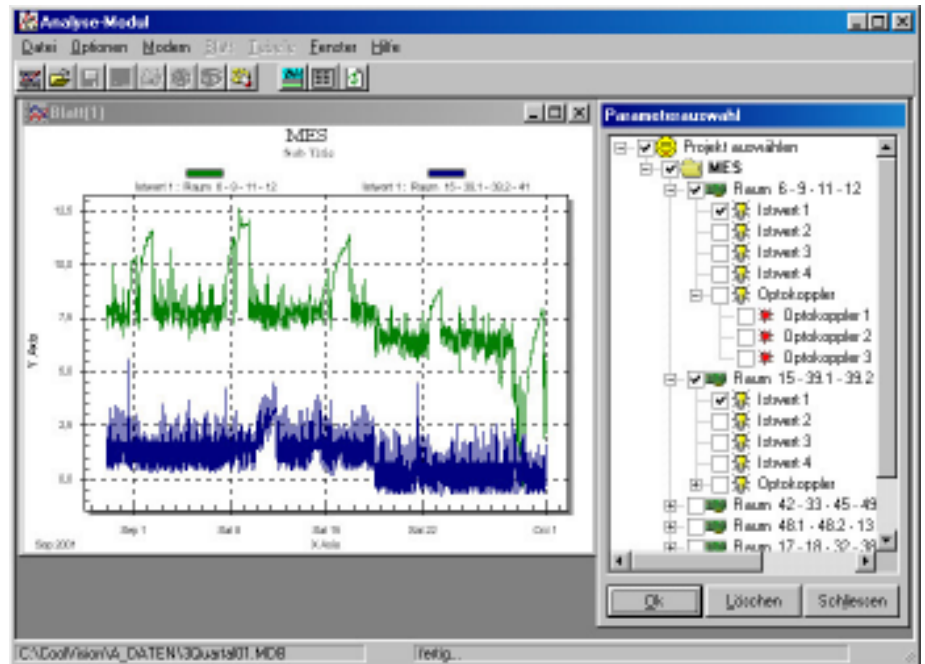


Operating- & Data Logging Software

**ELREHA**

**COOLVision**

for WIN 2000/XP®



**Networking, Remote  
Control and Data  
Logging of  
Controller Units**

**Version 1.64.1x**

Doc.No.5330009-00/11

## COOLVision-Benutzerhandbuch

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## Introduction

Dear Customer !

Modern cooling plants cause very high requirements on control systems. This implies automatically the usage of microprocessor controlled systems with very comprehensive functions.

To get a good survey over such systems or to improve it, designers decided to connect stand-alone systems by a databus system to a central PC, to get all information and to control all the functions remotely.

Very important is the ability of recording, saving and processing of data.

This program package offers comprehensive features for graphical representations, long term recording, data access and export utilities to other programs.

This manual will guide you throughout the hardware and software installations and describes the functions of each module.

Your ELREHA Team

**Note:** This manual can be found in the root directory of the CD as a '.pdf'-file for using on a PC

### Pictograms used in this document



- Common Safety Note



- Attention! Danger for Life!



- Important Information

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## System Requirements & Operating Environment

### Operation Environment

COOLVision has been designed for operation on Stand-Alone PC's, which are planned for long time data recording exclusively.

We cannot recommend a continuous operation on a PC together with software of foreign manufacturers, because COOLVision takes over the control over the operating system and initiates a warm start e.g. in case of data transmission faults.

So operating of foreign software is not guaranteed. Additionally, unforeseen interactions may occur while COOLVision operates together with foreign software, particularly with software which also uses the interfaces.

*COOLVision from version 1.64 is suitable for:*

- PC's with MS-Windows 2000 (Servicepack 4) and Windows XP Operating Systems.



*It is not suitable for:*

- older Windows OS and not-MS-Operating Systems.
- operating in a network as distributed Client/Server-System

### Hardware Requirements (recommended)

- Pentium resp. Athlon from 1300 Mhz
- The BIOS of the mainboard must be suitable for autostart after power loss and power on on modem ring signal.
- 512 MB RAM
- Harddisk: 30 MB for COOLVision, 1GB or more for data recording (the size of storable data depends on harddisk size only, 20GB or more recommended)
- CD-ROM drive
- 1\* serial interface (RS 232) for databus connection via SSC 10xx
- 1\* parallel interface (Centronics) for external watchdog (HW 101) or printer
- mouse or compatible input device

#### Optional

- 56K modem
- internal RS-485 interface card (Wiesemann & Theis recommended) for databus connection without SSC-converter
- 1\*parallel interface for external watchdog (HW 101) or printer



### Note for service contractors

#### Error Message Central Office

A company who has bought and installed this software for its customer and has a contract for monitoring the plant, has the right to install one (1) copy of the software on an own PC to let it operate as an Error Message Central Office. For this purpose you will find a license file named 'Service.lic' on the CD (please see also chapter 'Personalized License').

## The deliverable program packages and its components

The COOLVision program system is strictly modular. The modules are combined to packages, each of them covers a special task. Each package can be bought individually, so that the used software matches your individual requirements and demands. It can be completed at any time.

*The single packages:*



**COOLVision-Standard:** (consists of the modules MES, MDM, WDM, DBM and Analyse)

This package contains the basic functions. It contains all features for connection to a controller network, remote control of the controllers as well as data acquisition and recording to a database. It enables to display saved data as diagrams or tables and to print them.



**COOLVision-Error Message Package** (consists of the modules MES, MDM, WDM, SMM and SBM)

This package contains the complete error and failure message system including forwarding and operation via modem. It can be used either stand-alone or to complete the Standard Package.

## COOLVision - Operation Examples

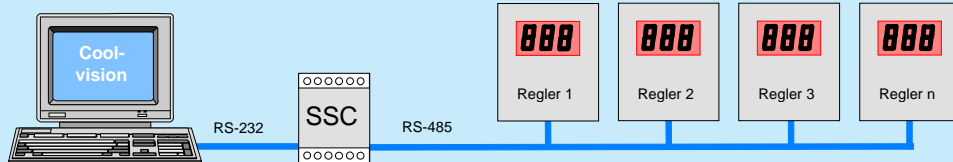
Here you can find some examples how your units could be build on site. The listed COOLVision-modules are absolutely necessary for operation.

### Controller Remote Operation only

#### COOLVision

- MES
- WDM

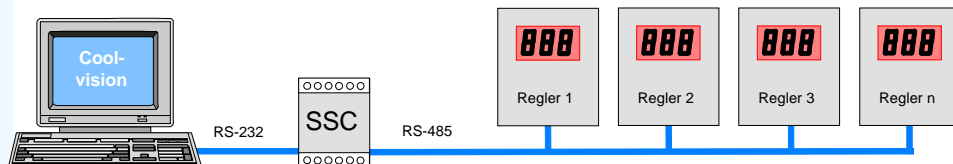
Configuration:  
See chapter "First steps"



### - Controller Remote Control - Data Recording

#### COOLVision

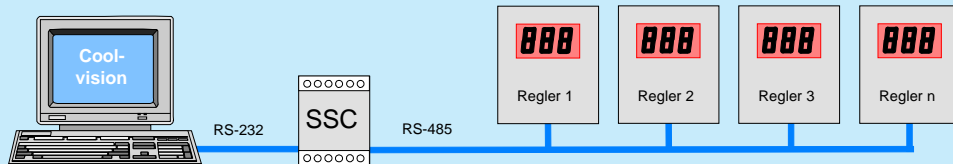
- MES
- DBM
- WDM



### - Controller Remote Control - Recording of error messages

#### COOLVision

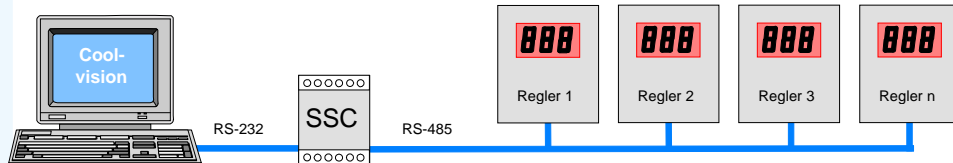
- MES
- SMM
- WDM



### - Controller Remote Control - Data Recording/ Analysis (Diagrams, etc.)

#### COOLVision

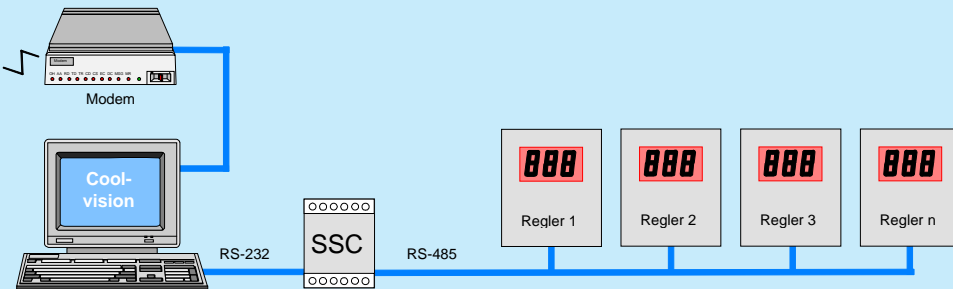
- MES
- DBM
- Analyse
- WDM



### - Controller Remote Control - Recording of error messages only - Forwarding of error messages

#### COOLVision

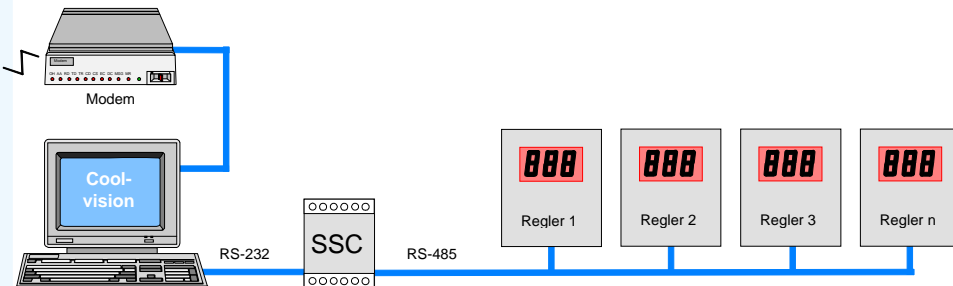
- MES
- SMM
- MDM
- WDM



### - Controller Remote Control - Recording of error messages - Forwarding of error messages - Data recording - Data analysis (Diagrams, etc.)

#### COOLVision

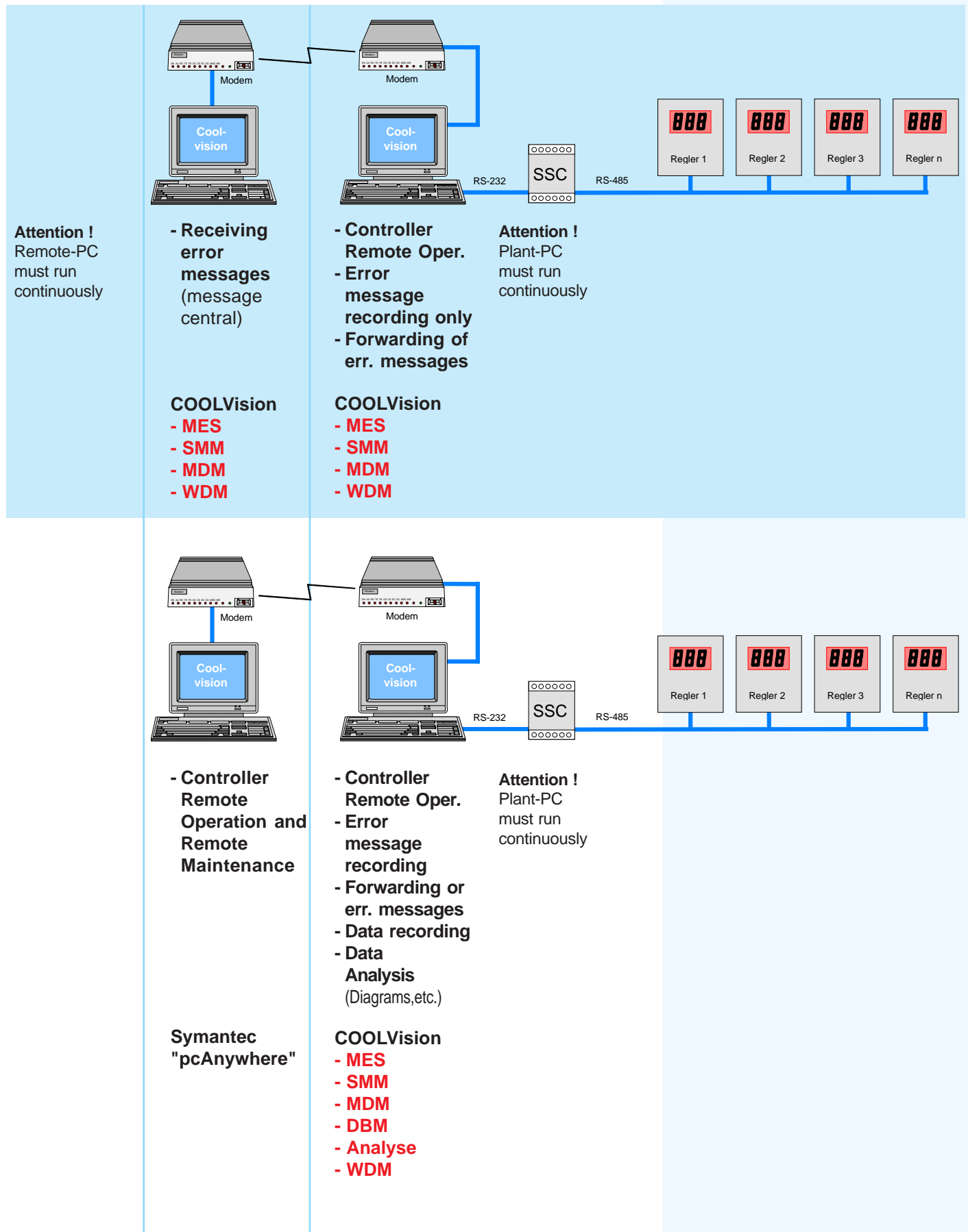
- MES
- SMM
- MDM
- DBM
- Analyse
- WDM



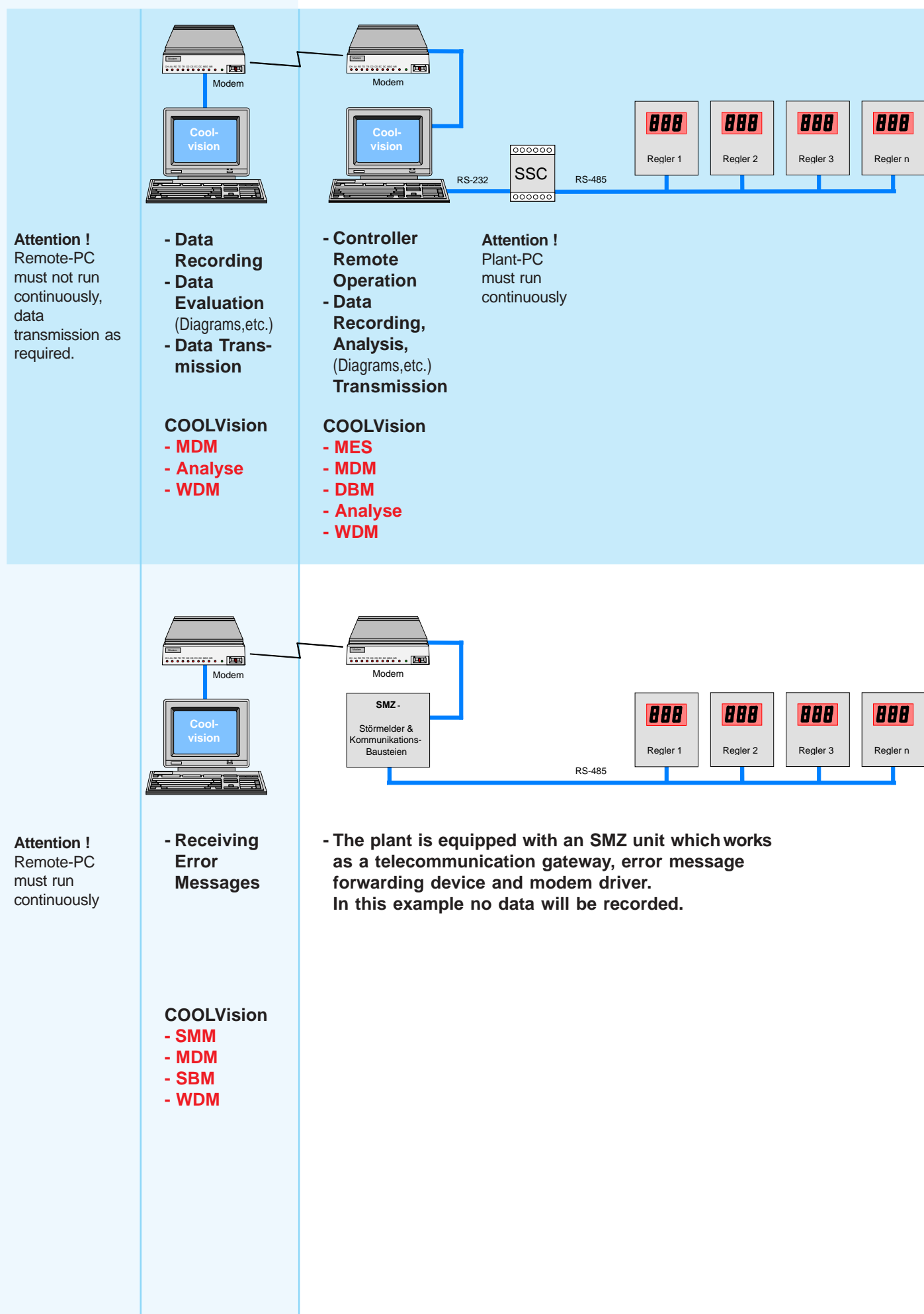


## COOLVision - Application Examples

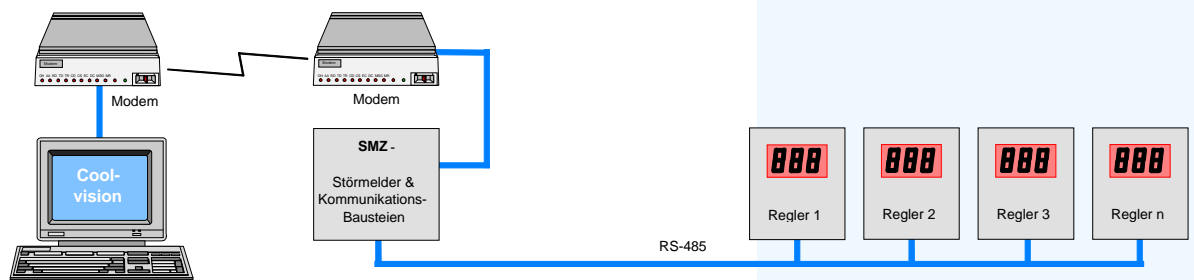
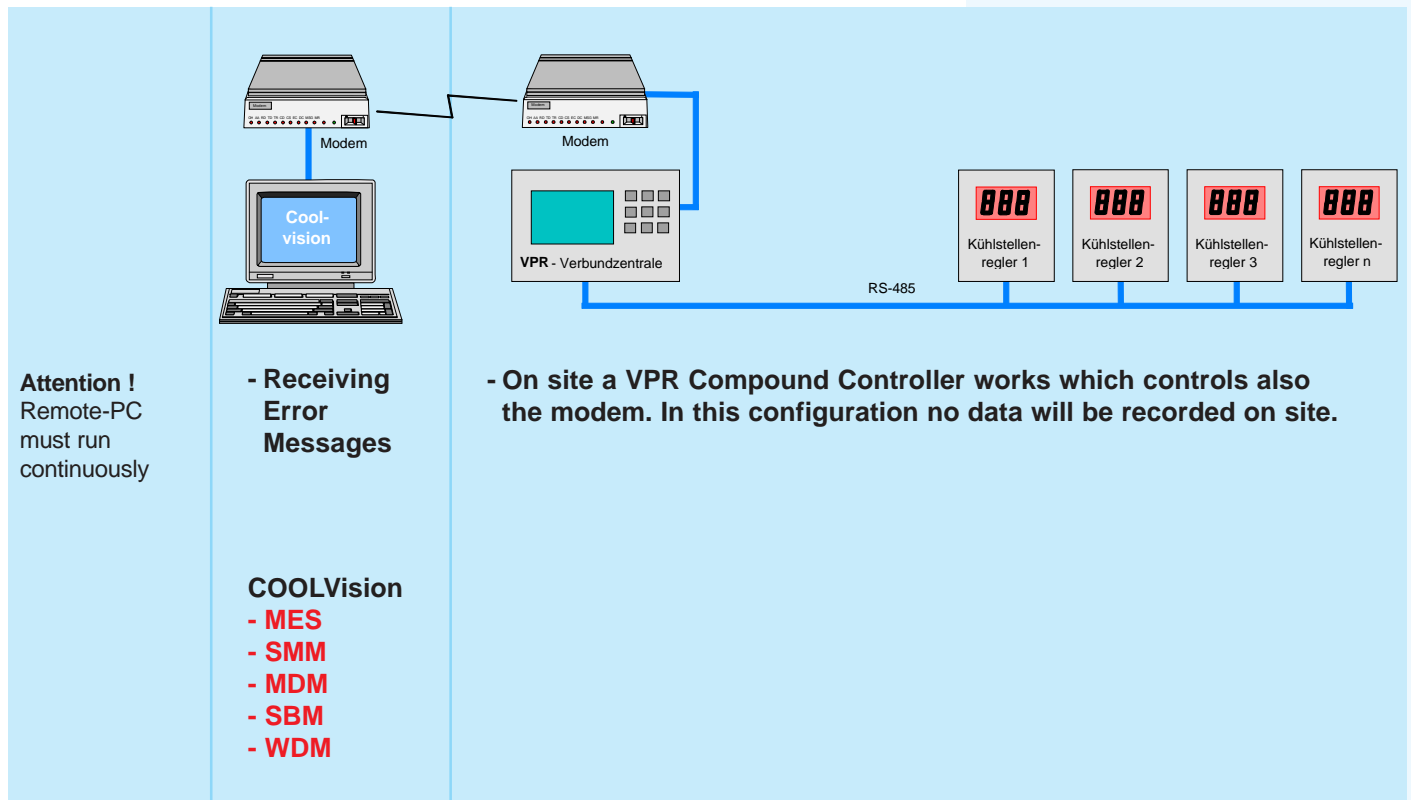
These examples show how your refrigeration plant can be accessed by remote PC's. The listed COOLVision-modules are absolutely necessary for operation.



