad> will be checked if the structure of the give file is declared. Otherwise the structure configuration in section [Default.csv] is used.
- The entry SrcTbl in section [Database] will be actualised with the name of the file <CsvDateiPfad> (without path, with extension).
- After data import the file CsvDateiPfad will be renamed to <CsvDateiPfad>.old.

If the path <CsvDateiPfad> is **not** given:

- Data import will run with the configuration in MevisDbc.ini without additional operations.

13.5.2. Configurations for making MEVIS data available

As a prerequisite for the inserting of MEVIS data into the MS-ACCESS database using ODBC methods, MEVIS has to write the records in a comma separated file.

The file name must correspond with the mask **EXPDBn.CSV** (n: number).

Country-specific WINDOWS system settings are used as the decimal point, field separator and for the date and time format.

On exporting files to another computer, these settings have to correspond to those of the MEVIS computer.

Up to 99 different export files can be declared in the file **ExpDB.INI** (which is to be created in the MEVIS main directory).

Warning! With the standard set up described, the data from the export files can only be written in one Access database IODBC.MDB.

For exporting into different paths, please contact UMAD GmbH.

The entries in ExpDB.INI are to be effected as follows (absolutely necessary details are printed in **bold type**)

[General]

MaxFiles=1 Number of export files
MevDbDir=n:\mevisdbc Path name of MEVISDC.EXE (analogue to environment variables for MevDbDir, if this is declared in the system the entry is not necessary)

[File(1)]

PathName=n:\mevisdbc\daten Number of the ExpDB file
 For automatic ODBC transfer data sub-path of the path in which the ACCESS database, the links and IODBC.EXE are installed (see below).
 default c:\mevisdbc\data
 For additional files that are used by the customer, the path is optional)
FileName=ExpDBS.csv Number of channels/components which give the values in the file

Destination file name, standard: ExpDBnn (nn: file number, maximum 99)
 Only the name ExpDBS1.csv (standard name of the first file) will be accepted by the automatic ODBC import in standard configurations.
 Other files with any other names can only be used by the user himself.

MaxElement=5

Element(1)=Flugfeld,CO,6,1 Number of channels/components which give the values in the file
 Specification of the station name, channel- or component name (written as in MEVIS configuration), significant places and places after the decimal point, on which rounding takes place, when the value lies in the range from 0.001 to 10000 or is 0.
 default for places: significance 0, places after the decimal point 0, produces the exponential number with maximal resolution with 11-place significance

IsKomponente(1)=true true: Element is component, (in order, for example, to circumvent channel offsetting or to use components not allocated to a channel)
 default false (element is a channel)

DBStatName(1)=Station1 Station name in database, default MEVIS station name

DBKName(1)=Kanal1 Channel- or component name in database,
 default MEVIS-channel/component name

DBME(1)=Kanal1 Unit of measurement in database, default MEVIS unit of measurement

Basis(1)=30 Time base in minutes for mean value, default=0: *** values

Faktor(1)=1000 Factor, with which the value is multiplied, e.g. in order to convert mg into µg; default=1.0

Offset(1)=-273.14 Value which is added to the measured value; default=0.0

LastTimeExpValue(1)= 286804800 Time for the value which was last exported, the next output takes place from this to TimeLastDat,
is automatically written by MEVIS, do not change!

Element(2)=Flugfeld,SO2,6,1

...

Channels or components of several stations can be written in one file; there is practically no limitation in number (maximum 32000).

In order to automatically insert data in the ACCESS database, the following should be entered in the file **AUTOMAT.INI**:

[General]

...

ExpDBMax=3 Number of the transfer file

[ExpDB]

Mask(1)=3 Number of the ExpDB-Files, declare in EXPDB.INI under [File(n)], standard 1

RunPeriod(1)=900

Repetition period in double seconds, after which the job will be executed once more.
Standard: 43200 (one day)

Warning! Only use in the time periods normal for MEVIS (1,10,30,60 minutes, 2,3,4,6,8,12,24 hours, 1 week, from 1 month the symbol times for 1 month 1339200, for 1 quarter 4017600 and for 1 year 15811200)!

RunOffset(1)=60

Offset for job execution of a regular time in double seconds, in order to effect the execution e.g. as in this case, every 2 minutes following the half-hour.

DBInsert(1)=DBInsert.CMD

Link that must be called up for DS transfer in IODBC.MDB,

Insert DBInsert.PIF for Win95, for NT 4.0 DBInsert.CMD

In the standard installation, the link must be identical for all EXPDB files!

MakeMDB(1)=false

Entry controls if data from primary CSV file are imported from database (standard, true) or if the data will be written in the CSV file only.

Attention! File grows with every data export if no other process depletes it.

In the case of data export occurring for the first time, the data for the desired element is outputted from the start of the current day.

A word of advice:

Data export in the CSV-Files can be implemented via the menu point "Data Export.Output ExpDB Files" at a suitable time for the purpose of testing. If the content has automatically inserted in the database, then determine it in the dialog.

If more data exports are started during MEVISDBC.EXE is working a message box reports: 'Previous ODBC export is still running!'

Try to export later or increase the period of the automatically export (increase "RunPeriod(n)").