## COOLVision - Application Examples



## COOLVision - Application Examples



- Reading and setting of parameters

### COOLVision

- MES
- MDM

- The plant is equipped with an SMZ unit which works as a telecommunication gateway, error message forwarding device and modem driver. In this example no data will be recorded.

## Software - Installation Version 1.64.1x

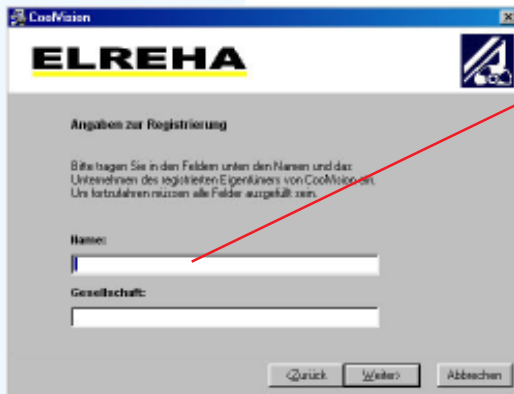
### Important Notice



This software version is not longer suitable for MS-Windows 95 und 98 A.  
Make sure that your operating system is MS-Windows 2000 or XP

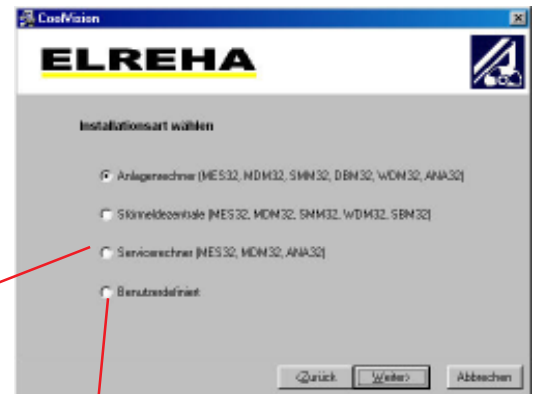
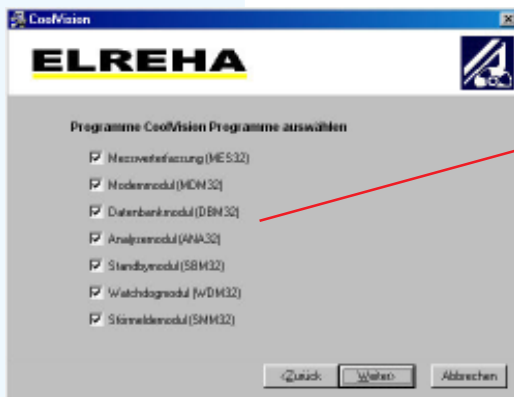
### Automatic Installation

If you insert your COOLVision-CD to your CD-Rom Drive and the 'Autostart'-Option is active (standard), then Windows starts the file "cv\_setup.exe" automatically and a welcome screen opens.  
For installation please follow the installation instructions below.



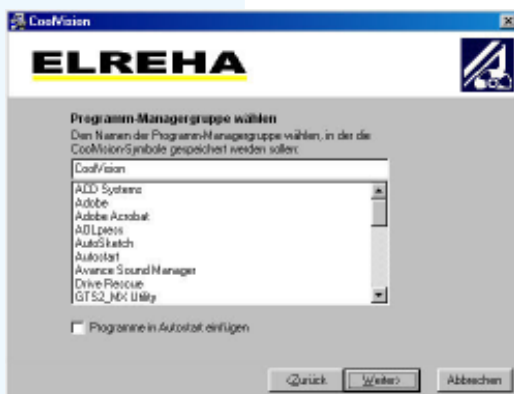
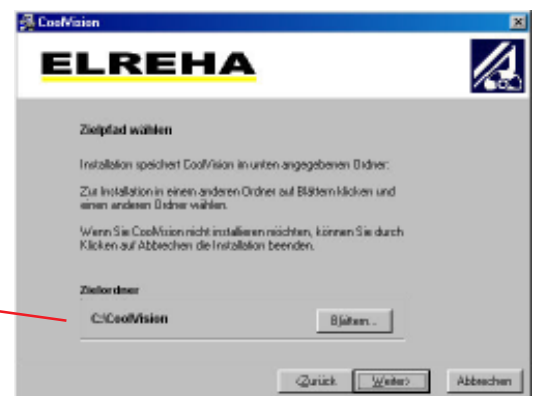
Here the standard name appears which can be edited if necessary.

The next windows asks for application purposes.  
Number and kind of software modules to install depend on your answer.



By selecting 'user defined' you are able to install individual software modules.

The following window asks for the installation folder.  
We recommend to use the default folder.



The next decisions are:

- The desired name of the program group
- Should a link to the module be copied to the 'autostart' folder to ensure an automatic start after Windows has been started ?

After that, the installation procedure begins.

## Software - Installation Version 1.64.1.x

### Manual Installation

The installation procedure can be started manually by starting file 'cv\_setup.exe' in the root directory of your CD.

### Failure Message

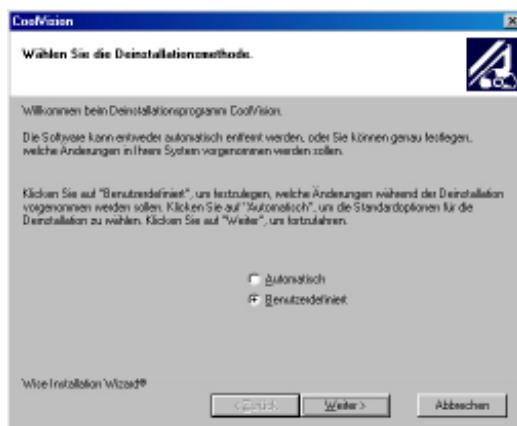


COOLVision expects a specific state of development of your Windows OS. While installation, the software checks this state. If necessary parts are missing, the setup procedure will be terminated. Please update your system now, the most important updates you will find on the CD or can be downloaded from the website of Microsoft Corp. Then restart installation by starting file 'cv\_setup.exe' again.

### Handbook

This handbook is available on the CD as a file named "handbook164\_10.pdf". To read or print this file you need the "Adobe Acrobat Reader" which can be downloaded from <http://www.adobe.com>.

### COOLVision De-Installation



Open 'system properties/software/installation-de-Installation' and tag 'COOLVision'. The setup-window opens. Please remove the marks from the software-module(s) to de-install. Click on "weiter" to start De-Installation.



### Personalized License

If the software starts or the 'Info'-button is pressed, an information box with the licensed owner of this software must appear. This information is stored in a file named e.g. "customer.lic" on your data medium. The file also contains information about the purchased software modules.

If your data medium doesn't contain a license file, please demand one from us. This is very important for you because:

1. Without a license file the installed software is a DEMO-version and stops working after 60 days
2. Software versions without license are illegal
3. The customer gets no Technical Support

#### Later Licensing

Please copy the new license file to the COOLVision directory (standard: c:\program\coolvision) and delete older license files. After successful transfer of the file to your harddisk, please click on the '.lic'-file with the right mouse key, choose properties and remove the attribute "READ ONLY".

Now start COOLVision and click on the Info-button in the menu-bar. Now an Information about the OWNER of this software appears on screen.

#### License Agreement for service contractors

Service contractors which have bought and installed this software for customers have the right to install one copy of the software on an own PC operating as Error Message Central Office. Therefore, please use the license file 'service.lic' on your CD.

## First Steps with COOLVision

Here we will describe the first steps with COOLVision-MES. We imply a correct installation of the controller units and that a functioning data bus is available. For further information please read the detailed chapters.

The following steps must be worked out now:

1. **Select your application** (see application examples)
2. **Start COOLVision MES**
3. **Select language** (default = german)
4. **Start connection to the controller units**
5. **Designation of controller positions**
6. **Storing of adjustments as a 'project'** (= plant)
7. **Defining user rights**
8. **Call up controllers / reading and adjusting of parameters**
9. **Start of data recording** (if necessary only)

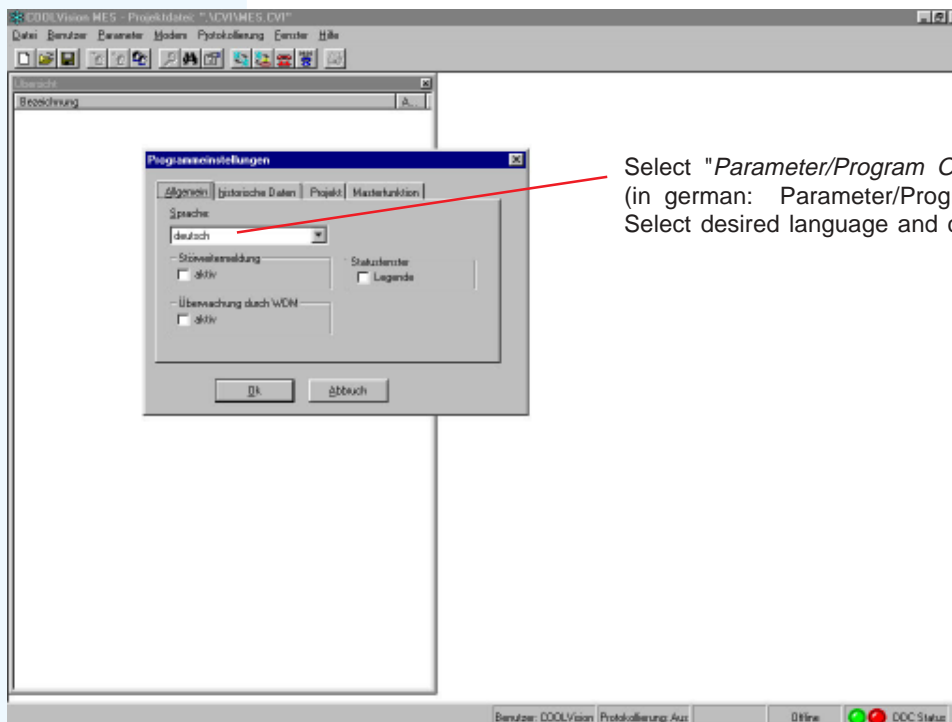
## 2. Start COOLVision-MES

For the first steps it is quite enough to start COOLVision-MES manually. For continuous operation MES and the additional modules must start automatically after windows has been started. This can be done either by a link in the 'Autostart'-folder as well as by a start-up script (see chapter: 'Automatic Start').

All installed modules you will find under "**Start / ELREHA / COOLVision**". Start the necessary modules for your application, for this first steps start MES only.

## 3. Select language

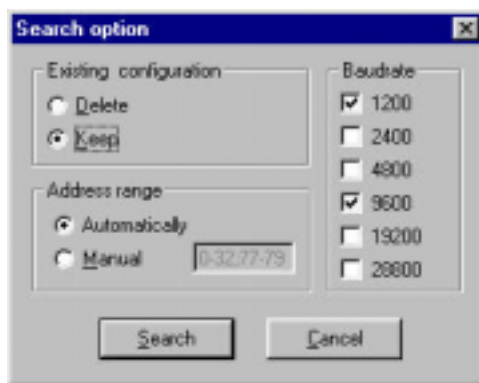
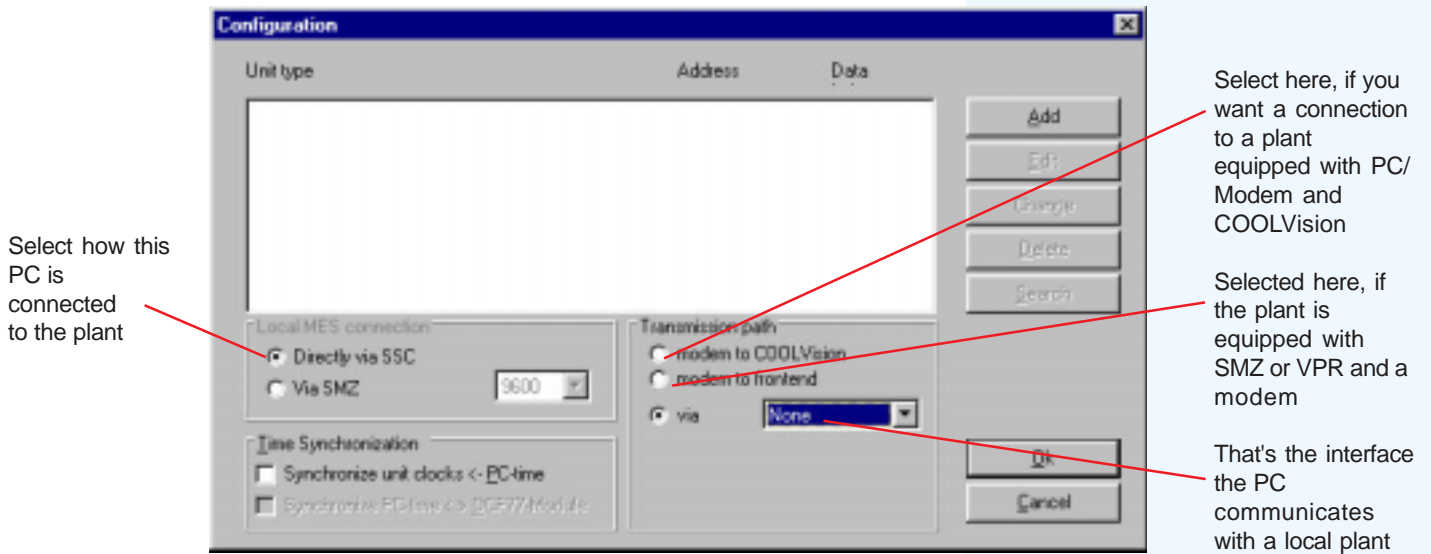
The user interface of COOLVision can be switched to 4 different languages. The default language is always german, if you need another language, do the following:



## First Steps with COOLVision

### 4. Start connection to controller units

Open "Parameter/Plant Configuration". Here you define PC-interface and connection method.



After selecting the correct PC-interface click on "Search", the 'Search option' window opens.

Normally the standard entries are ok and with a click on "Search" the window will close.

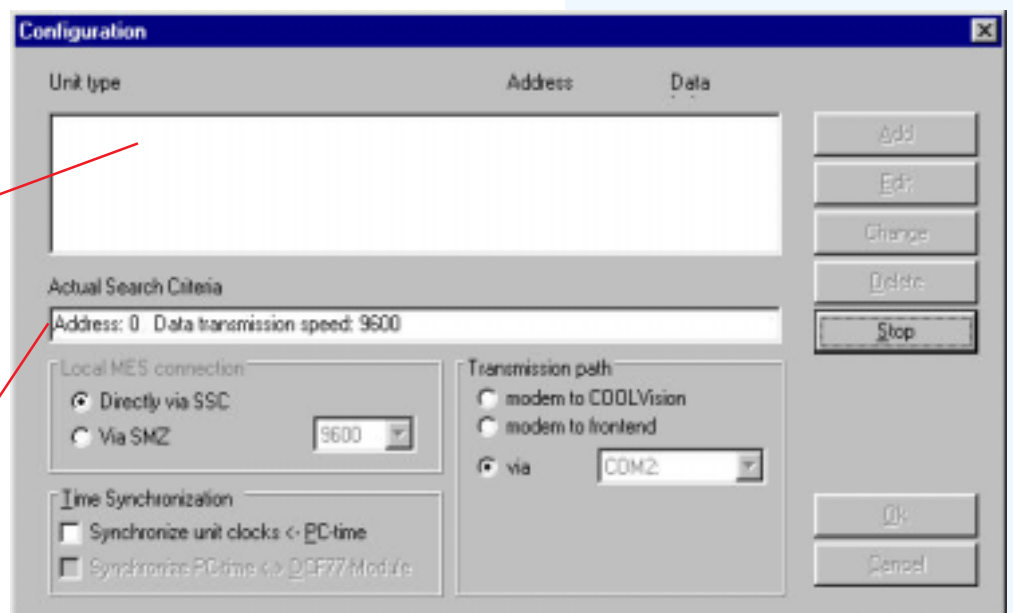
Now MES begins to scan the databus for existing controller units.



Because modern controller units work with 9600 baud only, searching speed will increase if you remove the marks at 1200 baud.

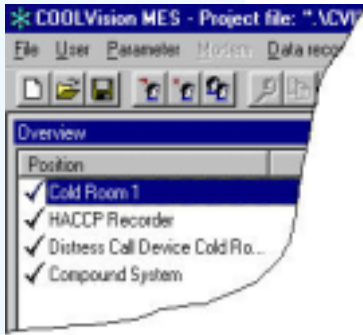
Every time a controller unit is found, it will be displayed here with its name, address and baudrate.

While scanning, the current unit address and baudrate will be displayed here



While MES is searching for controllers on the databus, only the button „Stop“ is available. If this button is pushed, automatic search will stop immediately.

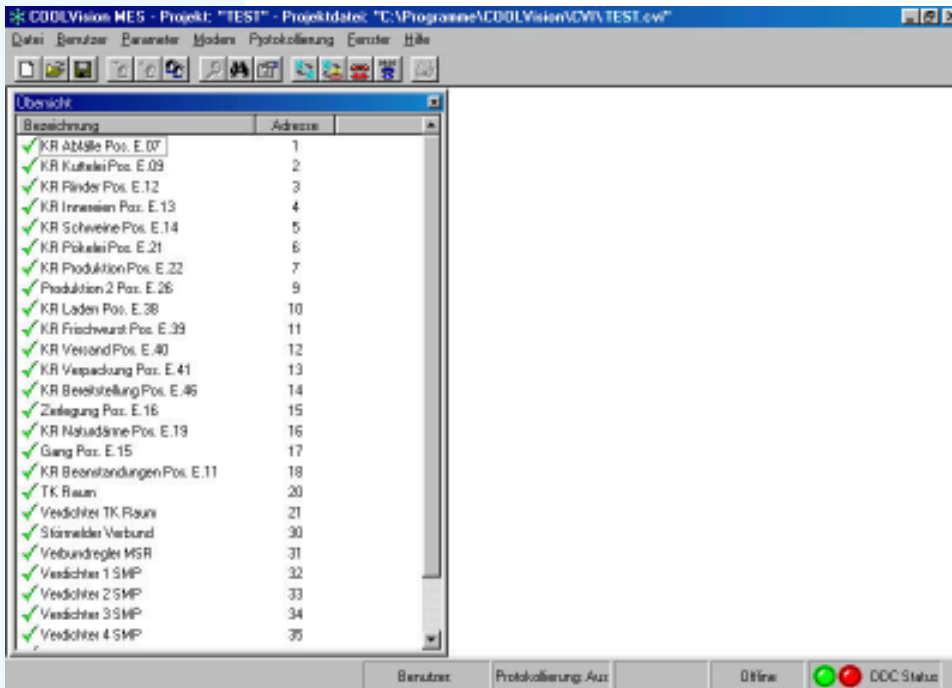
## First Steps with COOLVision



Upon completion of search for units and upon having closed the configuration window with "OK" you get an overview with all found controller units and controller types.

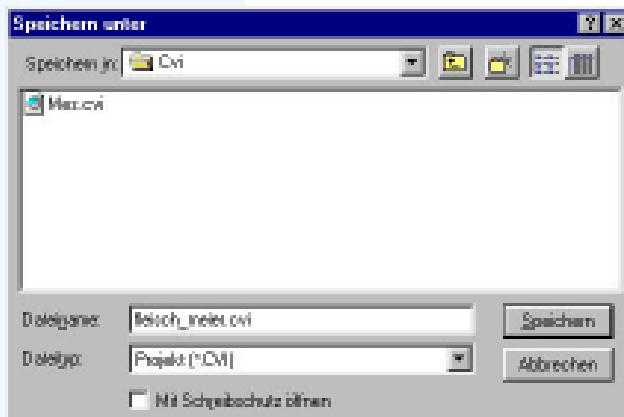
### 5. Entitle controller positions

Mostly the controller units get the position names from the plan. To do this, select the unit to change and choose "Parameter /Controller Name". Now the name of the unit can be changed as desired.



### 6. Store settings as 'project' (= plant)

Upon designation of all controller units, the current configuration can be stored as 'Project' (e.g. plant name). This is advisable, if more than one plant must be operated from this user interface.



To choose an individual name, open 'File', click on 'Save Project As' and enter a name. The file type is predefined as ".cvi".

**i** If you click on 'File/Save Project' without choosing an individual name, the current configuration will be stored as "mes.cvi" automatically.



## First Steps with COOLVision

### 7. Defining User Rights

As long as no specialized rights and passwords are assigned to single users, this user has unrestricted rights to start the software and to open a 'project'. That means this user has full access to all information of the controller units and is able to change all parameter values.

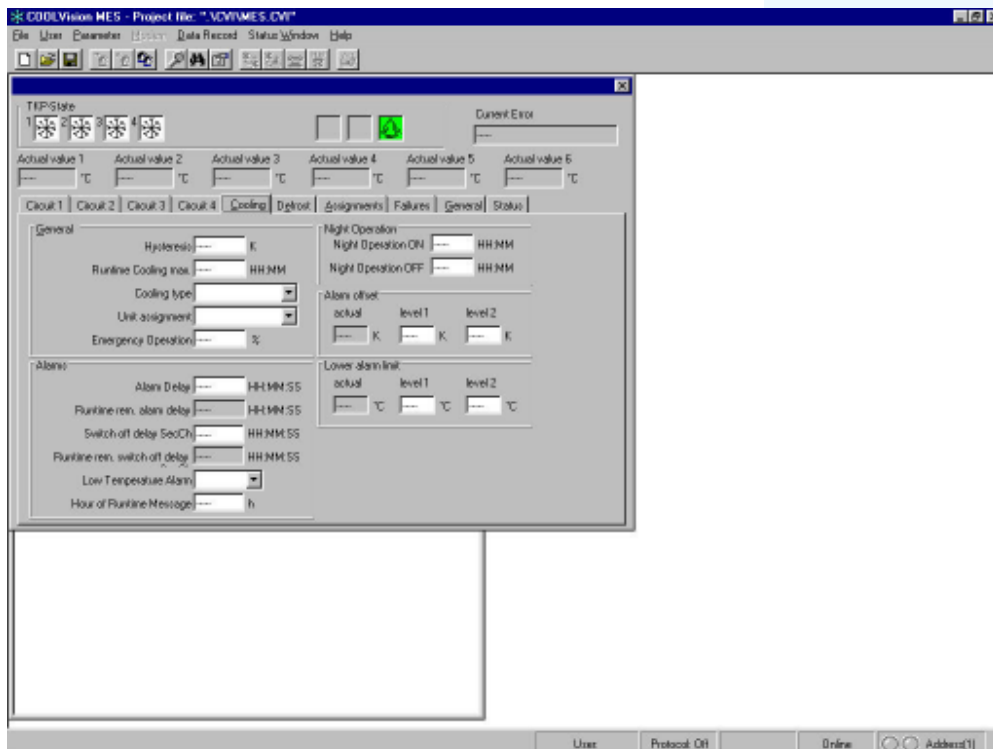
For the first steps in COOLVision restrictions are not necessary. Please read chapter 'User Administration' for further information.

### 8. Getting in touch with controller units / reading and adjusting of information

A double click on one of the entries of the overview window opens the parameter window of the assigned controller unit. Here all values of the unit can be read or changed.



New entries will be stored after a push on "Ret" on your keyboard.



### 9. Begin of Data Recording

If necessary in your application, switch on data recording function by choosing "Data Recording / Start Recording". All parameters selected in window 'Data Recording / Recording Option / Selection' will then be stored in a database which can be read at any time.



## Common Functions • Automatic Start

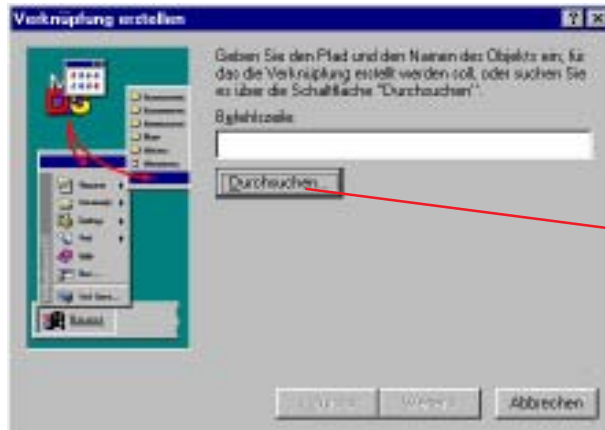
### Automatic Start

To start software automatically while power-on of the PC (this is very important for unmonitored PC's), a link to every software module must be created in the **Autostart**-folder.

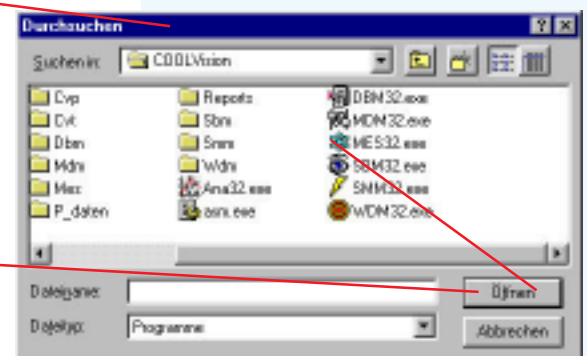
The shown screen dumps can differ a little bit depending on the used MS-Windows version.

Create a link

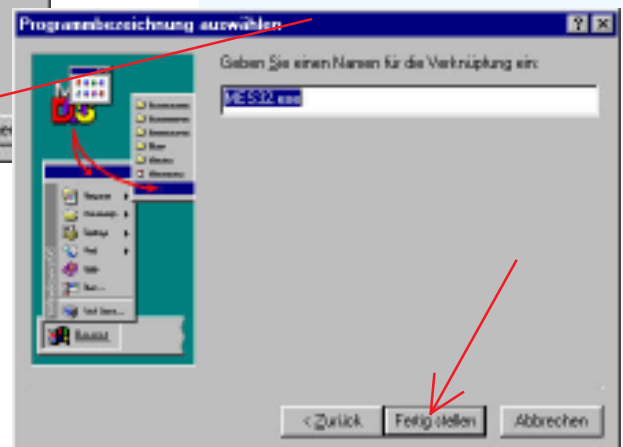
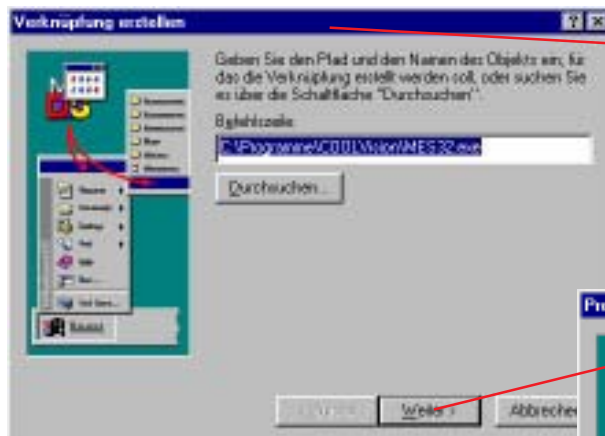
- Open your "Windows-Explorer"
- Shift to directory "*c:\Windows\Startmenü\Programme\Autostart*"
- Click with right mouse button into the free area of the right Explorer window and choose "*Neu/Verknüpfung*"



- Choose "*Durchsuchen..*" and search for directory "*Programme/Coolvision*" .



- Select desired module and push "Öffnen"

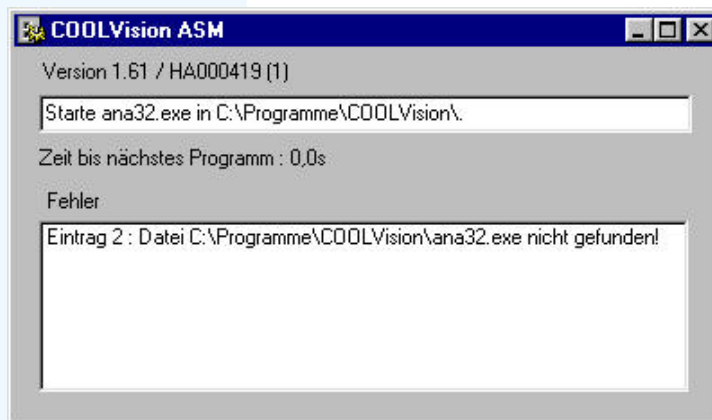


At the end you can fix any name for this link.  
While Windows starts the next time,  
this module will be started automatically.

## Common Functions • Automatic Start

### Automatic start in a certain sequence (for special applications or if there are any problems)

Especially on slow PC's you may get an error message while all COOLVision modules start at the same time. To prevent this and to ensure that the coolvision modules start in a specific sequence the tool 'asm.exe' can be used.



If you create a link to 'asm.exe' this program allows you launching of the different COOLVision modules in a certain sequence and sequence time, i.e. you can predefine the delay up to the launch of the next module. If some modules are absent, an error message appears but without further consequences.

#### Inside COOLVision

"asm.exe" get its information from file "asm.ini" which is a pure text-file. Experienced windows users could edit this text file with a common text editor (e.g. notepad) set the sequence as needed as well as time intervals for the automatic start-up.

```
[AUTOSTART]
STARTINTERVALL=30
PROGRAMM_0=mes32.exe
PROGRAMM_1=mdm32.exe
PROGRAMM_2=ana32.exe
.
.
.
```

Time delay (msec) before next module starts  
1st. program to start  
2nd. program to start  
3rd. program to start  
etc.

# User Administration

## Tasks and Functionality

User administration gives different system users different access rights. Access rights define how a user is allowed to access and use the system, e.g. the service contractor would have another system access rights and passwords as an employee of the supermarket.

Moreover, the administration of the rights i.e. the “user administration” itself is flexible depending on the project.

For every project on the PC a specific user administration is assigned. For example, a service contractor would get the rights to change the setpoints in project “*supermarket 1*” but not in project “*supermarket 2*”.

If the “user administration” is activated for a project, all set rights will affect to all COOLVision software modules.

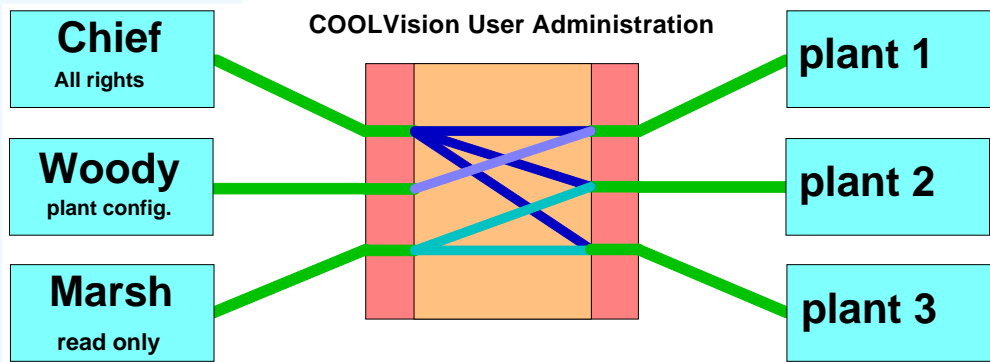
**Common Functions • User Administration**

**Overview**

Complex systems that offer a lot of features and functionalities and by this some failure sources, must be usually operated from qualified personnel.  
 Persons who are not able to estimate the effect of their system settings, must not be allowed to access the system or to change values. To do this, Coolvision offers you the “user administration” function, which predefines the access rights of each user. As long as no rights are assigned, all users of the system have all rights. That means, every user is able to see and to change all values of a controller. To prevent this, i.e to allow only specific persons or groups to work with the system, they must login with a password. Users which have no password have less possibilities to move through the system. To specify rights more exact, they can differ from project to project. Each project file has its own access rights.

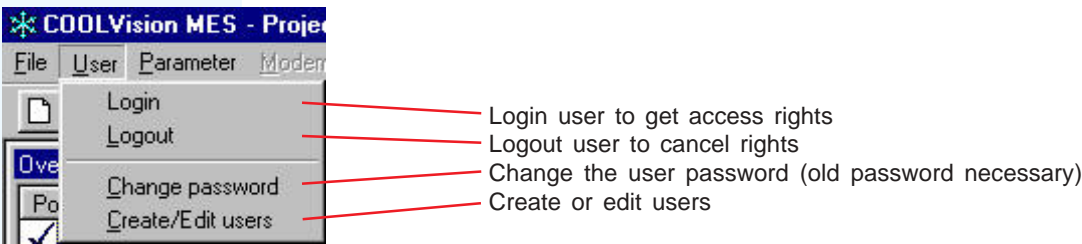
*Examples* Let us suppose that we have 3 refrigeration plants to use with COOLVision: plant 1, plant 2 and plant 3. Furthermore supposing that there are 3 users who would access these plants:  
 The Chief-User (the refrigeration system contractor), Mr. Woody (plant configurator) and Mr. Marsh (house keeper/janitor: allowed only to readout values).

- Chief-User has rights to access plants 1 to 3. Moreover he is allowed to assign access rights to new users.
- Mr. Woody is allowed to access plant 1 and is allowed to configure it.
- Mr. Marsh has the task to read out the values of plants 2 and 3 (not plant 1), i.e. he is not allowed to change values in the plants.



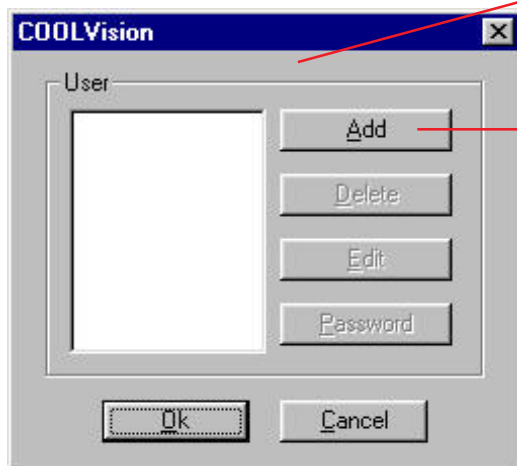
**The COOLVision “User Administration”**

The COOLVision user administration can be found in the “USER” menu of the most modules .  
 Users are able to log in (or log out) at every running module to get the assigned access rights for all modules.



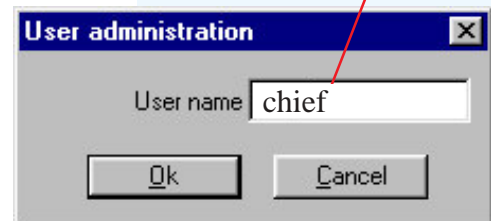
## Common Functions • User Administration

### Create / Add a new user

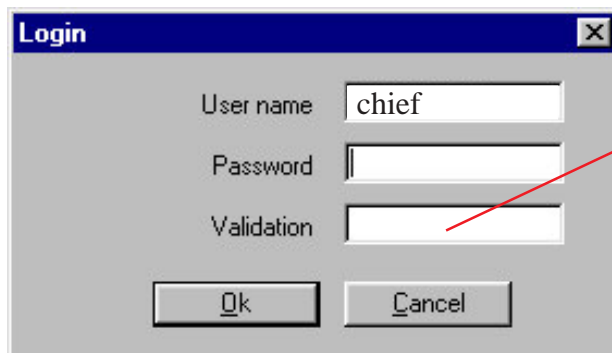


„**User/Create/Edit users**“ launches the register dialog box. Here new users will be entered, all registered users will be displayed.

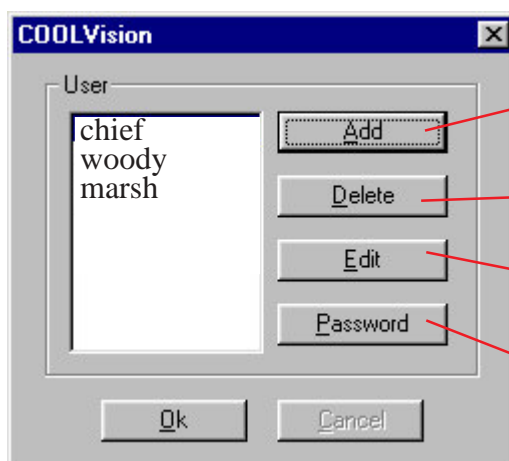
„**Add**“ Input of new user name. This is the name for a later login.



**Note:**  
COOLVision does not distinguish between capital or small letters.



After you have entered user name and desired password for this user, repeat the password in the “Validation”-field.



Enter new user

Delete highlighted user

Assign rights to highlighted user

Change password of highlighted user

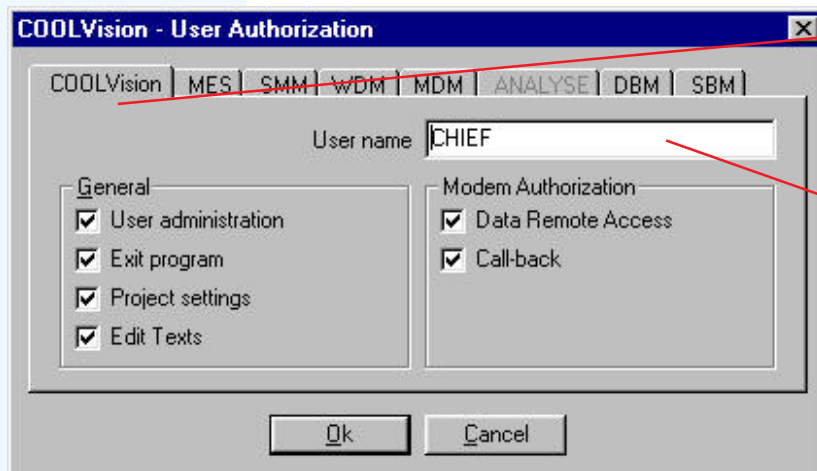
After creating the user, the name appears in the list field of the dialog box. At this moment, the user has no specific rights. The next step is to assign some access rights for the new user.



**Important:** At least one user (administrator) must have the right to edit and to change the user administration. If not, the dialog box (= User Administration) cannot be closed.

## Common Functions • User Administration

### Edit User Rights



In tab 'COOLVision' you will find rights which affect all modules of the COOLVision-system.

The rights selected here are valid for this user only.

In tab "COOLVision" common rights can be assigned to selected users. There are rights which affect all system modules and rights which affect single modules only.



Please reflect the specific user rights carefully to avoid false operation respectively system damage.

#### The individual access rights

##### *User Administration*

The displayed user has the right to register a new user, to delete a user and to edit the rights of an available user.

##### *Exit Program*

The displayed user has the right to terminate running COOLVision-modules. This affects all modules, **because without this right COOLVision cannot be shut-down.**

##### *Project Settings*

The user is able to open and to save new projects as well as to open and to close any other project.

##### *Edit Texts*

The user has the right to change and to edit texts in the individual dialog boxes. In many of the COOLVision-screens the standard default text can be edited.

For example: TAR1810 -> Refrigerated Case 1. This text then will appear in all other modules.

##### *Data Remote Access*

The user is allowed to access to another computers via modem to read data.

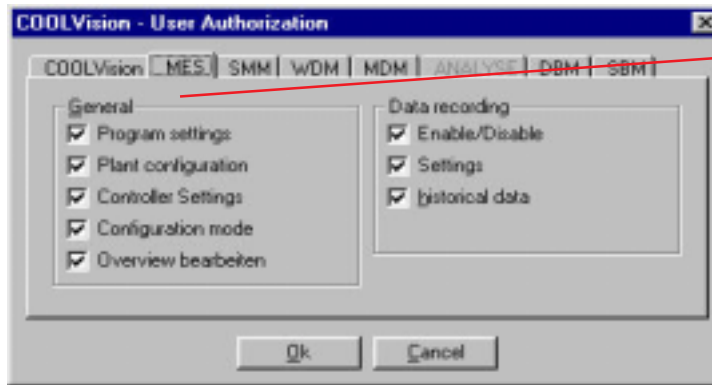
##### *Call Back*

The user is allowed to call another PC by modem and to cause this PC to call him back.

This may be interesting for refrigeration plant service contractors who want to save telephone costs.



## Common Functions • User Administration



All rights in tab MES affect the functions of the MES-Module of COOLVision software system only.

### The individual rights for MES:

#### *Program Settings:*

The user has the right to change program adjustments

#### *Plant Configuration:*

The user is allowed to set or to change plant configurations, i.e. insert new controllers, delete controllers or to rename existing controllers.

#### *Controller Settings:*

The user is allowed to change controller settings (for example: Setpoints, etc...).

#### *Configuration Mode:*

The user is allowed to activate the configuration mode of a controller.

#### *Turn ON/OFF:*

The user is allowed to enable/disable recording mode in the MES module ON or OFF .

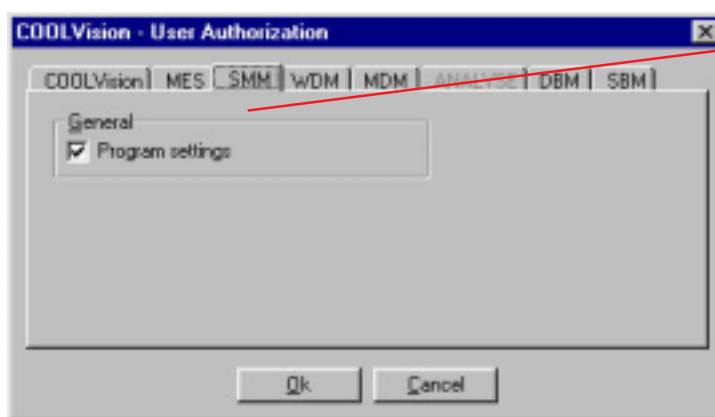
Please note that, if recording mode is switched OFF, no data will be recorded!

#### *Adjustments:*

The user is allowed to set or to change recording settings like recording time interval, selection of values to be recorded, etc...

#### *Historical data:*

If controllers with integrated data loggers are used, it is possible to read out all data stored in their memories.



In tab SMM you will find all rights which affect the software module SMM.