If the execution of MEVISMDB.EXE will never end please restart MEVIS again. The start of MEVIS removes all its old instances.



That's why you should not terminate MEVIS after an export too quick. Not all data can be transferred to the database.

13.6. Export of all graphic types

You can export all graphics, diurnal variations, correlations and wind roses into a WMF file. This can be used in other programs, e.g. in WORD for WINDOWS.

There is a method to simplify the export of a graphic to WORD via RTF (Rich Text Format) file (according to the MEVIS report generation).

The following requirements have to be implemented:

1. A version of Microsoft WORD for WINDOWS is correctly installed on the computer. MEVIS starts it automatically.
2. You have to add the following entries in the MEVIS REPDAT.INI file:
[WinWord]
WinWordInGKW=true
WinWordPath=C:\Progra~1\Micros~1\Office
The make of any graphic will write the entry "WinWordInGKW=false" in the section [WinWord]. You have to change it to "true".
You have to explore the installation path of WORD for the entry "WinWordPath". The example above shows the default path of WORD in 8.3 notation. If necessary you have to change the drive or the number in "Micros~1", if there are more than one path "Program files\Microsoft...".
If the entry " WinWordInGKW=true" exists there will be a menu "WinWord" in all graphics (Before you have to restart MEVIS).
3. The file WINWORD.ORI has to be in the same path as REPDAT.INI.
4. The file MEVIS.DOT has to be in the WORD path "templates". You can find the path name in the option dialog of WORD.
Please use a matching Version of MEVIS.DOT. There is a DOT file for Word up to WORD 95 and another for Word 97 and 2000.

13.7. Events (depending on several channel data)

This option allows the logical integration of the inspection results from up to 3 channels of arbitrary stations. The values of every channel can be checked if they correspond to a channel specific set range.

The thresholds of these ranges are independent of the alert or warning thresholds of the channels.

You can configure up to 20 events.

If the collected data match the conditions of an event a message box will appear. The event name and the causal values will be shown in a window.

The following demand is an example to use events:

If the wind speed value is higher than 10 m/s and at the same time wind direction value is matching to the 30° sector "North" or the temperature value is smaller than 0°C and higher than -5.5°C a message should result.

Events are only possible

- if data of all checked channels are collected for the first time and
- if the moment with the matching values is not older than a defined period (standard 8 hours).

Events can control the relays of a USEW. Please refer to chapter 13.8 for its configuration.

The events can be declared in the EVENT.INI file. This file has to be stored in the same path as MEVIS.INI.

[General]

EventNrMax=3 {Number of inspected events, standard: 0 – no inspection}

CheckPeriod=1800 {Time period in double seconds from the moment of receiving data to history in which data will be checked for events; here 1 hour, standard: 8 hours}

[Event(1)]

MaxElement=3 {Number of channels to check for the event, maximum 3, standard 0}

Text=Test-Event {String to describe the event in the event window and in the log file, maximum 75 characters, Standard "Event <event number>"}

Element(1)=O,Station 1,Wind speed,10,-1

{Parameter of checked channel, comma separated:

- Boolean operator for combining the result of the channel conditions, A: AND; O: OR, use 'O' or " for the first element (channel)
- Station name, written equal to the MEVIS configuration,
- Channel name, written equal to the MEVIS configuration,
- lower threshold, standard 0.0
- upper Threshold, standard 0.0

Program functions

- Boolean operator „in range“: true, if the value has to match in the range between lower and upper threshold (including thresholds) – otherwise „false“ (standard)

Element(2)=A,Station 1,Wind direction,15,345
{Wind direction near North is not matching the range 15°...345°, „in range“ is false as standard}

Element(3)=O, Station 1,Temperature, -5.5,0,true
{true means, temperature value has to be in the range -5.5°C ...0°C to match the condition}

USEWRelais=1 Number of USEW relay controlled by the event,
standard: 0 – no relay will be controlled

USEWOnEvent=3 Relay switches if event occurs:
0: no switch, 1: switch off, 2: **switch on** (standard),
3: switch on for 4 to 6 seconds

USEWOffEvent=3 Relay switches if event disappears:
0: no switch, 1: **switch off** (standard), 2: switch on,
3: switch on for 4 to 6 seconds

USEWQuittung=3 Relay switches if event will be receipted:
0: no switch, 1: **switch off** (standard), 2: switch on,
3: switch on for 4 to 6 seconds

LastCheckTime=323896470
{Youngest moment for which the values of all elements are checked; it will be written by MEVIS – **do not edit!!!**}

Hints:

You can leave out standard settings. They will be deleted automatically by restart MEVIS.
You have to write the commas as delimiter if you leave out standard settings.

Commas are not allowed in names of stations or channels.

The decimal point is always a colon.

The conditions will be processed one after the other without attention of the operator hierarchy.

If you want to check only one of both thresholds please set the other to a value that never can be injured by measuring values.

Example: An event condition is that values of relative humidity are higher then 60%. The lower threshold should not be leaved out (that means 0.0) but should be set to -100.0.