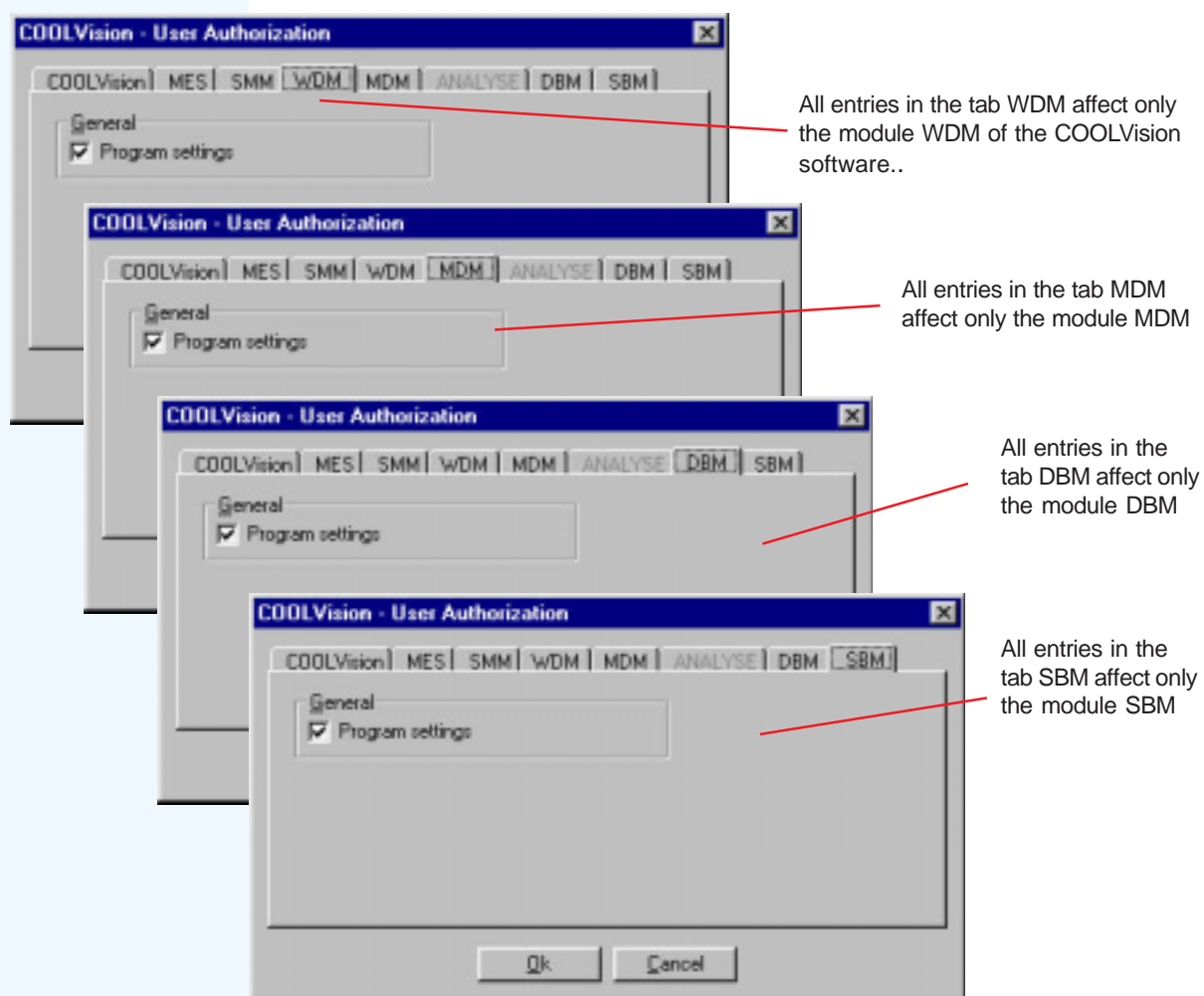
### The individual rights for SMM:

#### *Program Settings*

The user has the right to change all program settings.

Please note that the "program settings"-functions allow to preset how incoming error messages should be forwarded and processed.

## Common Functions • User Administration



At present there are only general program setting rights for selection in these 4 modules.

## Cancellation of Rights

If the user is logged in, his rights are cancelled if:

1. the user logs out
2. a new user logs in
3. if no operation is detected for about 15 minutes

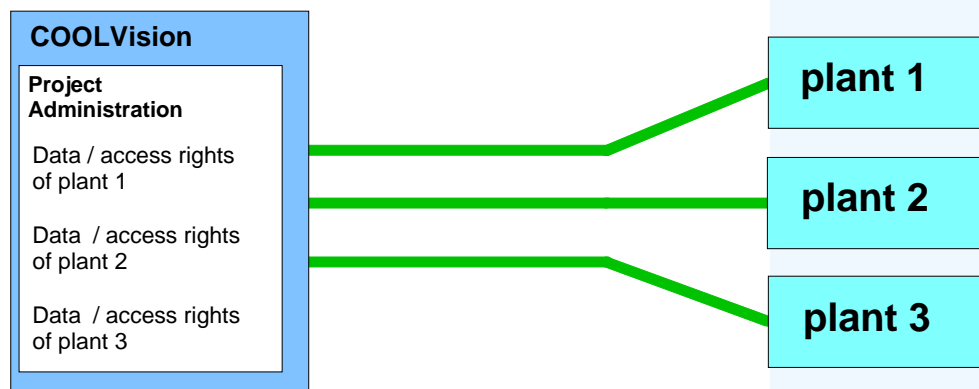
# Project Administration

## Overview

In practice very often several networked refrigeration plants must be read or monitored, particularly if COOLVision software is used by a service contractor company.

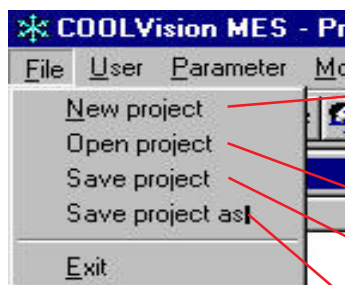
For this purpose so called projects (= plants) can be predefined.

These projects contain all necessary information about the used controllers, configurations and access rights of a plant.



## Project Administration

You can call the project administration from the main menus of the modules MES, SMM, WDM or MDM. Only that person who got the individual right is able to create a new project file.



Opens a new project, the overview window is empty. Now you have the possibility to configure the plant and to assign rights to the appropriate users.

Select and open an existing project.

Stores this project with the current name. Standard name is 'mes'.

If you have to control a new refrigeration plant which differs only a little bit from an existing one, so please open an existing project file, change whatever needed and save it with a new name.



### Inside COOLVision

Coolvision saves the project files in directory "/Coolvision/cvi/" as a file with the extension ".cvi".

**If this file is removed (because of any reason), Coolvision will not be able to access the unit. To access the unit again, a reconfiguration is necessary.**

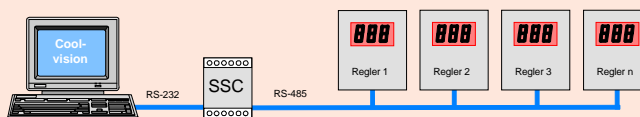
## Common Functions • Project Administration



Because of the different applications you have to know the following important coherences:

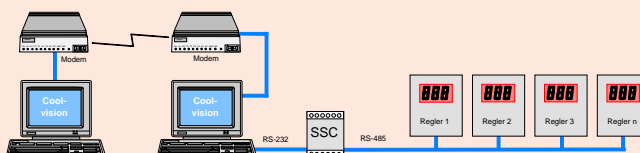
### 1. PC on site

A PC on site stores the file "projekt.cvi" automatically.



### 2. PC on site + Remote PC

If a remote PC must have access to the plant, it must use the same project file as the PC on site. For this purpose, the file will be transmitted to the remote PC at first after a successful modem connection.

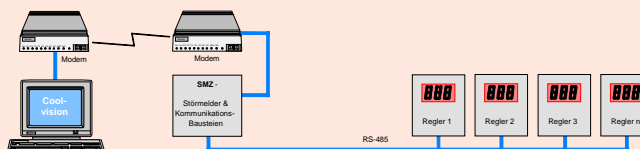


#### Reduction functionality:

If the plant uses changed parameter designations (user texts), they cannot be seen at the service PC.

### 3. SMZ or VPR on site + Remote PC

If you have a remote PC only, the configuration of the plant must be done there. So you need information about the controller network, the controller types, the set addresses and access passwords. File "projekt.cvi" will be stored locally.



# The COOLVision Modules

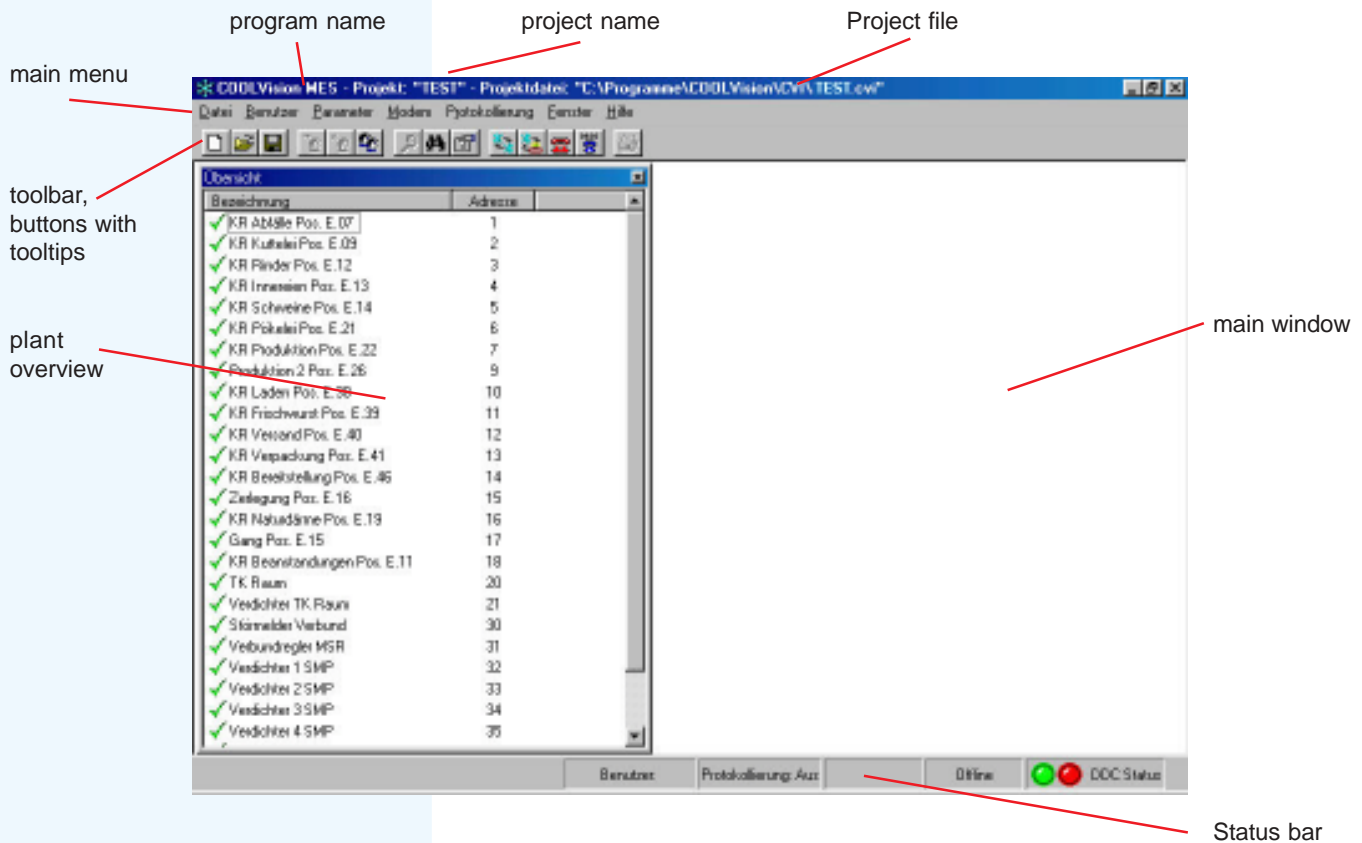
---

# The Basic Module 'MES'

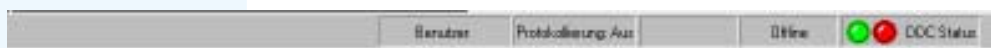
## The tasks of this module

- Adjusting and monitoring of networked controllers via data bus.
- Read out of values from the networked plant and administration (also via modem).
- Recording of values measured by controllers to a database as well as forwarding of error messages coming from the network to the SMM-module (which is the error message forwarding part of COOLVision).
- Configuration of controllers, i.e. transferring existing configurations from a file on your PC to a single controller or to a network of controllers.

## The user interface



## The status bar



Current state of recording

Name of the current data base

Modem connection

Offline = no connection

Online = connection active

State of the data bus

green = PC receives data, red = PC sends data

mark beside = address of the transmitting controller

At normal operation, red and green blinks alternately regularly or irregularly.

No blinking (grey) if the PC is connected to a PC on site via modem.

## Software Modules • MES

### Main Menu Overview

<b>File</b>	
<b>New Project</b> .....	Create a new plant / plant configuration (project)
<b>Open Project</b> .....	Open existing plant
<b>Save Project</b> .....	Save current configuration
<b>Save Project As</b> .....	Save plant with new name
<b>Exit</b> .....	Close COOLVision MES
<b>User</b>	
<b>Login</b> .....	Login of user to get appropriate privileges
<b>Logout</b> .....	Logout of user, termination of access rights
<b>Change Password</b> .....	Change of Password (old password is necessary)
<b>Create/Edit users</b> .....	Create and edit users with appropriate access rights
<b>Parameter</b>	
<b>Overview</b> .....	Switching plant overview window On / Off
<b>Configuration mode</b> .....	Editing of parameter sets, upload/download
<b>Plant configuration</b> .....	Edit controller types, interfaces, etc.
<b>Controller name</b> .....	Edit marked name in the plant overview window
<b>Save Programm Settings</b> .....	Save all set values
<b>Window position</b>	
<b>Maximized</b> .....	Program window after start in full size
<b>Minimized</b> .....	Program window closed after start
<b>Status Window</b> .....	
<b>Save current position</b> .....	
<b>Restore while start</b>	
<b>Master function</b>	
<b>Download (Device -&gt; File)</b> .....	Save data from a controller device into a file on the PC
<b>Upload (File -&gt; Device)</b> .....	Transfer data from a file to a controller device
<b>Program Settings</b> .....	Common settings such as language etc.
<b>Show User Texts</b> .....	Parameter designations will be replaced by user defined names.
<b>Modem</b>	
<b>Select</b>	
<b>Unit via COOLVision</b> .....	COOLVision is running on a PC on site
<b>Unit direct call</b> .....	An SMZ or a VPR operate as frontend systems on site
<b>Hang up</b> .....	Disconnect remote connection
<b>Restart Plant PC</b> .....	Remote initiated warm start of the plant PC
<b>Telephone number</b> .....	Specify phone numbers and call-back number
<b>Data Recording</b>	
<b>Start recording</b> .....	Recording function will be started
<b>Recording settings</b> .....	Kind of data to be recorded, Intervals, etc.
<b>Read out hist. data</b> .....	Read out data from devices with integrated data memory (such as MiniMEP or TAR 1860, etc...)
<b>Status Window</b> .....	Overview about all currently opened windows
<b>Help</b>	
<b>Info</b> .....	Software version, Customer License etc.

### The Toolbar

The toolbar contains the commonly used commands icons. If you hold the mouse cursor on an icon for a moment, a "tooltip" appears.








## Software Modules • MES

### The Plant Overview

This Plant Overview Window is a very important part of MES. This window enables you to call **any controller highlighted in the listing by a double click.**

In this window you see a listing of all controllers registered in the plant configuration. The number of controllers appearing in the listing must be the same as the number of controllers networked to the bus.

This overview represents the controller equipment of the complete plant. If closed by mistake, the window can be opened at any time by a click on 'Parameter / Overview'.

Controller State	Position	Actual Values			Current Error	Controller address on databus	Sub-address e.g. if controller devices are controlled by a VPR or SMZ frontend	Type of controller
 no failure, connection OK								
 Controller is offline								
 Controller failure message								
 Controller is off								
 Communication failure								

Position	Actual Value 1	Actual Value 2	Actual Value 3	Error	Adress	Subaddress	Controller
✓ Kühlraum 2	9,8	0,3	Aus	kein Fehler	05		TKP0030
✓ Luftklappensteuerung	22,5	22,5	----	kein Fehler	06		TAR0260
✓ Protokollierung 1-4	----	----	----	----	07		MINIMEP
✓ Protokollierung 5-8	----	----	----	----	08		MINIMEP
✓ Kühlraum 2	----	----	----	----	09		TAR
✓ Kühltunnel	----	----	----	----	10		TAR
✓ Fleischzerlegung	----	----	----	----	11		TAR



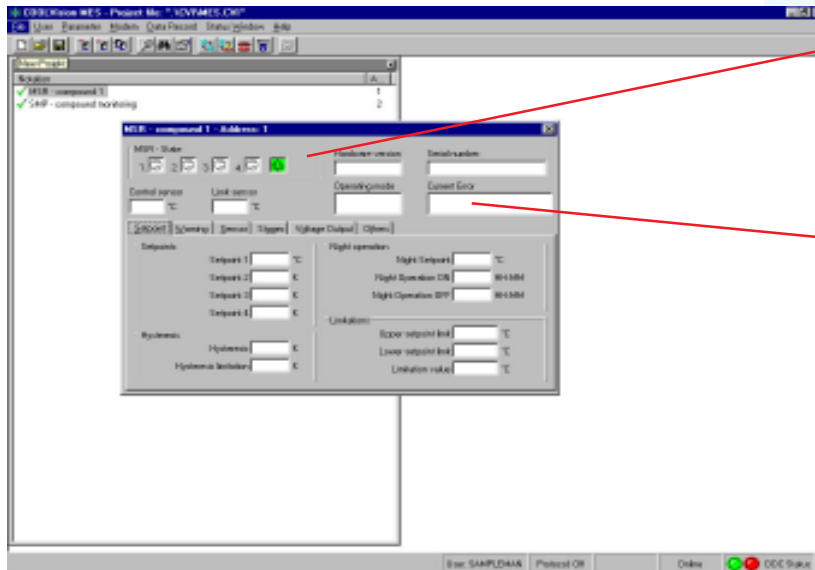
## Software Modules • MES

### Example of a controller window

Each registered controller device owns a corresponding controller dialog window, which enables editing and changing of all parameters of this device.



Further information about the meaning of the parameters you will find in the technical manuals of the controllers.



Status window, shows the current logical state of controller outputs (on / off), alarm output and state of data transmission.

In every controller window you will find a field which shows the current error message.

#### The status icons of the controller dialog window



Data transmission



Compressor



Frame Heater



Refrigeration, Solenoid Valve or Cooling Circuit



Evaporator Fan, Condenser Fan



Night Operation



Alarm, Alarm Relay



Defrost, Defrost Heater

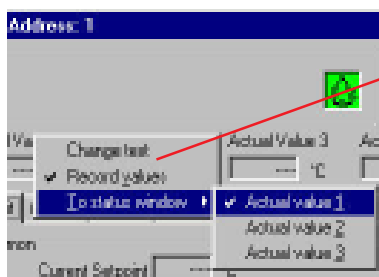


Setpoint Layer No..

background color of icons: white = Stage is OFF  
 red = Stage failed  
 yellow = Stage not yet ON, but delay timer just running  
 green = Stage is ON  
 grey = without function resp. not selected

### Edit position designations

Additionally, the controller dialog box offers the possibility to improve the clarity of the items. By a right mouse button click on a parameter name, a context menu opens (most controllers - not all).



The context menu allows to:

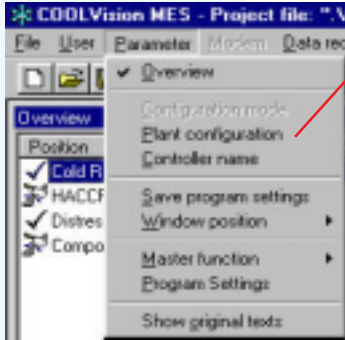
- change parameter designation
- mark this parameter for recording.
- mark this parameter for permanent display in the plant overview as Actual Value X.

The entered designations will be displayed if you click on 'Parameter > Show User Texts'.

To switch back to the original names please select 'Parameter > Show Original Texts'.

## Software Modules • MES

### Plant Configuration

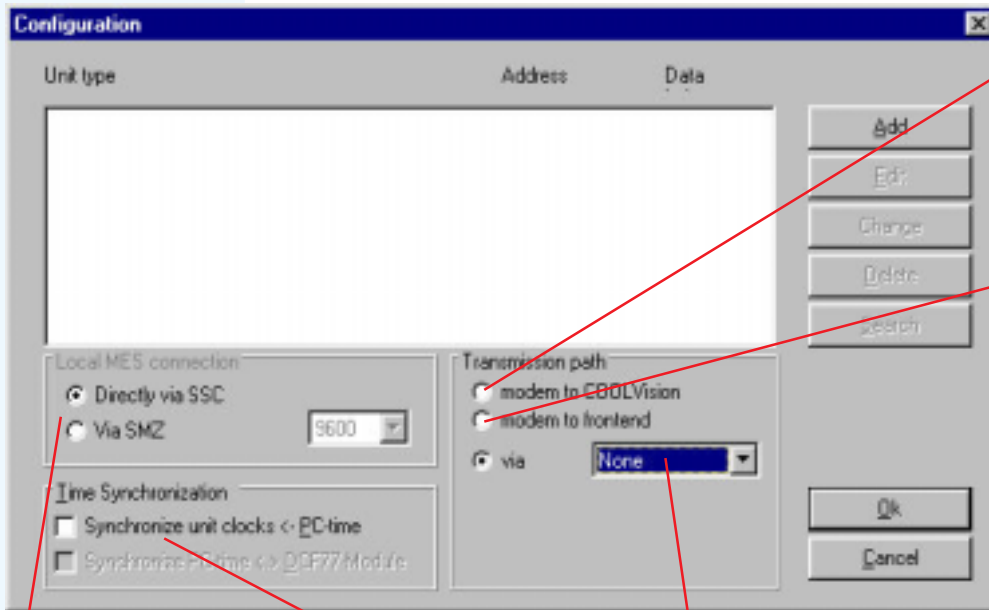


In menu "Parameter > Plant configuration" you preset which controller units of a plant must be read and operated by MES and you define the way this controllers are connected to the PC.

These settings are very important for operation of the software system, e.g. if a controller is not registered (=listed), the software will operate as if the controller does not exist (even if it is physically connected to the databus).

MES is able to communicate with a plant via different ways:

- With a local plant via an interface converter or an integrated RS-485-interface card
- With a local plant which has a SMZ or VPR Alarm System Frontend.
- With a plant at a distant location with PC on site and own COOLVision.
- With a plant at a distant location without PC, but with a SMZ or VPR Alarm System Frontend and a modem



Check here if the plant is at a distant location and is equipped with PC/COOL-Vision and a modem.

Check here if the plant is at a distant location and is equipped with a SMZ or VPR Alarm System Frontend and a modem.

Choose here if the controller network is connected directly via interface converter or via SMZ frontend

Check here if the real time clocks of the connected controllers are to be synchronized with the PC clock

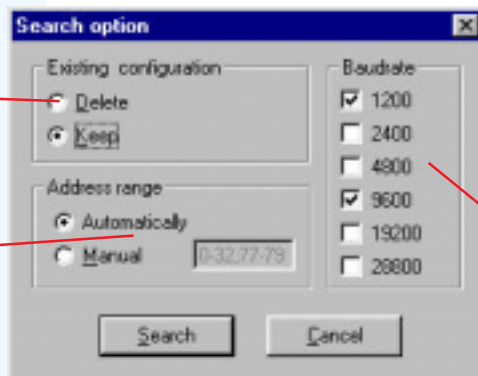
Interface for local plant connection

### Automatic Search for Controllers

After an interface has been selected, the "search" button is enabled. As long as no interface is selected, the "search" button remains disabled. If the "search" button is pushed, the search dialog box closes and MES begins to scan for controller units on the databus.

While an automatic search the previous configuration will be overwritten

The address range for an automatic scan is from Adr. 0 to Adr. 79.



The baudrate (transmission speed). You can check different data transmission rates. This is useful if there are different controllers connected to the partyline which use different data transmission rates. The standard items in this box are valid for the most ELREHA controllers, if there is any doubt, please read the manual of the controller.

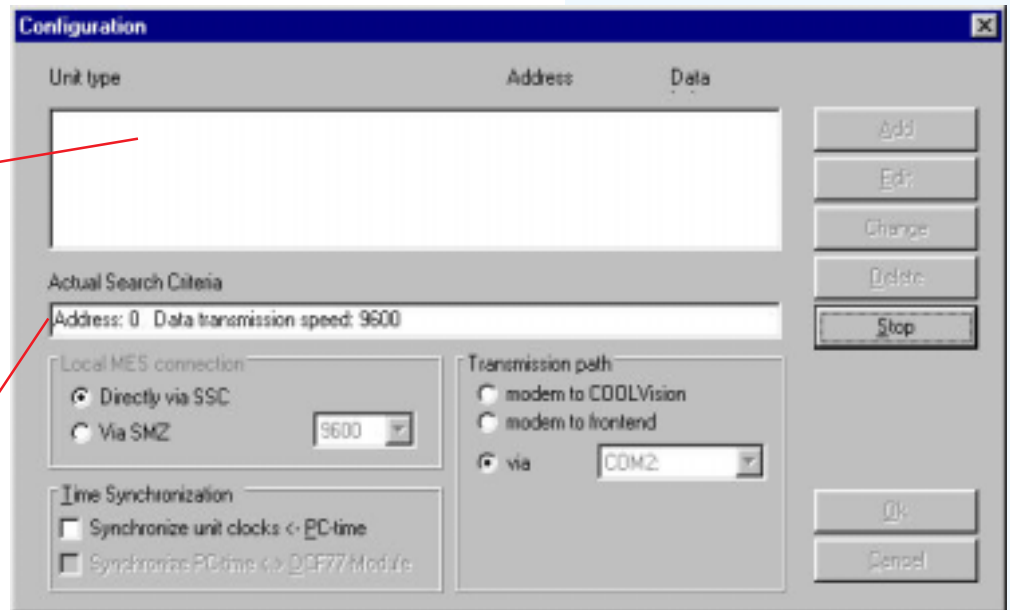


Because modern controller units work with 9600 baud only, the searching speed will increase if you remove the checks at 1200 baud.

## Software Modules • MES

Every time a controller unit is found, it will be displayed here with its name, address and baudrate.

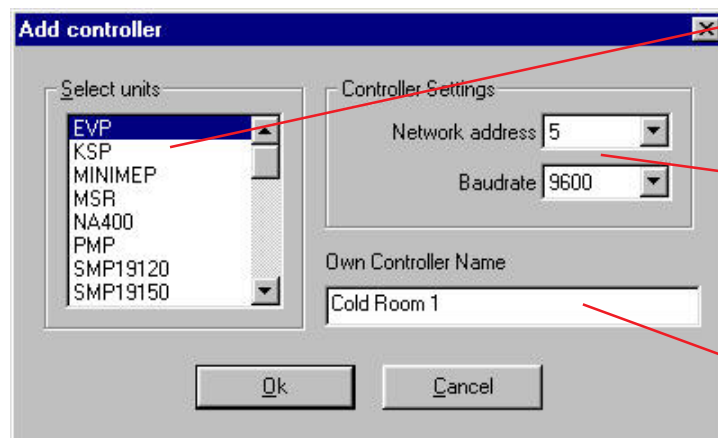
While scanning, the actual unit address and baudrate will be displayed here



## Manual Insertion of Controllers

Instead of an automatic controller search on the data bus, it is possible to register controllers manually. Click on button "Add" in the configuration screen.

You may only choose an address which is not already in use (i.e. already assigned by an automatic search). An overview about the controller units and its addresses offers the 'plant configuration' dialog box.



Select controller type (only one feasible at the same time)

Address and data transmission speed of the controller to be scanned. Attention: It is very important that these two values are identical with the values in the controllers. Otherwise the controllers cannot be found !

Name of the position in plain text. You can change it to any name you want. Default name of the controller is the type-name (for example TAR 1810).

While MES is searching for controllers on the data bus, only the „Stop“ button is available. If this button is pushed, the automatic search will stop immediately. The recognized controllers remain in the list box.

Software Modules • MES

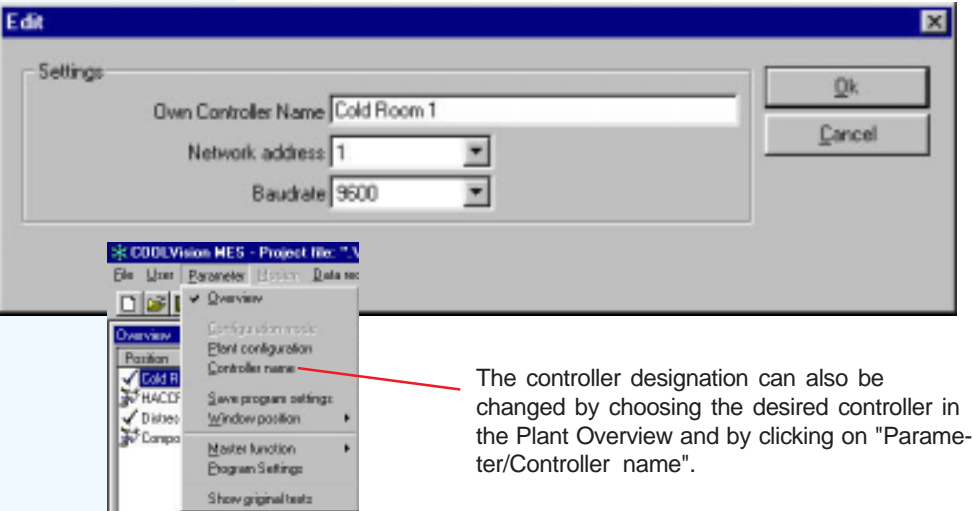
### Delete Controllers

Choose a controller in the 'plant configuration' dialog box and click on 'Delete'. The controller disappears from the list and is deleted from the plant configuration at the same time.

**Attention:** If you delete a controller from the list, no more values will be recorded and the software acts as if the controller is not connected to the data bus (even if it is physically connected).

### Editing of controllers in the plant configuration

Here you can change the name of the controller, its network address on the databus and data transmission speed.

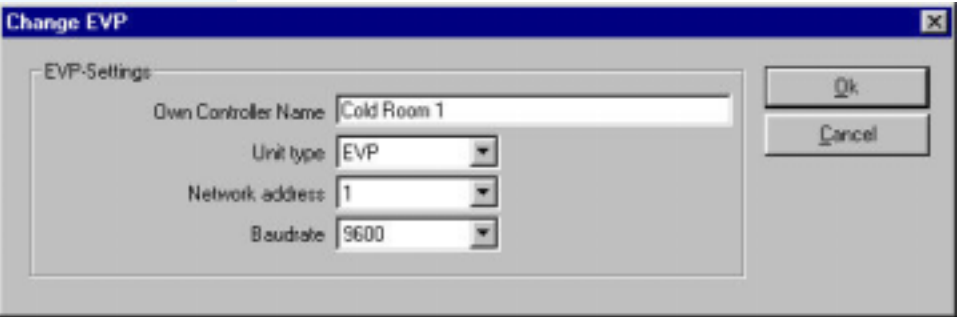


### Changes on Controllers

If you make any changes on a controller on site or if, for example, a controller is replaced by another device (e.g. TAR -> MiniMEP), COOLVision gets here the information about the new controller type, its name address and data transmission speed.



**Attention:** These changes affect COOLVision only and will not be transmitted to the controllers on site.



### Exit Configuration

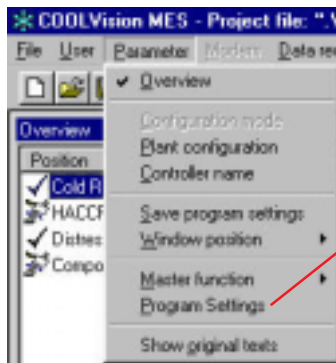
After entering all desired values and settings close dialog box by "OK".



"Cancel" ignores all new values and you will get a system with the previous adjustments.

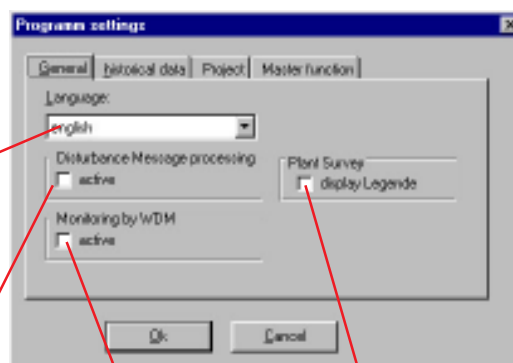
## Software Modules • MES

### Program Settings



In menu 'Parameter / Program Settings' parameters can be edited which affect the software as a whole.

Select language you want to use. After closing the box all lettering appear with the selected language.



Bezeichnung	Raumtemperatur 1	Info
Kühlraum 2	9.8	
Lüftklappensteuerung	27.5	
Protokollierung 1-4	----	
Protokollierung 5-8	----	
Kühlraum 2	----	
Kühlkammer	----	
Fleischzerlegung	----	

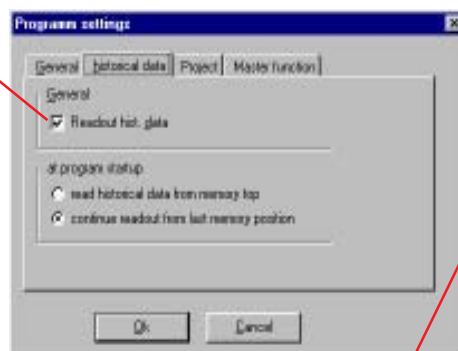
Legende
Kein Fehler
Offline
Pegler meldet Fehler
Pegler aus
Kommunikationsstörung mit Pegler

Check if incoming errors from a controller shall be forwarded to the SMM module. If this checkbox is not activated, no error messages will be forwarded.

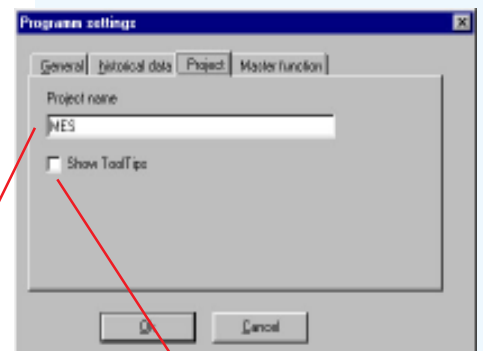
Select here if the program has to be monitored by the WDM (watchdog module).

With this checked, an icon explanation will be displayed at the bottom of the Plant Overview.

Some controllers have an integrated data logger. Check here if MES has to read out all data recorded on site and to save them in the database. MES recognizes automatically if a controller owns a data logger.



Enter the name of your project. Each plant should have a unique project name.



Check if you want to display tooltips while the cursor moves over icons in the controller dialog boxes (at present for VPR screen only)

Data recording (protocolling)



After configuration, i.e. after all controllers are registered and the parameters to be recorded are selected, data recording can be started by 'Data Recording / Start Recording'. For this the following adjustments are valid.

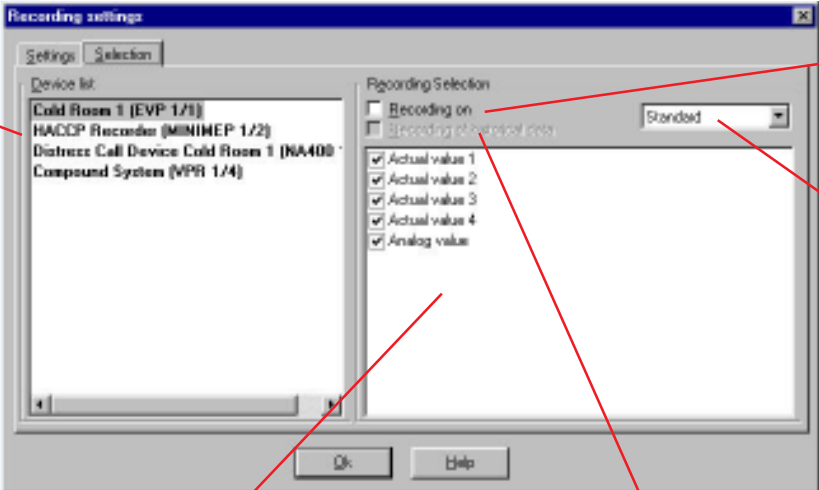
**i** The database module must run while data recording

Inside COOLVision: Database structure

- **Daily Databases**  
COOLVision creates a database for each day and stores it in folder "coolvision/P\_datan". The values stored in this Daily Databases will be continuously copied into an Analysis Database, located in in folder "coolvision/A\_datan". This is the information source for the "Analysis Module".  
The Analysis Database always contains the logged data of the last 4 months. With the begin of the 5th month, the data of the 1st month will be transferred to a "Quarter Database" to prevent the Analysis Database from getting to extensive. With every new month, old data will be moved again. For further information, see chapter 'database module DBM'
- **Analysis Database**
- **Quarter Databases**

Recording Settings

Select controller which should deliver the desired data



Shall it be possible to record parameters of this controller?

This setting allows epitomes of the recordable parameters.



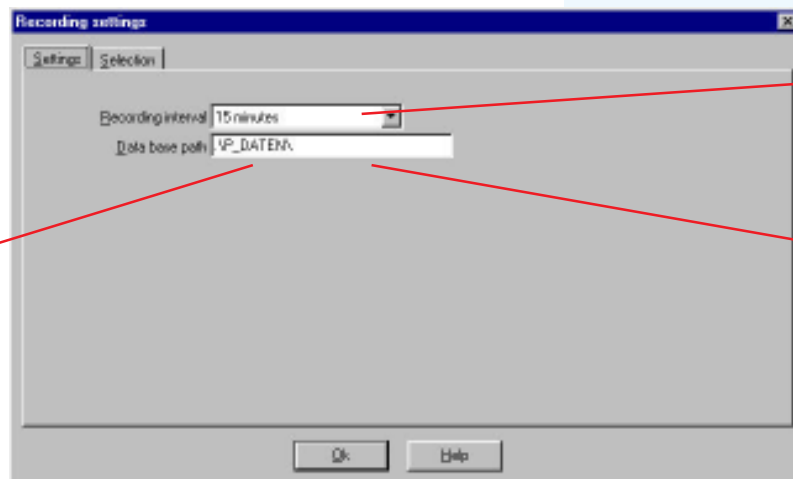
**Tip:** Selecting the needed values only keeps the database files small.

Listing of recordable controller parameters. Unchecked parameters receive no consideration.

If this controller is equipped with an integrated data logger, is it allowed to read it out?

**Software Modules • MES****Common Settings****Tip:**

We recommend that only experienced users should change the path directory in this field, since other Coolvision Software parts use this database files too.



Recording  
time intervals

Daily  
database  
directory



## Configuration Mode for Controller Units



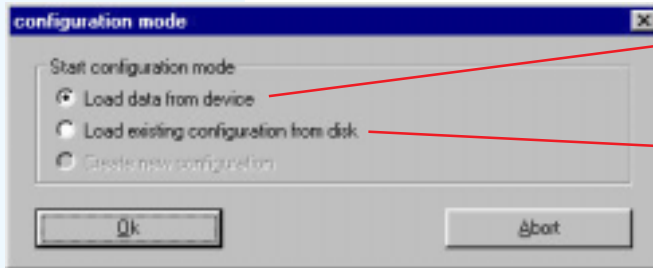
Controller systems with extensive parameter sets need the possibility to download and to store this sets on the PC. This relieves to configure multiple controllers with the same or nearly the same parameter settings. This can be done by the 'Configuration Mode'.



The mode can only be reached if:

- the controller dialog box of a matching type is open
- a user with appropriate rights is logged in

Start Configuration Mode by menuitem "Parameter/Configuration Mode" or the tool icon.



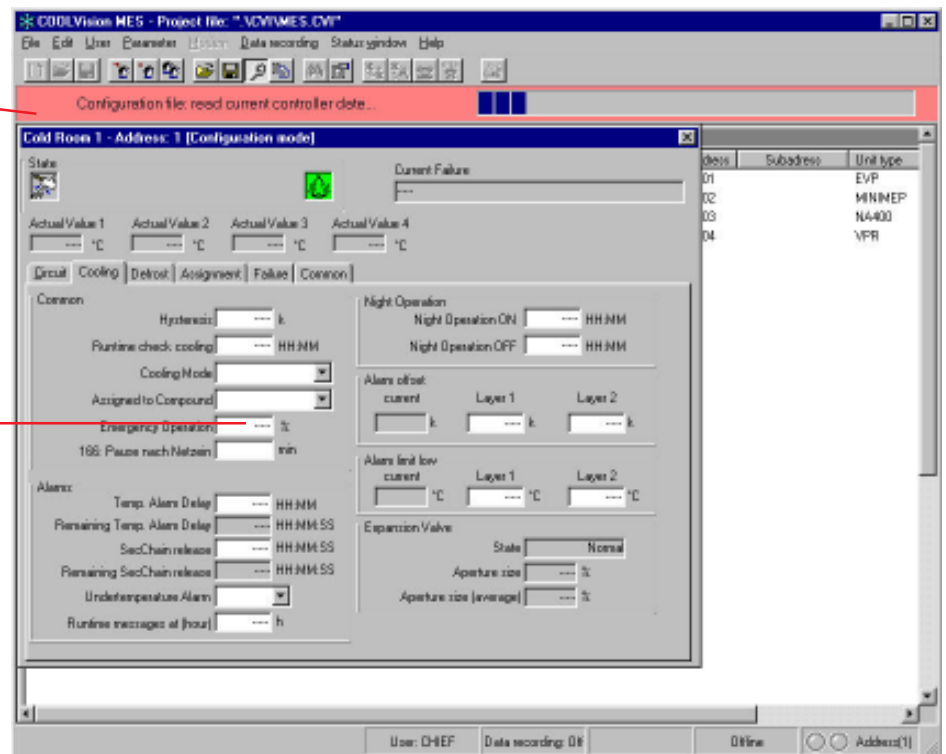
Check if you want to download the current configuration from the controller unit to edit or to store it.

Check if you want to load an existing configuration from a disk. (file format 'datei.cvc')

The red bar indicates that MES operates in configuration mode.

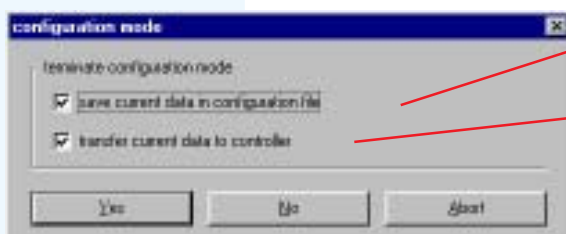
While data transfer, a progress bar indicates the current state.

Now you can enter any parameter values to the controller dialog box, but the controller doesn't use them at this point in time.



## Quit Configuration Mode

Click on the tool icon or uncheck menuitem "Parameter/Configuration Mode". The following query asks you if you want to transmit the new parameters to the controller unit or if you want to store them on a disk.



The current configuration will be stored on a disk in a file with the format 'name.cvc'.

The current configuration will be transmitted to the controller and then used immediately.

Finally, the configuration mode will close and the red bar disappears.



## Common Configuration Backup (Master Function)

With the 'Master Function' COOLVision offers a tool to backup a complete parameter set of the plant (e.g. after a successful start-up) to a PC.


Every time COOLVision starts running, the complete parameter set of the plant, that means the parameters of all controllers, will be overwritten by the backedup parameter set. With this tool, manual parameter changes at the controllers can be restored surely.



Values which has been changed via dialog box and lost values because of an exchanged controller unit, will be restored without query based on the backup file located in folder "/Coolvision/cvd".