Using a USEW you have to declare an additional communication object for an available COM port in the MEVIS.INI file:

```
[Kommunikation]
ObjCount=n      {increase the number of objects}
...

[KomObj(n)]
Typ=13          {USEW type, object will not appear in the "Control" menu}
Port=3          {available COM port with its own IRQ}
PortIni=4800,N,8,1 {do not edit! USEW doesn't work with other parameters}
```

The usage of the relays as switch is standard and the entry "Relais(i)=0" is not necessary.
For more information refer to the USEW documentation.

13.8. Universal Switch Unit with Watchdog "USEW" (not available in the viewer version)

For the use of data centrals in the monitoring operation it is often necessary to pass signals on external receivers depending from the data course (threshold infringement) respectively from status signals of the

Program functions

measuring devices. At certain conditions of the system should for example sound a horn, light up a lamp or release another switch action by the data central via a potential free contact.

In addition it is mostly necessary to give external persons (safety guard) information about the regular operation of the data equipment, so that they can arrange for alarming of introduced personal.

For this uses the switch unit USEW was developed. It has four independent potential free changeover switches that can be programmed as

- switch by a order from the data central or
- watchdog to supervise the functions of the data central program.

The switch unit is connected to a free serial port of the data central and is controlled by single orders of the central software.

The data central program has the following options. You can activate them by items in the control file at the installation of the system.

Switch function at threshold exceeding	An eligible relay contact switches when the values from the measuring device violate an alarm or warning threshold. This switch function is activated simultaneously to the alarm message on the screen. If the operator quits this message box, the contact switches back to its origin state.
Switch function at status signals	In MEVIS the operator can adjust, which status signals of the measured values shall release alarms. If such marked status signals are detected as active the switching of the relay occur at the same manner like at function 1. It is possible to use several relays for the functions 1 and 2 as well as to use an only common relay.
Failure of the communication with a measuring device	To supervise the correct data acquisition from the measuring equipment into the PC the watchdog function is to use. A switch contact is hold passive as long as USEW gets commands to trigger the watchdog of this relay. If the commands are absent, at most three minutes after the last trigger command the assigned contact switches. The trigger of the watchdog will be interrupted, when <ul style="list-style-type: none"> • the communication with a measuring device is cancelled (connector is unplugged, line is broken, driver circuit damaged, change of TDV address and so on), • the program MEVIS is terminated (terminated by user, computer hardware or system crashed down, power failure an PC or USEW etc.)
	To fade out short time interruptions a failure of the communication line of 3 minutes is tolerated. If then the communication doesn't go on the watchdog trigger stops and 3 minutes later the watchdog alarms. A Watchdog alarm makes <ul style="list-style-type: none"> • an acoustic signal (30 sec), • an optical signal (by analogy to the contact state) • a switch of the respectively contact to the active state (relay 1 for 30 sec, relay 2 for 30 sec in a cycle of 4 sec, relay 3 and 4 permanently). For contacts 1 and 2 the signalisation is effected cyclical all 3 minutes. If MEVIS is running it tries to get a connection to the device. As soon as the device gives an answer, MEVIS resets the external signals at USEW. If MEVIS works on several bus lines or measuring devices are connected at single ports a separate contact is to assign for each bus line or port. At least you can supervise four ports. At bus line operation the failure of one device causes an alarm at USEW. If several devices are connected on the port (on a bus) the lost

	communication with only one of them will be signalled by the watchdog. To recognize the alert cause you can use the message "Device xxx does not answer" in the communication screen.
--	---

13.9. Network Option

One or more MEVIS instances can work on one or different computers using the same MEVIS database since MEVIS version 1.5.

Therefore the following conditions are necessary:

- The folder of the "server" that contains the DAT path has to be shared for reading.
- This folder is mapped to the local computer and a letter has been assigned to it.
- The configuration of the MEVIS "server" is adapted to the local computer.

You have to choose the path, where the MEVIS database is situated, via the option Configuration/Data path (see chapter 3.5).

The visualisation via Local Area Network is possible with the standard and viewer versions.

If a standard version is used you have to add the Entry `Client=True` in the Section [General] of the `MEVIS.INI` file. Otherwise the values will not be actualised automatically.

In the viewer version this entry will be red as standard.

13.10. Deviations of the MEVIS viewer version

The **Viewer Version** serves for visualisation of MEVIS data.

It requires the data collection with a standard or light version application.

The MEVIS data access can be executed via Local Area Network. Therefore the MEVIS data have to be stored on a shared read enabled folder.

The viewer version cannot collect, import or modify data by oneself.

That's why it is not able to show present values.

The following functions are **not available** in the Viewer Version.

- Configurations of stations and components
- Control functions for polling data loggers
- Collecting and displaying of present values
- Import of dBase and ASCII files
- Post processing of data
- Automatic functions
- Export to data bases via ACCESS file
- Controlling of the Universal Switch Unit

The Viewer Version requires a special dongle (different to standard version).

13.11. Universal lists (not available in the light version)

Prerequisite: A `RTF_DLL.DLL` with a creation date **from 13.09.98** is installed.

The user must know the documentation for MEVIS reports and be familiar with the generation of report mask files

With the report element universal lists, the user is offered a large measure of flexibility in the preparation of report lists.