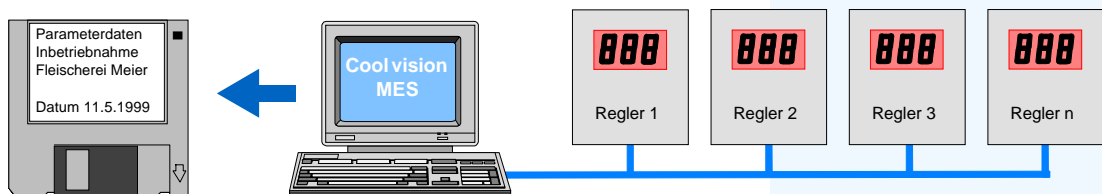
To prevent the plant from being overwritten, the backup database for this plant must be removed from the '/cvd' folder.

Conditions to use the 'Master Function':

- Module MES must run,
- Plant Overview window is visible
- Running data connection, all controller states are 
- You are logged in with appropriate rights.

### Application Example: Upload and Download of Common Parameter Sets

After a succesful start-up of the plant you want to backup all preset parameters



#### Backup of the parameter set (download)

- Choose "*Parameter / Master Function / Download / Controller -> File*"
- Now all parameters of the plant will be stored in a database file. This file gets the project name with the extension ".mdb" automatically and is located in folder "/Coolvision/cvd". (Example: 'supermarket.mdb'). This file can be stored on any data medium and used if necessary.

#### Restore of the parameter set (upload)

- Open existing project (= plant)
- Plant parameters will be overwritten by the parameters stored in the database file with the same name as the project. (Example: You open 'supermarket.cvi' --> Plant will be overwritten by parameter out of 'supermarket.mdb')

or

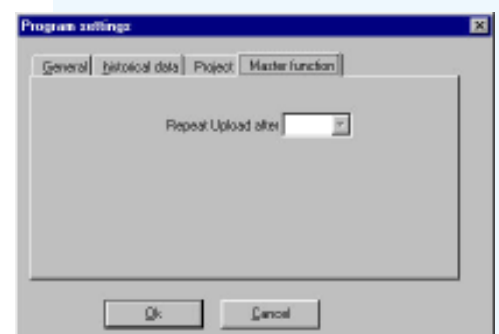
- Open existing project (= plant)
- Choose "*Parameter / Master Function / Download / File -> Controller*"
- Plant parameters will be overwritten by the parameters stored in the database file with the same name as the project.

#### Automatic Upload



For experienced users only!

The plant configuration can be overwritten in time intervals. In menu "*Parameter / Program Options / Master Function*" you get the option for selecting a matching time interval.



## Software Modules • MES • Remote Access

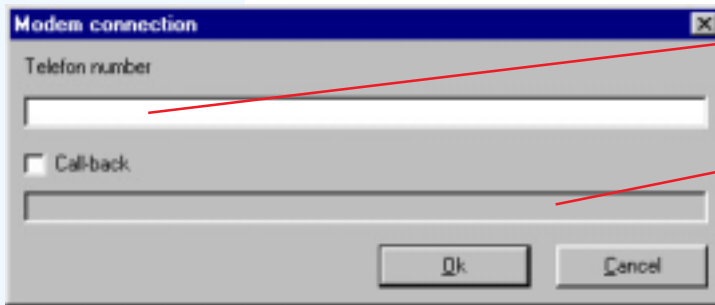
### Remote Access to a refrigeration plant

Sometimes you must access the plant from a head office for reading or changing parameters. For this purpose, you must install COOLVision-MES on your office PC. Configure MES as follows:

- Set plant configuration to "modem to COOLVision"

#### Preparation

- Make sure that the modem module (MDM) of the PC on site is set to "Remote Data Access" and "Answer machine"
- Make sure the MDM module runs
- At the MES in your office, enter phone number of the refrigeration plant to be called.



The phone number of the plant to be called

Your own phone number for call-back of the plant

#### Ring Up

- Choose '*Modem / Select / Unit via Coolvision*', now the modem starts dialing.



If the PC on site is equipped with a COOLVision version older than 1.64.75, an access is only possible, if the project file of the PC on site was copied to the office PC before by a suitable data medium.

**For the practice we recommend to use 'PC-AnyWhere' from Symantec Corporation, this product allows not only an access to parameters on site but also remote maintenance of the system including the operating system.**

### Remote Access to a refrigeration plant with Frontend Systems

Many refrigeration plants have no PC on site but are equipped with an SMZ Alarm Central or a VPR-Compound System which are able to operate as Frontend Systems.

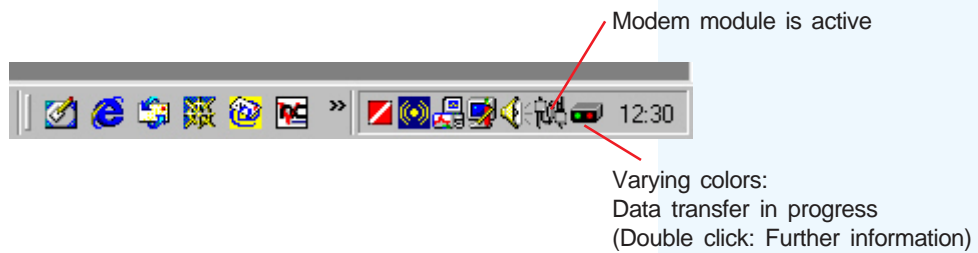
For this purpose, the COOLVision-MES on your office PC must be configured as follows:

- Set plant configuration to "modem to frontend"
- Make sure the MDM module runs
- Enter phone number of the refrigeration plant to be called.
- If MES and the frontend are connected, controllers can be scanned and added as described in chapter "Plant Configuration".

## Software Modules • MDM

### The Modem Module MDM

The module MDM has the task to build up a telecommunication connection to a plant or to accept an incoming call from a plant. After it has been started it can be found in the system tray of your Windows, located next to the clock. If data is transferred, the tray shows an modem icon additionally. This icon indicates data transfer by varying colors.



#### Inside COOLVision: Modem operation

The modem module operates as a gateway between Coolvision and the modem driver. Please note that the modem module is reliant on the settings of the modem driver, which must be checked carefully.

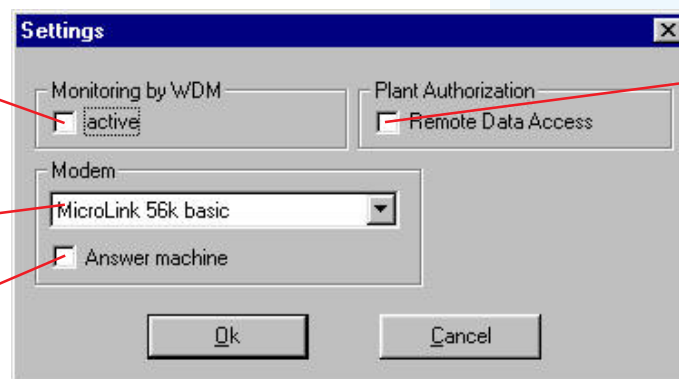
### Settings

Less settings are necessary at the modem module. Open dialog box by a right mouse button click on the modem icon in the system tray and choose "Program Options".

Check if this module shall be monitored by the watchdog module.

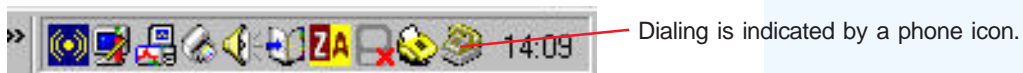
The type of your modem

Check, if the modem module must accept incoming calls.



If checked, a remote PC is able to get a connection to this PC to read or to change data.

After clicking on the icon in the system tray with the right mouse button, you can choose "Dial". With this, the MDM module dials the entered phone number. This function can be used to check the modem without starting the common software system.



A click on the phone icon with the right mouse button terminates dialing.



While a connection, no data will be transmitted. The connection will be interrupted after about 5 minutes automatically.

## Software-Monitoring with WDM (watchdog module)

Every running software system could crash sometimes. If a PC runs unmonitored by an user, a crash of the system could cause fatal results.

The software module WDM has the task to check out if program modules of COOLVision are running properly.

To check the state of readiness, each module sends a signal to WDM in specific time intervals.

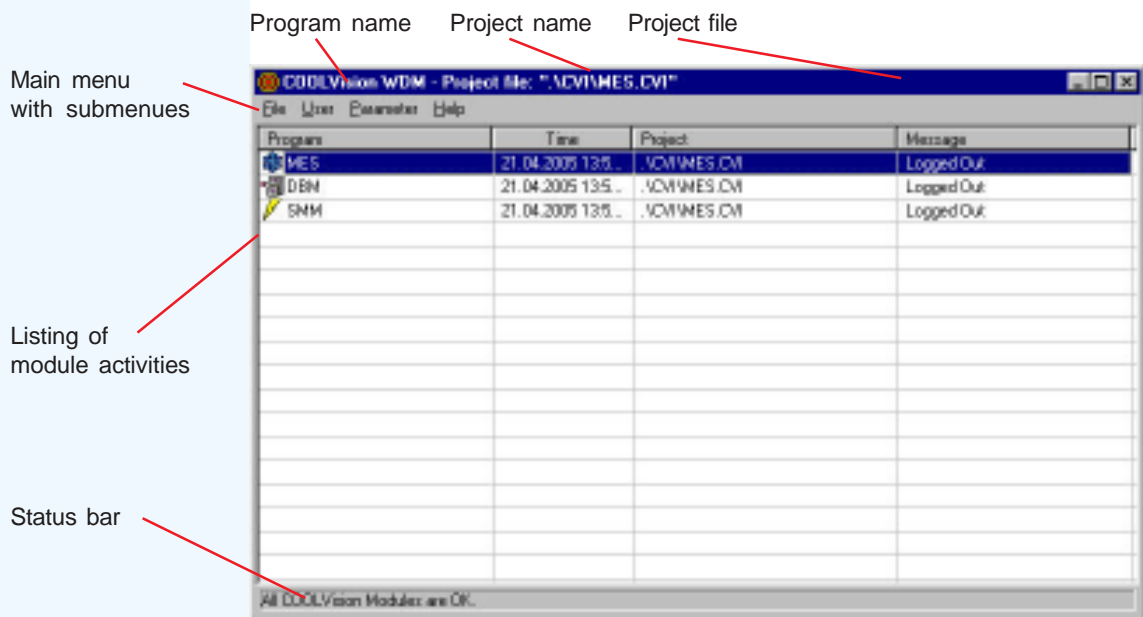
The option whether a module is monitored or not, can be preset under '*Program Options*' (Monitored by WDM) of the desired module. If this option is selected and the WDM-module does not receive a signal from another module within a specific time interval, the WDM-module considers that the software does not work well and responds appropriately.

Additionally, WDM lists the COOLVision modules started and stopped while its runtime. With a restart of WDM the listing will be erased. WDM is prepared for working stand-alone or with the Hardware-Watchdog HW101 or the SMZ 3130 configured as Hardware-Watchdog/Switching Module. Only by using a hardware-watchdog it is possible to restart the PC and by this a defined restart of all programs.

### Reactions on recognized failures or as a precaution

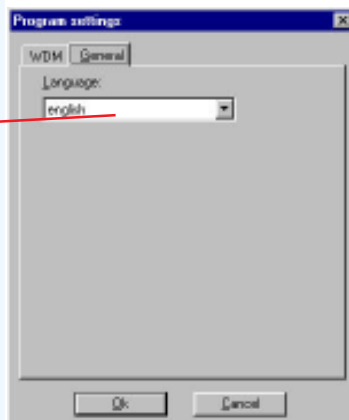
- Daily restart (warm start) of the PC at a certain time as a precaution.
- Restart (warm start) of the PC, if a COOLVision module is still out of order after a certain time.
- Switching the PC off/on by the switching module to force defined start-up of hardware and software.

### The main window



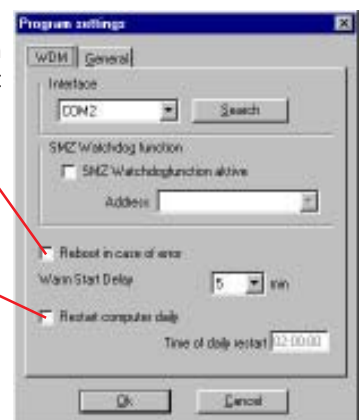
### Common Settings

Select the language you want to use. After closing the box all texts appear with the selected language.



If a COOLVision-module has been recognized as out of order, Windows will restart time delayed.

Preventive measure, daily restart of Windows/PC at certain time.

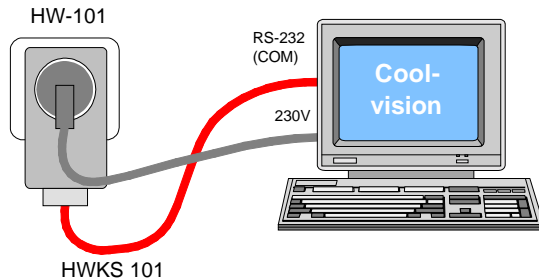


## Software Modules • WDM

### PC-Monitoring with Switching Module HW-101 (Hardware-Watchdog)

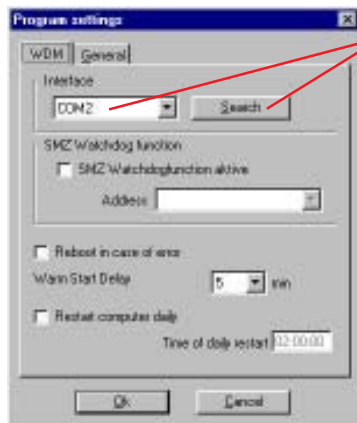
The PC is not supplied directly from the power socket but from the HW-101 as an adaptor. Additionally, the HW-101 is connected via an serial interface cable to a COM-interface of the PC to get information by the WDM module in certain intervals.

If this information is absent for about 20 minutes, the power supply of the PC will be shut-off and switched on again after a few seconds. This allows a defined restart of PC and software after the following "scandisk" run.



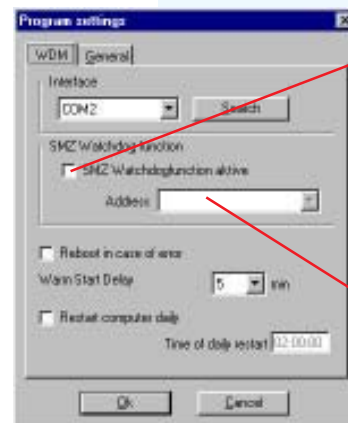
The Hardware-Watchdog is connected via a serial interface cable.

#### Settings for a HW 101



The interface the HW 101 is connected to. If the interface is unknown, it can be searched automatically.

#### Settings for a SMZ



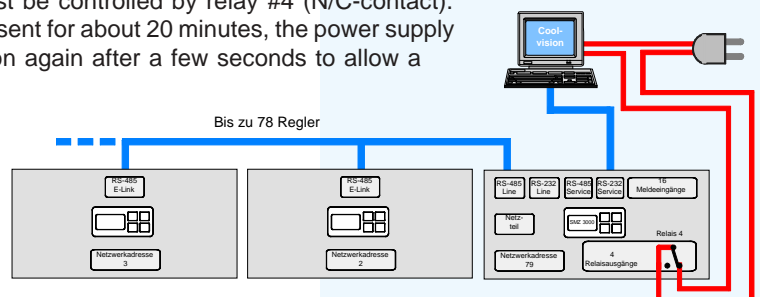
Check if a SMZ unit is used as external Hardware Watchdog. One of its output relays restarts the PC by interrupting its supply voltage.

Network address of the SMZ-unit.

### PC-Monitoring with SMZ 3140 as a switching module

If a SMZ Alarm Central is located on the bus, it can be used to operate as a switching module to control the PC's power supply.

For this purpose, the supply voltage must be controlled by relay #4 (N/C-contact). If the trigger information from the PC is absent for about 20 minutes, the power supply of the PC will be shut-off and switched on again after a few seconds to allow a defined restart of PC and software.



#### \* BIOS-Settings

All PC's suitable for Coolvision contain modern ATX-Boards, which do not restart automatically but wait for a press on power button.

To prevent this, the function 'start on ring' can be used. The necessary signal is delivered by the switching module connected to the interface. Regrettably, there is no common standard for this BIOS setting, each manufacturer has its own settings.

Depending on manufacturer the settings are called "Resume on Ring", "Resume by Ring" or "Power on Source: Remote" or similar, which must be set to "enabled".

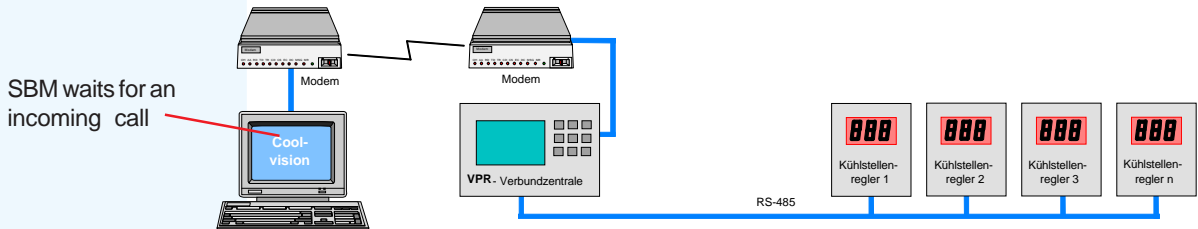
**A PC without such a function is not suitable to operate with a switching module !!**

## Software Modules • SBM

# Waiting for incoming calls - The Standby Module SBM

The task of the module is to wait in the background for incoming calls from plants equipped with a SMZ or VPR System as a frontend device.

SBM detects an incoming call from a plant and launches MES with the corresponding project file or SMM depending on plant type.



If SBM starts then:

- The modem module MDM which cares for data transmission, starts additionally.
- The module SMM starts which cares for error message processing.
- The SBM icon can be found in the system tray.



SBM runs and has been started the modem module automatically



As long as SBM runs, MDM and SMM cannot be terminated resp. will restart automatically.

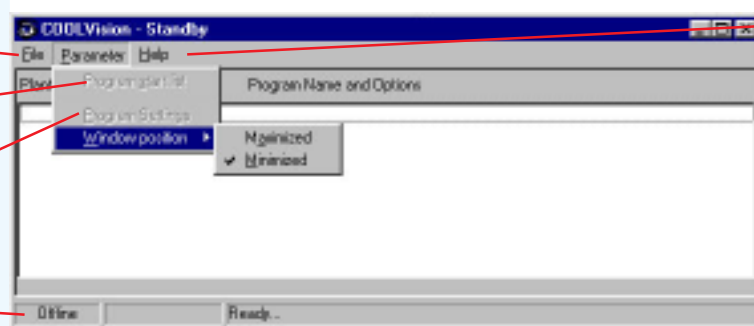
A right mouse button double click on the SBM icon in the system tray (the eye) opens the **status screen**.

Close COOLVision  
SBM

Set plants to  
monitor

Common settings

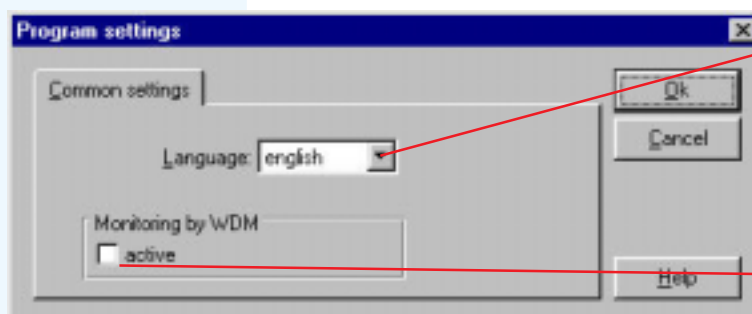
Status bar



Software  
version,  
customer  
license

## Common Program Settings

Open "Parameter / Program options"



Select the language you want  
to use.

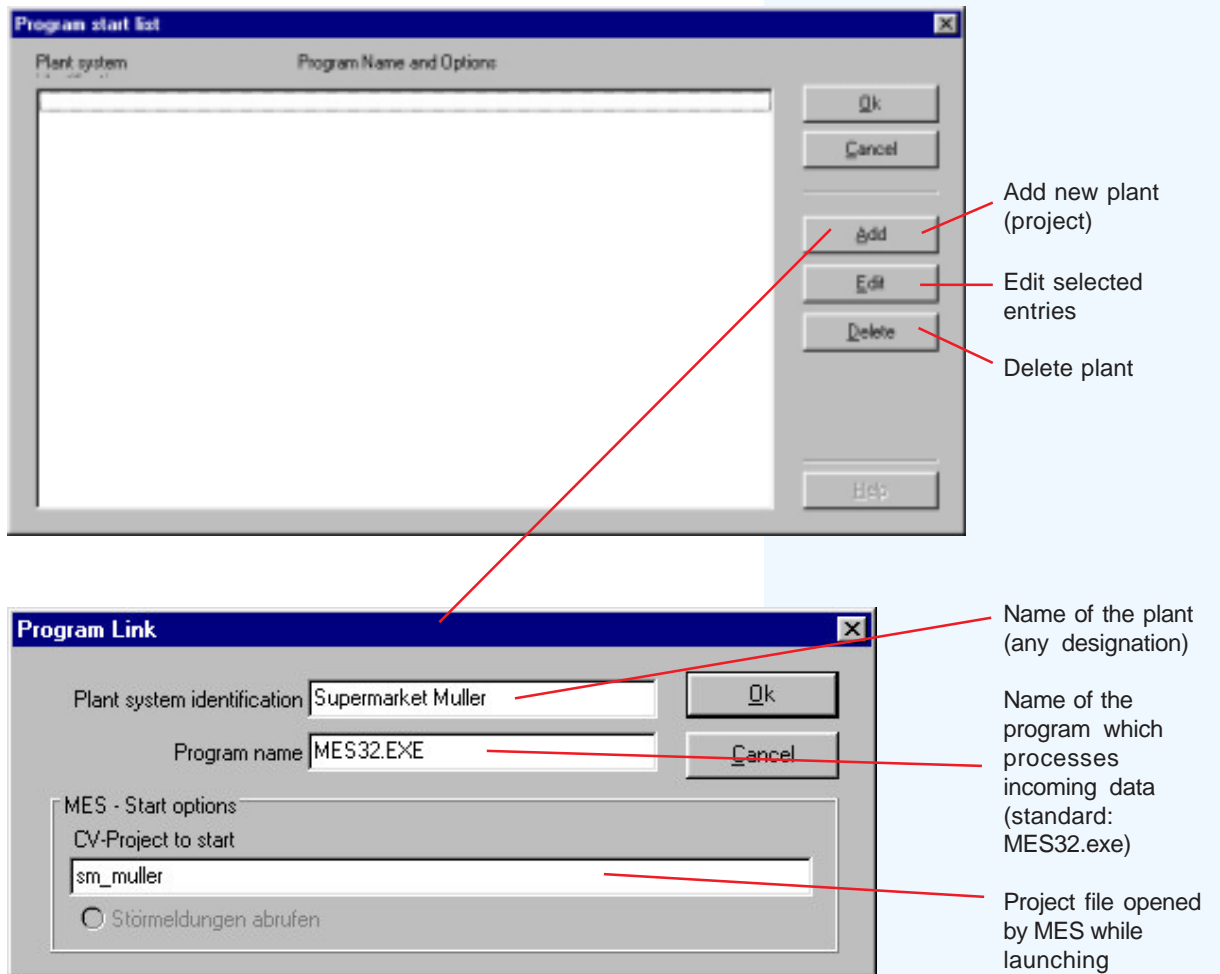
After closing the box all texts  
appear with selected  
language.

Check if this module  
shall be monitored by  
the watchdog module.

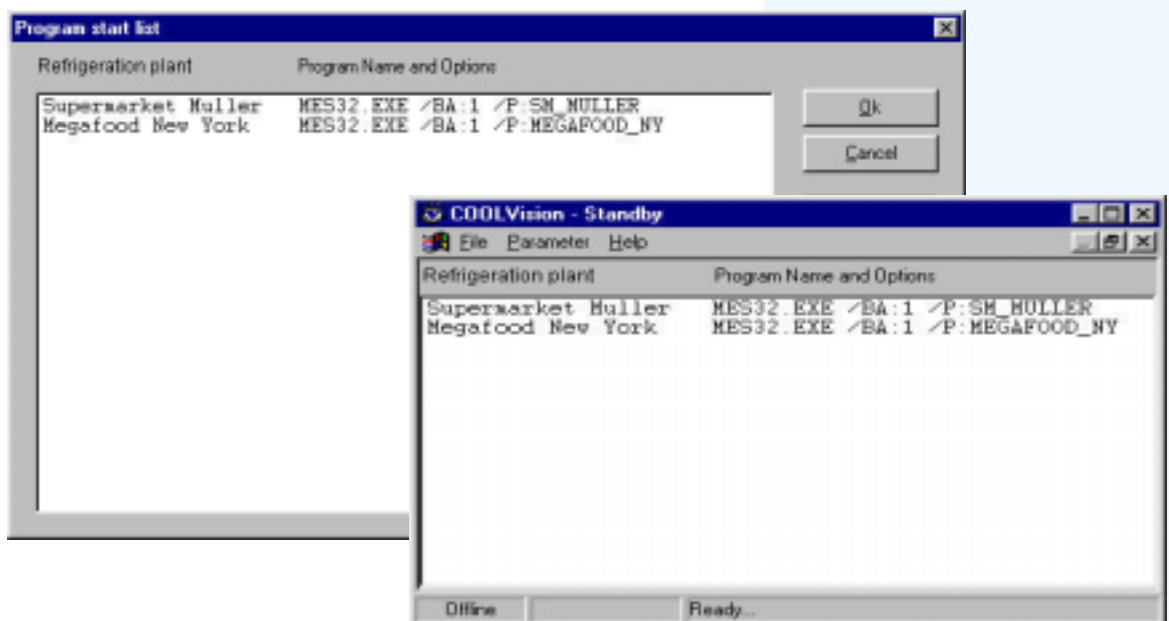
## Software Modules • SBM

### Configure SBM for stand-by operation

Open "Parameter / Program start list". Here all plants equipped with SMZ and VPR-frontend appear which should be monitored.



After confirmation by 'OK' the new entries will be displayed in the program launch list and displayed in the main window if the program start list has been closed.



While the SBM module is running, the modem is reserved for receiving error messages. While this time, dial-up from external PC's is impossible.



## The Alarm Message Module SMM

This module is one of the most important within the COOLVision system. SMM allows to receive controller failure/error messages, to save, to forward or to process/edit them. SMM is able to operate in different configurations:

- As error message module on site. It records error messages and forwards them to a matching addressee, e.g. an error message central office or a service contractor.
- SMM is able to operate as an error message center at a service contractors office waiting for error messages of several refrigeration plants.

### Examples for error message forwarding:

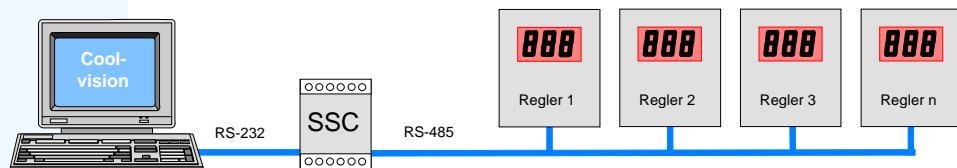
- PC on site of the plant transmits selected error messages as an SMS to a service technician
- PC on site of the plant transmits selected error messages to a host (Error Message Central Office)
- PC on site stores errors only, without forwarding
- Error Message Central Office receives messages by modem and stores them
- Active scan for errors by the Error Message Central Office

### PC on site with MES and SMM

When SMM is started, it takes over the error messages of the project currently opened by MES. Another project can be opened at MES or SMM.



Error messages are processed by MES only, if parameter "Error Message processing" in the program options of MES is set to active.



SMM recognizes all error messages of the controller units via databus and shows them in a listing.

Program name Project name / file

Main menu

Sort by different criteria

Error message listing

An entry can be selected by a click. If various entries shall be selected, hold 'Ctrl' (Strg)-key while a click

Status bar

Δ	Endtime	Project	Address	Unit name	Error message	Notice
	18.04.2005 14:31:27	MES	1	MiniMEP	Communication fault c/o controller	
	19.04.2005 14:31:27	MES	2	testtype	Communication disturbances with controller unit	
	20.04.2005 16:11:06	MES	1	MiniMEP	Communication fault c/o controller	
	20.04.2005 16:11:58	MES	2	testtype	Communication disturbances with controller unit	
	20.04.2005 16:11:58	MES	2	WDM 1.64	PC rebootet	
	21.04.2005 15:12:...	MES	1	Cold Res...	Communication disturbances with cent...	
	21.04.2005 15:12:...	MES	3	Distress C...	Communication disturbances with cent...	

User: CHIEF Online

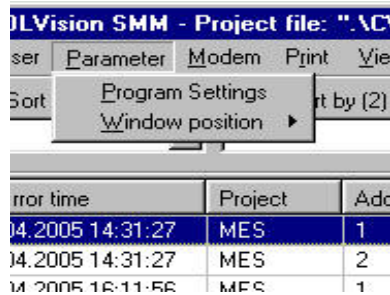


Reset error messages by a double click on the desired item



## Software Modules • SMM

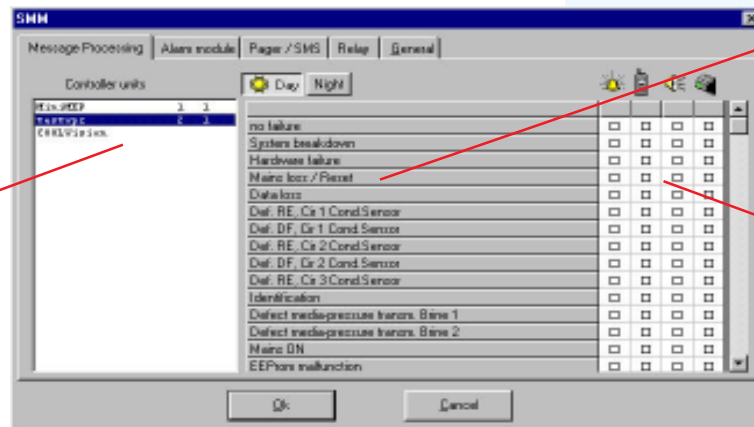
### Configure SMM



Open "Parameter/Program settings". In the resulting submenu you will find all available controller units under "Message processing". Here you can define the error message to forward and its target.

### Selection of Error Messages to Process

Controllers, whose messages shall be processed. In this listing all controller units of the current project appear with their network address. So a clear identification of the controllers is possible.



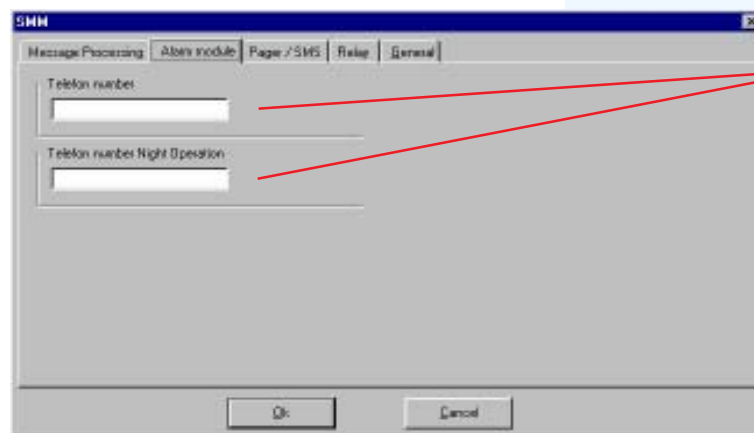
Here the possible error messages of the selected controller type appear.

Check here the target of forwarding.

### Choose Error Message Central Office (PC with SMM) as receiver

Enter here the phone numbers of an Error Message Central Office.

This is a PC with modem and running MDM, SBM and SMM for monitoring. All error messages checked under "alarm module (SMM)" will be forwarded to this target.



Different Error Message Central Offices can be called at day or night.

The times for day/night operation are set in register "General". If both times are identical, only one number can be entered here.

## Software Modules • SMM

### Error forwarding to a mobile phone (as SMS) or another pager system

SMS (Short messages) are not transferred directly to a mobile phone. The carrier is a provider which offers this service. COOLVision always sends information with a specific code to a service provider. This code allows the provider to transmit the information to a specific mobile phone or pager. The desired provider can be selected at the SMM.



In germany, the most reliable provider was **D1** up to now.

How the error message shall be transferred ?

Wake up the addressee by ringing the bell of its phone

This text appears on the display of the mobile phone or pager

Instead of the variables (e.g. [1]) the designations delivered by the plant appear (Macros).

Change text in the upper window as desired, the lower window displays how the text appears on the phone display.

Reset message text to factory setting.

Send example text to check proper operation.

The number of the mobile phone which should receive the SMS.

The service provider

The times for day/night operation are set in register "General". If both times are identical, only one number can be entered here.

### Wake-up the receiver of an SMS by an additional ring

Frequently, an addressee doesn't hear if a SMS has been arrived. With "Call mobile phone" checked the addressee will be called additionally, so the bell rings to call attention to the SMS.



#### Inside COOLVision: SMS-Provider-Numbers

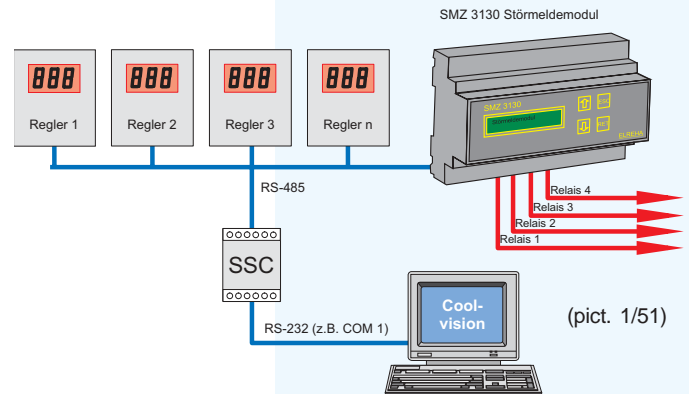
The service numbers of the SMS providers and their names are stored in a file called "smsProvider.lst". To edit or add providers, open this file by using a simple editor like "Notepad".

## Software Modules • SMM

### Error forwarding by relay contacts of an SMZ Alarm System

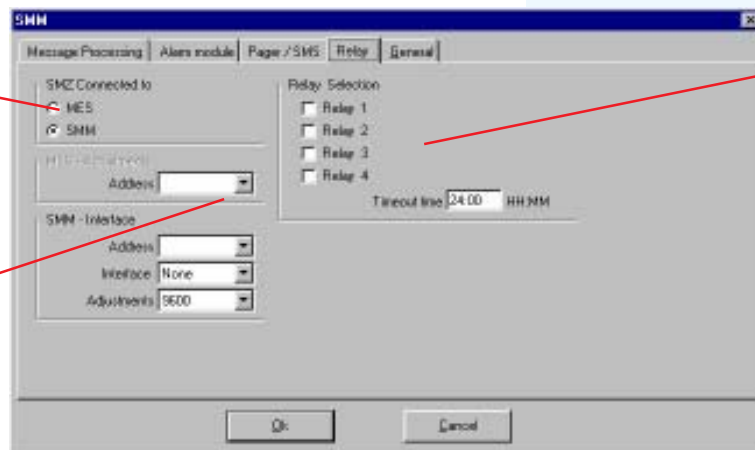
Each selectable error message can be forwarded by a relay contact of an SMZ Alarm System.

This SMZ can be located on the data bus (pict. 1/51) as well as connected to another interface of the PC (pict. 2/51).



Check 'MES', if the SMZ is located on the databus.

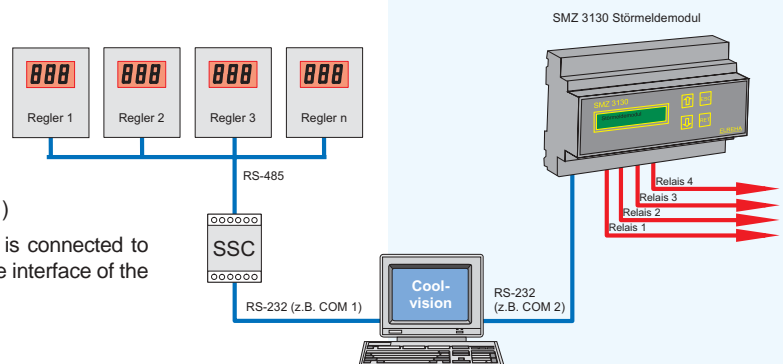
Address of the SMZ on the databus, because several SMZ modules could be connected to the bus.



Relay outputs of the SMZ module, which will be activated with an error message.

(pict. 2/51)

The SMZ is connected to a separate interface of the PC.



Check 'SMM' if the SMZ is connected to a separate interface of the PC.

Address of the SMZ module at the other PC interface.

Interface for SMZ connection

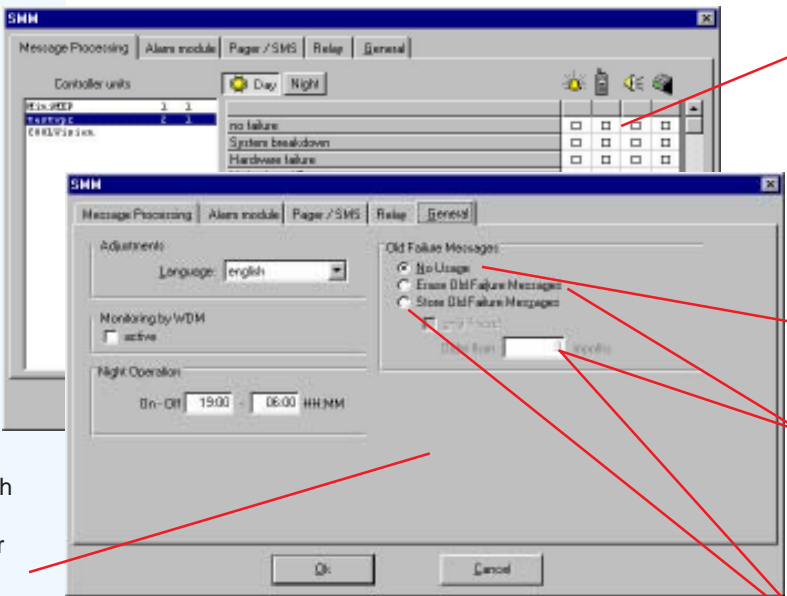
Data transmission speed.



Relay outputs of the SMZ module, which will be activated with an error message.

## Software Modules • SMM

### Storing error messages in the database only



Uncheck here to prevent forwarding.

What does the software do with old error messages ?

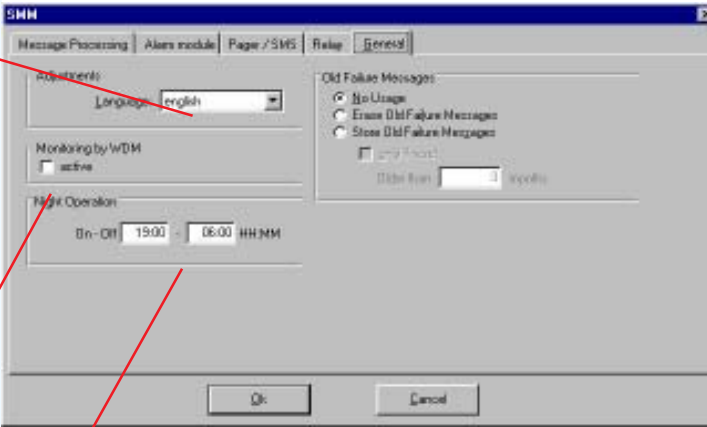
All error messages remain stored.

All error messages older than set here will be erased.

All error messages older than set here will be backedup in a separate error message database.

Only error messages which have been reset will be erased or backedup. Still active messages remain available

### Common Settings



Select language you want to use. After closing the box all lettering appear with the selected language.

Check if this module shall be monitored by the watchdog module.

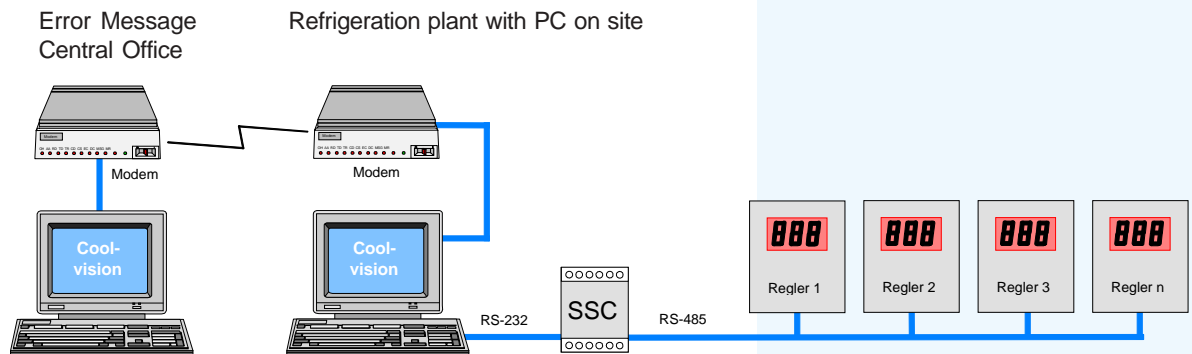
The times to switch from day to night mode (different phone/pager number). If the times are identical, only one phone number can be entered.

## Software Modules • SMM

### Error Message Central Office: Active scan for error messages



**TIP:** If you start the module SBM, all necessary modules for an Error Message Central Office (MDM, SMM) will start automatically at the same time.



To fetch error message listings from a PC on site, you must know the phone number of the plant and the project file of the plant to call must be opened.

Phone number of the plant to be scanned.

After choosing "Modem/Dial" the program tries to get a connection to the PC on site via the MDM module and the modem. With getting a successful connection you will be asked for user name and password of this project.

Error messages available on the PC on site.

Time period of the error messages to transmit.

Download selected error messages.

Terminate data transmission, hang up modem.

**Programm-Module • Störmeldemodul SMM**

**Error Message Central Office: Waiting for error messages**



**On the PC operating as an Error Message Central Office the modules MDM, SBM, SMM must run exclusively.**  
**TIP:** If you start the module SBM, all necessary modules for an Error Message Central Office (MDM, SMM) will start automatically at the same time.

**Principle of error message receiving:**

If the plant is not equipped with a PC on site but with SMZ or VPR as frontend systems:

- The modem module MDM accepts the call
- The standby module SBM takes the plant code and starts MES with this project for a moment
- MES transmits the messages to SMM, which displays them on its listing

If the plant is equipped with PC on site and COOLVision

- The modem module MDM of the office accepts the call
- The error message appears on the listing of SMM immediately



**The PC which works as Message Central Office accepts no messages while the MES module is running!**

**Printing options**

'automatic printout':  
Each incoming message will be printed out immediately.