In contrast to the very specific "L" lists, the order of the enquiry parameters in the table can, to a high degree, be selected according to choice.

The instruction for inserting universal lists is to be entered in the report document (RTF file) analogous to the lists as a serial print field with the identifier "LU([number of the universal list])" in an appropriate table.

Program functions

Example:

	Station 1		Station 2		Station 3	
	Median [$\mu\text{g}/\text{m}^3$]	Availability [%]	Median [$\mu\text{g}/\text{m}^3$]	Availability [%]	Median [$\mu\text{g}/\text{m}^3$]	Availability [%]
NO	{MERGEFIELD LU(1)}					
O3						

The structure of a universal list is to be defined analogously to the lists in the file REPDAT.INI.

Parameters can be declared under an application name in the form [UniList([number of the Universal list])].

The station-related channels are defined – as with the lists - with the term “element”.

In a universal list, up to 20 channels for different stations can be used.

The identifier “item type” stands for the various enquiry parameters, whose result for each element (channel) is to be entered in the list. In a universal list, up to 20 items can be selected from the following table. Enquiry parameters can be used several times with different parameters as an item (e.g. 50% and 98% percentile).

Enquiry Parameters	Keyword Item Type
Mean, arithmetic, for the reference time period ¹⁾	MW
Total value for the reference time period ²⁾	SW
Maximum in the reference time period	MAX
Minimum in the reference time period	MIN
Largest mean value in the reference time period	MWMAX
Largest floating mean value in the reference time period	MWMAXGL
Smallest mean value in the reference time period	MWMIN
Percentile in the reference time period	PERZ
Availability in the reference time period	VERF
Failure (missing data sets) in the reference time period (in percent)	AUSF
Standard deviation s^2 in the reference time period	VARIANZ
Mean, arithmetic, for the floating time period until the end of the report time period ³⁾	GLMW
Total value for the reference time period, reference components must be a sum	GLSW
Maximum for floating time period up until the end of the report time period	GLMAX
Minimum for floating time period up until the end of the report time period	GLMIN
Largest mean value for floating time period up until the end of the report time period	GLMWMAX
Smallest mean value for floating time period up until the end of the report time period	GLMWMIN
Percentile for floating time period up until the end of the report time period	GLPERZ
Availability for floating time period up until the end of the report time period	GLVERF
Standard deviation s^2 for floating time period up until the end of the report time period	GLVARIANZ
List of the time periods with limiting value violations with the columns Station name, channel name, start of the violation, duration, maximum mean value during the violation	GRENZL
List of days with at least one violation of a threshold by a mean value with the columns: date, station name channel name, overall duration, maximal/minimal mean value during the violation, value of a complementary channel at the moment of the maximal/minimal value	DAYGRENZL
List of days with at least one violation of a threshold by a floating mean value with the columns: date, station name channel name, overall duration, maximal/minimal mean value during the violation, value of a complementary channel at the moment of the maximal/minimal value	GLDAYGRENZL
Number of mean values that violate thresholds.	ANZGWV
Number of days with at least one violation of a threshold	ANZDAYGWV
Number of days when the 8 hour limit for ozone in the reference period was exceeded	D8HO3
Number of days when the 1 hour limit for ozone in the reference period was exceeded	D1HO3
Largest 8 hour mean value for ozone in the reference time period	8HMAXO3

Enquiry Parameters	Keyword Item Type
8-hour mean values (0000-0800, 0800-1600, 1600-2400 and 1200-2000) in lines with four columns for every element for all days of the report period	MW8H
List of the periods with set operational and error status bits with the columns: station name, channel name, start time of the period, duration, maximal mean value in the period	STATIL
User defined string	STRG

- ¹⁾ The reference time period can be the report time period or a part of this time period (1 day, 1 month or 1 quarter) for listing by lines.
- ²⁾ Total values are only produced for channels on which components depend and which are totals. (Examples: amounts of precipitation, details regarding substances or activities)
- ³⁾ Example: The floating annual mean value for the monthly report from September '98 is made up of the values from 1.10.97 0:00 h up until 31.09.98 24:00, for the monthly report October '98 with the values from 1.11.97 0:00 h up until 31.10.98 24:00.

The keywords can be appropriately written with capital letters or lower case letters.

A lot of parameters enable adaptations.

Parameters that refer to elements begin with "E" and have the index number of the corresponding element.

All other indexed elements refer to the item whose item type is identified with the same index number.

The following entries are necessary (in bold print) or possible:

[UniListe(1)]	Declaration part for the list (in this case, the number 1)
StdMWZ=60	Mean time in minutes which is used for all enquiry parameters, if no other definitions have been made. ¹⁾ Standard: 30 minutes
MaxElement=5	The number of channels for which values are enquired, limited to 20
Element(1)=Station 1,CO,6,0	Specification of the station name, channel name (written as in the MEVIS configuration), significant places and places after the decimal point. If no channel is set for lists with violations of thresholds (item=GRENZL) all channels of the station will be checked for violations. With up to 6 significant places, a rounding typical for MEVIS takes place, when the value is in the range from 0.001 to 10000 or is 0, otherwise an exponential number with a three-place significance will be written. „0" significant digits means that the settings of the channel configuration will be used. Standard for places: significance 6, places after the decimal point 1 The availability is always listed with and the timeout day D?HO3 without places after the decimal point.) With 10 significant places, the value is listed in an exponential form; the places after the decimal point apply to the significance.
EStrg(1)=Carbon monoxide [µg/m³]	String, which will be written for element (n) if Itemtyp(n)=STRG. Commas are not allowed in the string!
EKomplK(1)=CO2	Complementary channel or component, used in lists with Itemtyp(n)=DAYGRENZL. For this channel the value at the moment of maximal or minimal value of the element (n) will be written.
EMWZ(1)=60	For the element with the same index number, independent of StdMWZ and IMWZ (see below), means with the specified time in minutes are used (in this case: hourly mean value) ¹⁾ . Standard: no particular mean time
EBFMask(1)=\$300	Mask to check the operational and error status bits of data sets of the element (n) for status lists (key word STATIL). Standard: 0 – no bit will be checked
MaxItem=4	Number of enquiry parameters, maximum 20

Program functions

ItemTyp(1)=MWMAX	Keyword enquiry type, standard MW
IMWZ(1)=120	For the item type with the same index number, independent of StdMWZ, but only elements without EMWZ (see above), use mean values with the specified time in minutes (in this case: 2-hourly means ¹). Standard: no particular mean time
GLMWMonate(1)=6	For floating enquiry parameters (keyword "GL????") with the same index time period for floating values in months. Standard: 12 months
GLMWTage(1)=100	For floating enquiry parameters (keyword "GL????") with the same index time period for floating values in days. Standard: GLMW months are used. When GLMW days are specified, the specification for GLMW months with the same index is invalid.
Perz(1)=50	Percentage number for percentile (keywords PERZ and GLPERZ), Standard: 98
GLMWZ (1)=7200	Period of floating mean value or sum (depending on component type) if the item types MWMAXGL or GLDAYGRENZL are used. The values will be calculated in steps of StdMWZ, EMWZ resp. IMWZ. Parameter means double seconds. Standard: 14400 (8 hours)
SName(1)=false	Listing of the station name with list of the time period with violation of limiting value (GRENZL), status lists (STATIL) and day lists of violations (DAYGRENZL), here suppressed Standard: true – listing takes place
KName(1)=false	Listing of the channel name with GRENZL, STATIL and DAYGRENZL, here suppressed Standard: true – listing takes place
GRDauer(1)=false	Listing of the duration of continuing violation of limiting values in hours with GRENZL, STATIL and DAYGRENZL, here suppressed Standard: true – listing takes place
InMinuten(1)=true	Causes to write the duration in minutes if the item type is GRENZL, STATIL or DAYGRENZL Standard: false – output in hours with one digit behind the decimal point
GRMWMax(1)=false	Listing of the highest mean value during the continuing violation of the thresholds with GRENZL, STATIL and DAYGRENZL in a column, here suppressed Standard: true – value will be written
GRMWMin(1)=false	Listing of the lowest mean value during the continuing violation of the thresholds with GRENZL, STATIL and DAYGRENZL in a column, here suppressed Standard: true – value will be written
GRMWExt(1)=false	Listing of the extremes during the continuing violation of the thresholds with GRENZL, STATIL and DAYGRENZL in a column if both GRMWMax and GRMWMin are false, here not output of extremes Standard: true
KomplKMax(1)=true	Output of the value of the complementary component at the moment with the highest value of the element in DAYGRENZL, complementary component has to be declared with KomplK(n). Standard: false ,
KomplKMin(1)=true	Output of the value of the complementary component at the moment with the lowest value of the element in DAYGRENZL, complementary component has to be declared with KomplK(n). Standard: false ,
OGR(1)=180	Upper limit, largest values result in listing

Program functions

	Standard (when UGR is not declared) upper alarm threshold for the channel
UGR(1)=-10	Lower limit, smaller values result in listing; Standard: no lower limit
CheckMax(1)=false	If true the violation of the upper threshold in GRENZL, STATIL and DAYGRENZL will be checked, Standard: true
CheckMin(1)=false	If true the violation of the lower threshold in GRENZL, STATIL and DAYGRENZL will be checked, Standard: true
CheckInvalidValues(1)=true	If true invalid values will be also checked for GRENZL and STATIL Standard: false
MindestStunden(1)=1	Minimum duration of a limiting value violation in hours for recording in the list. Standard: 0 (every instance of exceeding the value is listed)
... additional entries for ItemType(2) etc..	
AnzElementInLine=2	Number of elements which are written in a line of the list. Standard: MaxElement (all elements) ²⁾
AnzItemInLine=3	The number of enquiry parameters per element which are written in a line of a list. Standard: 1 ²⁾
Zeile=T	Allows the listing of values in lines for days (=T), months (=M) or quarters (=Q) or a given period in a list for the reporting time period. All enquiry parameters for all elements are listed in one line! A number will be interpreted as number of minutes of the period. Only the MEVIS standard periods ¹⁾ will be accepted. The entry Zeile=30 cause that in following lines the values for the moments of 0:30, 1:00, 1:30 ... are written. The mean value periods StdMWZ and EMWZ have to be smaller the value of the entry „Zeile=“. All found items would be written in one line!
OnlyTime=false	Only effective with a number in the entry "Zeile=". Standard: true, only the time will be written if false date and time will be written (recommended for report periods longer than a day).
NoTime=true	"true" suppresses date and time Standard: false date and time will be written.
RAnfOfs=-1440	Offset of the start time for the list in minutes. In the example the list starts a day earlier than the report. Standard: 0
REndOfs=0	Offset of the end time for the list in minutes. Standard: RAnfOfs In the example the list ends with the report end time. Without entry the list will end a day before.

¹⁾ For StdMWZ, EMWZ and IMWZ, only the mean time periods normally implemented in MEVIS - 10,30,60 minutes, 2,3,4,6,8,12,24 hours – can be used!

²⁾ For the listing of values in one line AnzElementInLine x AnzItemInLine columns are needed! AnzElementInLine should be devisors of MaxElement.
For listing by line of daily, monthly and quarterly values, all values are listed in a line. AnzElementInLine and AnzItemInLine are invalid!

Standard values do not have to stand in the list declaration and are removed automatically from the REPDAT.INI after program restart.

The use of capital letters and lower case letters is only relevant for station and channel names of the elements and must correspond with the station and channel configuration in MEVIS.

Program functions

Examples for INI entries:

For 3 stations, 50% percentile of the daily value for NO and SO₂ is to be outputted in a list as in the example above (comments in "{ }", do not specify these in the INI-File!):

```
[UniListe(1)]
MaxElement=6                {Number of channels for the list output}
StdMWZ=1440                 {1 day as mean time period for the individual values}
Element(1)=Station 1,NO,6,2 {6 significant places, 2 places after the decimal point}
Element(2)=Station 2,NO,6,2
Element(3)=Station 3,NO,6,2
Element(4)=Station 1,O3     {Standard 6 significant places, 1 place after the
                             decimal point}
Element(5)=Station 2,O3
Element(6)=Station 3,O3
MaxItem=2                   {Number of enquiry parameters per element}
ItemTyp(1)=Perz             {Specification of the item type (1)}
Perz(1)=50
ItemTyp(2)=Verf
AnzElementInLine=3         {in each case, 3 elements in a line}
AnzItemInLine=2            {in each case, 2 items per element in a line}
```

For **lists of limiting value violations**, the length of the table is not predictable.

Only the line in which the column {MERGEFIELD LU([number])}, which is to be filled up first in the table, is to be entered. The required lines will be automatically appended.

If several channels (elements) are examined for violation of limiting values, the results for each element are written in a chronological sequence, one after the other, and the sequence of the elements in the list corresponds to the index numbering.

If an upper or lower limiting value is specified, this limiting value applies to all elements.

If no limiting values are specified, the upper alarm thresholds set in MEVIS for the particular channel are used.

Example for an exceeding limiting value list for hourly mean values of a station that continues for at least 2 hours:

Exceeding mean hourly value for ozone of 180 µg/m³ for more than 2 hours in station 1:

Begin	Duration	Extreme value
{MERGEFIELD LU(2)}		

```
[UniListe(2)]
MaxElement=1
StdMWZ=60                   {use hourly mean value}
Element(1)=Station 1,O3
MaxItem=1
ItemTyp(1)=GrenzL
OGR(1)=180
MindestStunden(1)=2        {List entry only in the case of exceeding for at least 2 hours}
SName(1)=false             {Do not list station name, it is given in the heading of the table}
KName(1)=false             {Do not list channel name, reference to ozone is given in the heading}
```

On outputting **lists with a listing of values by line for days, months and quarters**, all item types for all elements are always written **in one line**.

In the first column, the date for that day, or the first or the last day of the month or quarter, is outputted in the short format of the WINDOWS system setting.

Only the line has to be created in the table whose first column to be filled up {MERGEFIELD LU([number])} is to be entered. Lines, which are needed, will be added automatically.

Program functions

An example of such a list for outputting by line of monthly mean values derived from the daily mean values and 98% percentile of ozone for 3 stations:

	Station 1		Station 2		Station 3	
Time period	Mean	98%-Perc	Mean	98%-Perc	Mean	98%-Perc
{MERGEFIELD LU(3)}						

[UniListe(3)]

Zeile=M

{the monthly value should stand in the lines}

StdMWZ=1440

{Monthly values are derived from daily mean values}

MaxElement=3

Element(1)=Station 1,O3,3,0

{3 place precision, no places after the decimal point}

Element(2)=Station 2,O3,3,0

{3 place precision, no places after the decimal point}

Element(3)=Station 3,O3,3,0

{3 place precision, no places after the decimal point}

MaxItem=2

ItemTyp(2)=Perz

{for 98%-percentile, Perc(2) does not have to be specified, standard}

For a quarterly report e.g. the following table would be produced:

	Station 1		Station 2		Station 3	
Time period	Mean	98%-Perc	Mean	98%-Perc	Mean	98%-Perc
01.01.98 - 31.01.98	30	40	35	45	40	50
01.02.98 - 28.02.98	31	41	36	46	41	51
01.03.98 - 31.03.98	32	42	37	47	42	52

For the output of 8-hour mean values by the day you have to declare:

[UniListe(9)]

MaxElement=2

Element(1)=Station 1,O3,3,0

Element(2)=Station 2,O3,3,0

MaxItem=1

ItemTyp(1)=MW8H

For a week report the following list will be generated (for example):

You have to declare four columns per element (although MaxItem=1) additional to the date column!

	Station 1				Station 2			
	0-8	8-16	16-24	12-20	0-8	8-16	16-24	12-20
05.01.98	81	76	52	59	75	60	40	41
06.01.98	76	68	28	59	71	63	22	48
07.01.98	11	29	50	41	13	14	34	22
08.01.98	46	54	42	56	36	34	22	34
09.01.98	36	37	22	45	26	30	10	32
10.01.98	0	24	14	33	1	17	2	20
11.01.98	5	24	8	27	0	15	3	19

14. Data structure and file administration

All necessary initialisation files (*.INI), the help file (MEVIS.HLP), the WORD dot file for the report (MEVIS.DOT), the executable program file (MEVIS.EXE), the libraries to work with dongle (API_1LNM.DLL) and to make reports (RTF_DLL.DLL) were placed at the installation directory during the installation.

This directory gets a subdirectory \DAT. This directory is the "father" of all annual directories (two digit date as designation) that contain the diurnal files (stored 1-day-mean values) of the components sorted by stations.

Every annual directory has monthly directories (two digit monthly number as designation). Here the program lays down the organisation files with the listing of the mean value periods of the received mean values and the universal time files with the received mean values for each component sorted by stations.

File name	Explanation
Initialisation files 	The user shouldn't never change, move or delete these files. They are the base of the right functionality of MEVIS.
MEVIS.INI	Contains the general configuration data of the system and makes possible the automatic restart of the computer with all settings after an interruption of the program by the user or a malfunction (e.g. power failure).
(XXXXXXXXX).INI	Global initialisation files, (XXXXXXXXX) is the short designation for the validity region.
Logbook file	
LOGB(MM)(YY).TXT Format since 01.01.2000: LOGB(YY)(MM).TXT	Logbook file of the month (MM) of the year (YY). The creation of monthly logbook files occurs automatically. The following events are stored in the logbook with date and time: <ul style="list-style-type: none"> • Program start and program end • incorrect code inputs • Changes of the configuration (at changing of date and time the new setting is token down) • the arrive of more unfavourable alarms or warnings than already displayed
Document pattern file	
MEVIS.DOT	You need the document pattern to edit a report file (in RTF format) by the word processing program WORD for WINDOWS. If you copy the file to the WONWORD patterns directory of your PC, WORD detects this pattern automatically.
Diurnal file	
(SSSS)(YY).T(NN)	Stored 1-day-mean values of the component (NN) of the station (SSSS) of the year (YY).
Organisation files and universal time files 	You must copy or remove the organisation and universal time files of a component of a station always together. The use of the integrated backup (look at "Accessories") guarantees the adherence of this demand.
Organisation file mean values (SSSS)(YY)(MM).O(NN)	Lists the mean value periods of the mean values of the component (NN) of the station (SSSS) of the month (MM) and the year (YY) in the order of their chronological appearing.
Universal time file mean values (SSSS)(YY)(MM).U(NN)	Lists the mean values of the component (NN) of the station (SSSS) of the month (MM) and the year (YY) in the order of their chronological appearing.
Organisation file measured values (SSSS)(YY)(MM).X(NN)	Lists the mean value periods of the measured values of the component (NN) of the station (SSSS) of the month (MM) and the year (YY) in the order of their chronological appearing.

Structure of data and files

File name	Explanation
Universal time file measured values	
(SSSS)(YY)(MM).Y(NN)	Lists the measured values of the component (NN) of the station (SSSS) of the month (MM) and the year (YY) in the order of their chronological appearing.

15. Display text and error messages

15.1. General

Message	Explanation
"There is no HARDLOCK E-Y-E safety module for MEVIS on the parallel port. Error no.: 1"	MEVIS was started without Dongle on the parallel port or the Dongle was removed from the computer during the program worked. With that message the program will be terminated.
"No station configured."	All operation acts, which refer to a station, cause this message, if no station is configured in the menu item "Configuration / Stations".
"Drive of the path xxx not ready. Use TEMP path while program starts (recommended)?"	This message occurs mostly if the network drive with the data path is not ready. Because of much file access at the program start you have to wait a long time. Use the TEMP while program starts and choose another (reserved) path via menu item "Configuration/Data path".

15.2. Menu items Graphics, Lists, Report

Message	Explanation
"Can't create path." "Can't open file." "File already exists." "Positioning error." "Can't determine file pointer." "Can't determine file length." "Can't write into file." "Can't read out of the file." "Can't cut file." "Can't close file." "Can't rename file." "Can't delete file." "File not found." "Existence of a file not determinable. Invalid or failed drive."	All this error messages show irregularities at the data files. As a rule the name of the respective data file is shown also in the error window. Please make a note of the name, the error message and the operation, on that the error occurred, and contact the software service company.
"Warning! Disk memory runs short!"	This message is really a warning, which means the desired operation (for example to make a graphic) will be done still duly. If the disk memory goes under 1 MB, this warning occurs at every write access.
"Not enough free disk memory."	You have ignored the above warning. The program cannot carry out the desired operation.
"Are you quite sure to cancel this program?"	At heavy errors the program offers you its termination. Occurs this message at full hard disk, you should terminate the program and make free space.
"Access to xx data presently denied. Please wait..."	To prevent write access to an opened file a watching cycle runs. It will be terminated in about 30 seconds. The message box will be closed automatically.
"File access error"	The access is presently blocked.

15.3. Menu item Graphics

Message	Explanation
"First generate a rectangle with the left mouse button (press and move)."	You tried to use the zoom function without to define the part of the curve to zoom.

15.4. Error messages in the communication window

Message	Explanation
Date Time Communication error: No communication object configured	Error in the initialisation file.
Date Time Communication error: KomObj(x): Object not configured. Useful only for demonstration.	Error in the initialisation file.
Date Time Communication error: No timer for communication.	Other applications occupied the available timers of the PC. Terminate these applications and start MEVIS again.
Date Time Communication error: KomObj(x): No or invalid port address configuration for this object.	Error in the initialisation file.
Date Time Communication error: KomObj(x): No port parameter configuration for this object.	Error in the initialisation file.
Date Time Communication error: KomObj(x): No parameters for modem initialisation for this object.	Error in the initialisation file.
Date Time Communication error: COMx- Set port not useful.	The COM port is either occupied by another application, faulty or does not exist physically.
Date Time Communication error: COMx- Communication port error (modem or device unplugged or off etc.).	Remove the error and initialise the modem subsequently.
Date Time Communication error: COMx- No reply of the command. Device(s): <Device name>	The measuring device sent no reply to a command.
Date Time Communication error: COMx- Time out. Communication break. Device(s): <Device name>	MEVIS polls automatically the measuring device and the device sent no answer during the configured time out.
Date Time Communication error: COMx- Modem got no connection.	The dialled phone was not reachable or busy or the modems did not synchronise.
Date Time Communication error: COMx- Call with invalid parameters (code/identification/data type/station numbers/time parameters/configuration counter).	Perhaps a call from an outside device or an error at the transfer.
Date Time Please wait for the end of the present communication task.	Only one transfer can take place at one time.
Date Time Transfer file open error. Task terminated.	Perhaps a heavy error at the file system on the hard disk or floppy disk. Check the data carrier by test programs and remove the error.
Date Time File received. Please rename. Present filename:	Any file was sent by another computer of the system (central or station). If you don't rename it, the next file transfer overwrites this file.
Date Time Receiver has broken the transfer.	The receiver has broken the transfer.
Date Time Communication break by operator.	The operator has broken the transfer.
Date Time Communication error: COMx- Empty or no numeric file pointer in received block.	Error during a transmission.
Date Time Communication error: COMx- Task terminated after some unsuccessful attempts.	If a certain count of block transfers is unsuccessfully (no connection, receiving programm does not run) this message appears. On automatic mode the next target follows or the next request time is calculated. The operator adjusts the count in the configuration dialogue.
Date Time COMx- Busy for transfer to: Called place	Advise to the use of the port.
Date Time COMx- Busy (receiving data)	Advise to the use of the port.
Date Time COMx- Communication port available	Advise to the use of the port.
Date Time COMx- Modem hanged up and initialised	Advise to the use of the port.

Display text and error messages

Message	Explanation
Date Time Communication error: COMx- The modem signals ERROR at initialising.	The program shows this message if the modem sent the answer "ERROR" after an initialisation. Cause of this is probably a faulty AT command.
Date Time Communication error: COMx- Time out. The modem don't announce after initialising.	The program shows this message if the modem didn't sent an answer after an initialisation. Cause of this is either a transmission error, a defect or a faulty AT command.



On errors in the initialisation file please contact the software service company!

15.5. Menu item Control / Block view

Message	Explanation
"Protect display and evaluate functions with code?"	If you give the answer "YES" here the next operation act needs to enter the view code. The protection is lifted after the next view code input again.
"Code is active!"	The display and evaluate functions are code protected already.

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If you cannot solve problems with help of this documentation please contact:

Adolf Thies GmbH & Co.KG
Hauptstraße. 76

D – 37083 Göttingen

Telefon 0551 7 90 01 0
Fax 0551 7 90 01 65
Internet <http://www.thiesclima.com>
eMail : info@thiesclima.com

Or use the MEVIS hotline of the

UMAD
Umweltmeßtechnik und Datenverarbeitungsgesellschaft mbH
Ferdinand – Schultze – Str. 71

D – 13055 Berlin

Telefon 030 98 69 45 31
Fax 030 98 69 45 34
Internet <http://www.umad.de>
eMail : info@umad.de

ADOLF THIES GmbH & Co.KG

Hauptstraße 76 37083 Göttingen Germany
Postfach 3536 + 3541 37025 Göttingen
Tel. (0551) 79001-0, Fax (0551) 79001-65
Internet <http://www.thiesclima.com> eMail info@thiesclima.com



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