'Print selected errors' prints all manually marked error messages

Enertime	Project	Address	Unit name	Error message	Notice
19.04.2005 14:31:27	MES	1	MiniMEP	Communication fault -> controller	
19.04.2005 14:31:27	MES	2	testtype	Communication disturbances with controller unit	
20.04.2005 16:11:56	MES	1	MiniMEP	Communication fault -> controller	
20.04.2005 16:11:56	MES	2	testtype	Communication disturbances with controller unit	
20.04.2005 16:11:56	MES	2	WDM 1.64	PC rebooted	
21.04.2005 15:12:51	MES	1	Cold Room 1	Communication disturbances with controller unit	
21.04.2005 15:12:51	MES	3	Distress Cell...	Communication disturbances with controller unit	
21.04.2005 15:12:51	MES	2	HADCP Rec...	Communication fault -> controller	
21.04.2005 15:12:51	MES	4	Compound...	Communication disturbances with controller unit	
21.04.2005 15:18:08	MES	5	TKP3000	Communication disturbances with controller unit	

'List' opens the following dialog:

All messages will be printed.

Messages will be selected and printed out by this

Time period of the messages to print.

**SMM-print**

Print options

☐ All alarm messages

☒ Print By

☒ Project

☐ Unit name:

☐ Error name

Time Period

From:  To:

Printer selection and configuration dialog, depends on printer type.

Select font and font attributes for printing as tables here

## The Database Module DBM

DBM has the task to manage database files and to monitor their integrity. COOLVision knows 3 kinds of databases with recorded information:

1. *Daily Databases* Creates a database for each day of the year and stores it in folder "/P\_daten".
2. *Analyse Databases* To display longer temperature flows, 3 minutes after each full hour DBM copies data from the daily database to an analysis database file, located in folder "/A\_daten". This is the information source for the "Analysis Module". The analysis database always contains logged data of the last 4 months.
3. *Quarter Databases* With the begin of the 5th month, the data of the 1st month will be transferred to a "Quarter database", to prevent the Analysis Database from getting to extensive. After reorganisation and packing the quarter database is stored in folder "/A-daten".

Strategy: Data recording start e.g. at the 1st january.

At the last day in April, the Analysis Database contains the data from January to April.

At the 1st. May data from January will be transferred to the 1st. Quarter Database. (Analysis-DB: February to May)

At the 1st. June data from February will be transferred to the 1st. Quarter Database. (Analysis-DB: March to June)

At the 1st. July data from March will be transferred to the 1st. Quarter Database. (Analysis-DB: April to July)

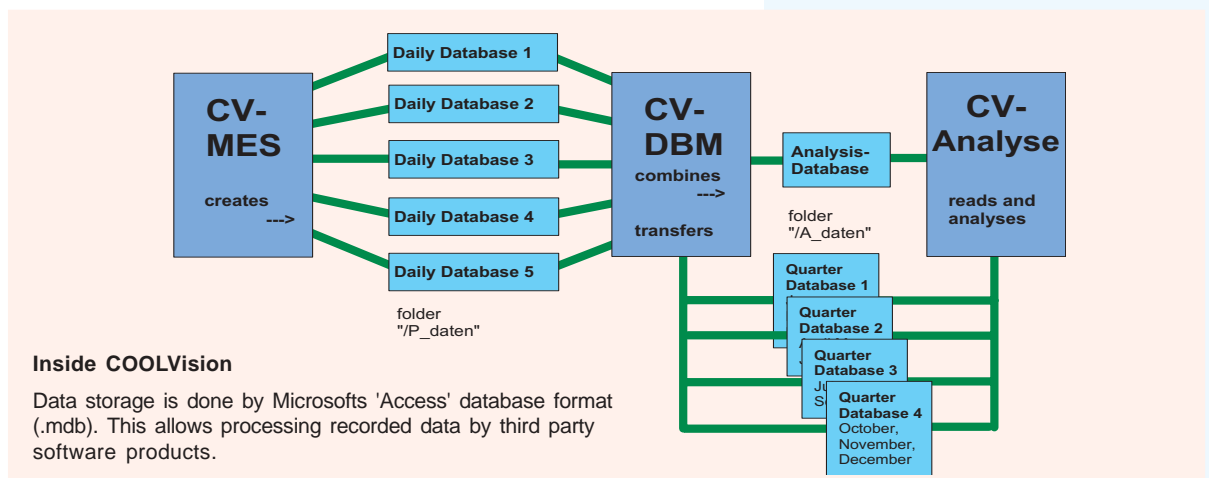
At the 1st. August data from April will be transferred to the 1st. Quarter Database. (Analysis-DB: May to August)

At the 1st. September data from May will be transferred to the 2nd. Quarter Database. (Analysis-DB: June to September) and so on.

The **reorganisation** of the databases starts automatically at 3:00am every day. At this point in time the database will be checked for failures, repaired if necessary and packed.



**DBM must always run if data should be recorded.**





## Software Modules • DBM • The database module

### Menu Overview

<b>File</b>	
Database update .....	Transfer daily databases to analysis database
Database complete update .....	Create a new analysis database (experts only)
Erase database, create a new one .....	Recreate an analysis database
Create a quarter database .....	Create a quarter database manually (experts only)
Compress database .....	Manual packing of databases (experts only)
Delete data manually .....	(experts only)
Exit .....	Exit program
<b>User</b>	
Login .....	Login user to get rights
Logout .....	Logout user to cancel rights
Change Password .....	Change password (previous password necessary)
Configuration .....	Create new user and rights access rights
<b>Parameter</b>	
Program Settings .....	General adjustments like language, etc.
Window Position	
Maximized .....	Program window after start in full size
Minimized .....	Program window closed after start
<b>Help</b>	
Info .....	Software version, Customer Licence



All DBM functions run automatically, but can be used also manually (experts only!):

### Database update

All daily databases, written since the last update, will be transferred to the analysis database. Without doing this, the new data cannot be read or analyzed by the analysis module. The analysis module itself controls this function by 'Update data via DBM'.

### Database complete update

Completes the analysis database by data from all daily databases without erasing any item (! for experts only, very time-consuming).

### Erase database, create a new one

Erases the current analysis database and creates a new one (! very time-consuming)

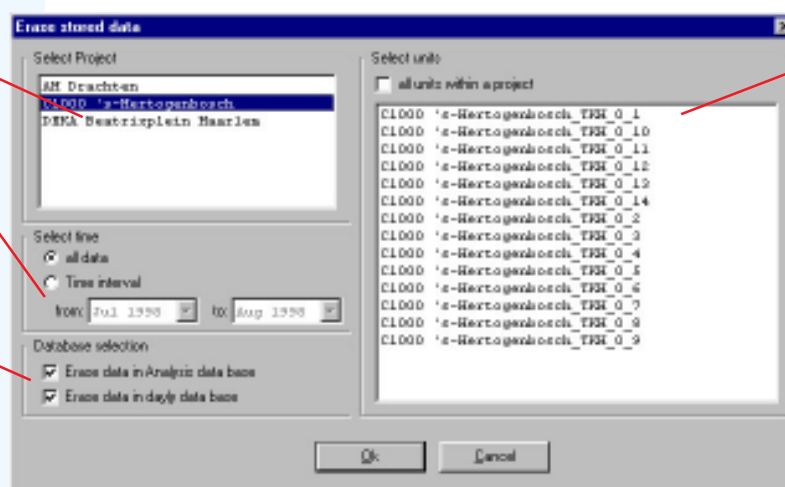
### Delete data manually

Here experts are able to delete old data

Plant with the data to delete.

Period of time of data to be deleted.

Delete from which database ?



Position (controller unit) whose data should be deleted.



! If someone erases a daily database or data from a daily database, data cannot be restored !



## Software Modules • DBM • The database module

### Program Settings

Folders on the harddisk for the databases.  
**We recommend not to change this settings.**

If unchecked here, the daily databases cannot be transferred to the analysis databases !

Select the language you want to use. After closing the box, all lettering appear with the selected language.

Check if this module shall be monitored by the watchdog module.

### Security Function Memory Check

Harddisks of modern PC's have enough memory space, nevertheless, by monitoring extensive refrigeration plants they fill up quickly. To prevent the PC from a data collapse, DBM starts a memory check at certain times automatically. If memory space of the harddisk falls short of a specific limit, DBM creates an error message and forwards it via SSM.

Set mark for automatic memory checks

If not checked here, a notice will be transferred if memory space falls short of 20 MB.

If checked, the warning limit can be set as desired.

Drive	Remark
c: [SYS]	No advice
d: [DATA]	No advice
e: [WEB]	No advice
t: [DATABACK]	No advice
g: [SYSBACK]	No advice
j: [VMVSERVER\TRAN...]	No advice

Point in time of memory check

Drive to check. Select the drive which contains the databases here (default c:)



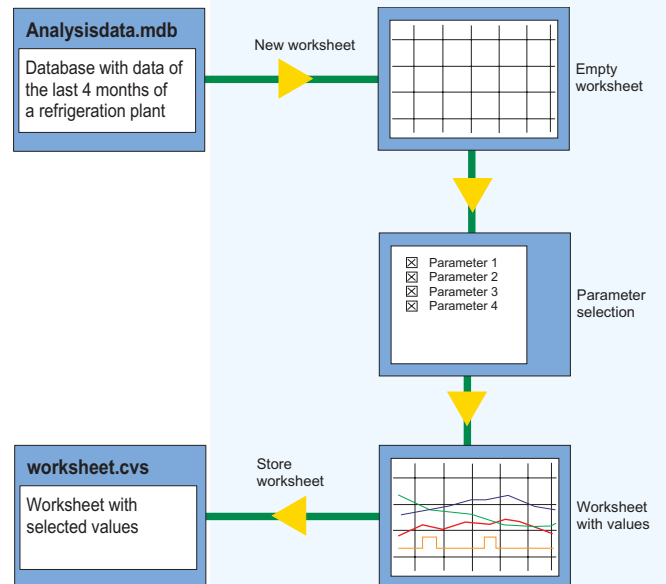
## ANA - The Analysis Module

The task of this module is to prepare recorded data for displaying as tables or diagrams as well as for printing. Moreover (in co-operation with MDM) the module offers remote access to recorded data located on a PC on site.

### Function

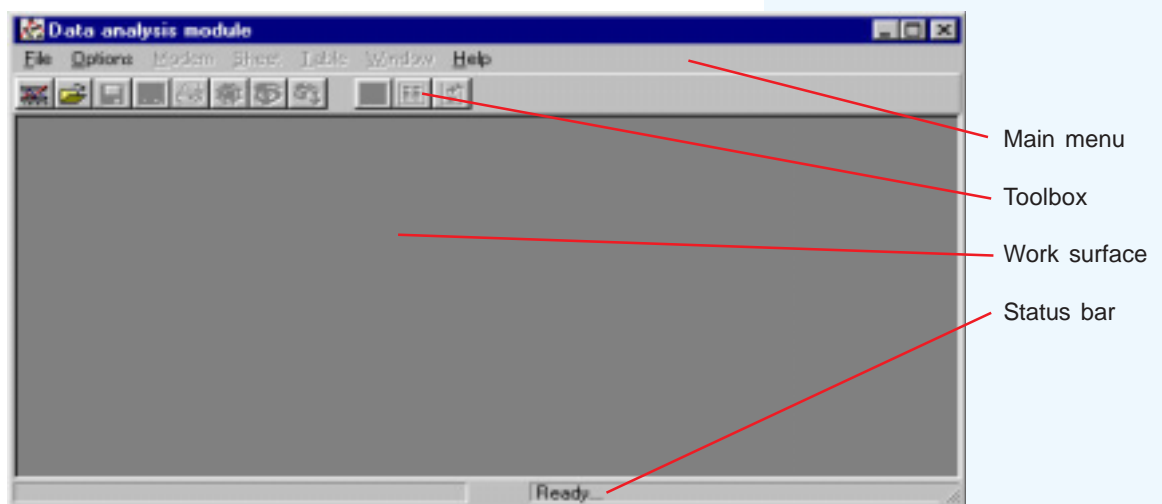
At a specific point in time an analysis database with recorded data is located in folder "A\_datan".

- You open a new, empty worksheet
- You select the parameters you want to see on this worksheet.
- You store the worksheet under any name to reuse it any time you need it



### User Interface after run-up

The analysis module opens with an empty work surface. The most important functions from the main menu are also available on an icon bar (toolbox).



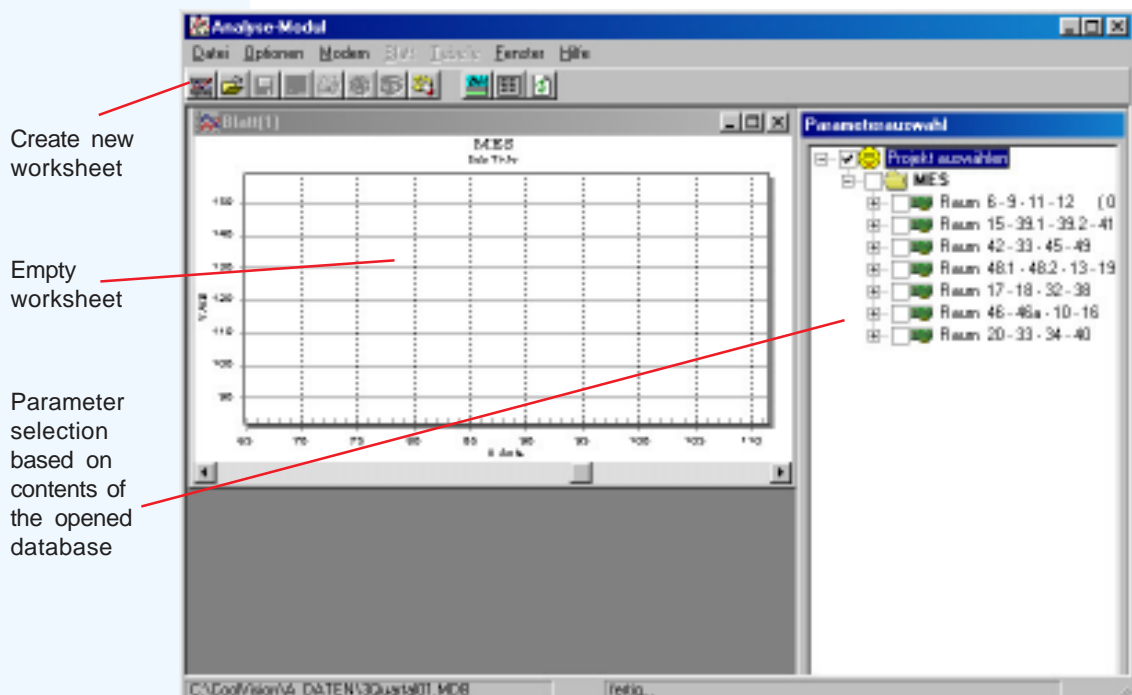
## Software Modules • ANA • The analysis module

### Main Menu Overview

<b>File</b>		
New sheet	.....	Open database and new, empty worksheet
Open sheet	.....	Open available worksheet
Close sheet	.....	Close current worksheet
Open table	.....	Open data table
Close table	.....	Close data table
Update database via DBM	.....	Update of the database, complete it with new data
Exit	.....	Close analysis module
<b>Options</b>		
Program Options	.....	Common settings like language and folders
Toolbox	.....	Switch icon bar on/off
<b>Modem</b>		
Dial	.....	Dial PC on site
Telephone number	.....	Phone number of the PC on site
<b>Sheet</b>		
Parameter selection	.....	Compile values for the worksheet
Show table	.....	Display data tables
Add new sheet	.....	Add new worksheet
Period selection	.....	Select data out of a specific time period
Sheet Settings	.....	Worksheet settings (color, designations, etc.)
Undo zooming	.....	Show all data
Maximize	.....	Fullscreen display of worksheet
Save	.....	Save worksheet
Save as	.....	Save worksheet with new name
Save sheet as Bitmap	.....	Export worksheet as a bitmap
Print	.....	Print worksheet
Close	.....	Close worksheet
<b>Table</b>		
Options	.....	Compile values for the table
Period selection	.....	Select data out of a specific time period
Save	.....	Save table
Print	.....	Print table
Close	.....	Close table
<b>Window</b>		
Sheet	.....	Only the worksheet are displayed
Table	.....	Only the table are displayed
Sheet + Table	.....	Worksheet and table are displayed at the same time
<b>Help</b>		
About	.....	Software version, customer license

### Create a new worksheet

Choose "File/New sheet" or the shown icon in the toolbox. Select the database which contains the data to display. An empty worksheet with a parameter selection window opens. Alternatively, the parameter selection window can be opened by "Sheet/Parameter selection" or a right mouse button click on the worksheet.



## Software Modules • ANA • The analysis module

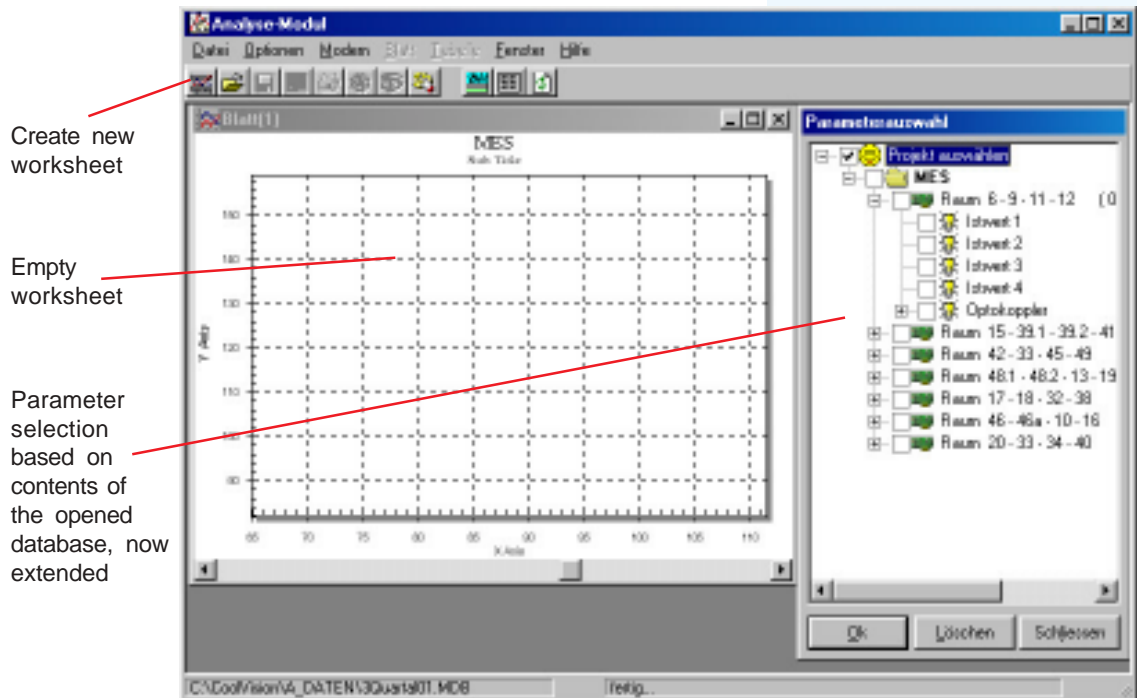
### Selection of parameters to display

The window "Parameter selection" contains a listing of all controller units whose data has been recorded. A click on the '+' next to the position name opens the available parameters.

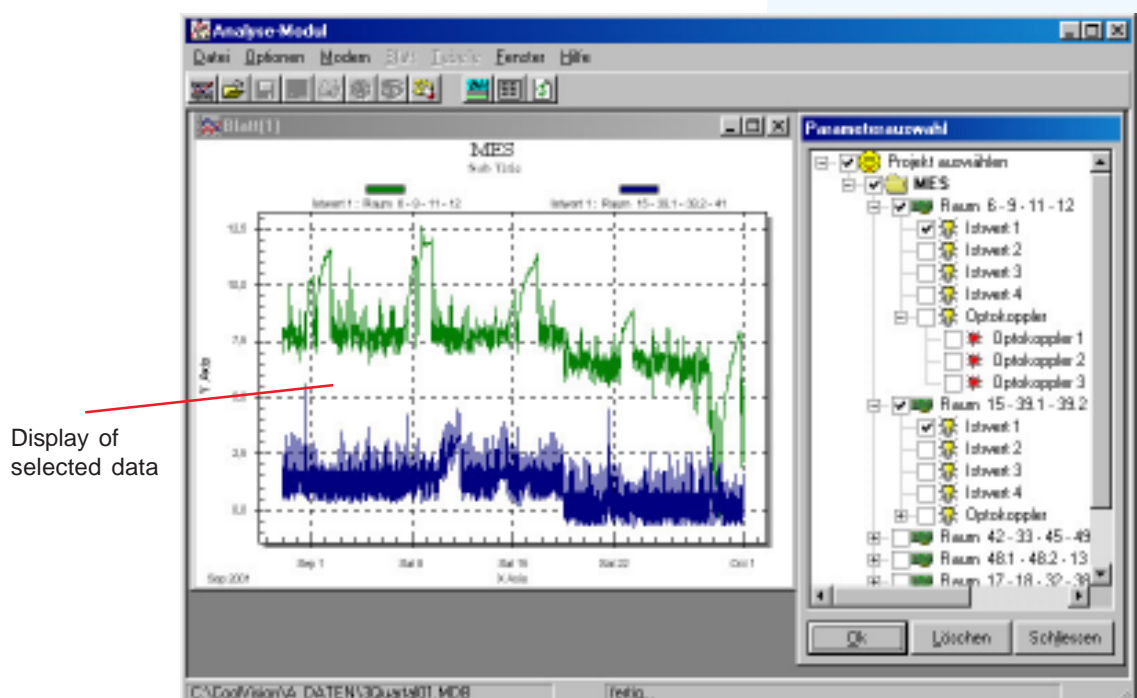


Depending on controller type, the quantity of parameters may be enormous. To improve survey, the amount of displayed parameters can be reduced. After a click on the parameter selection window with the right mouse button you get the following selections:

- All = All parameters are displayed
- Actual = Actual values and digital input states
- Default = Actual values only



If you check these parameters they will be displayed on the worksheet after confirmation by 'OK'.



## Software Modules • ANA • The analysis module

### Save worksheet

Choose "Sheet/Save" or "Sheet/Save as". The same menu appears with a right mouse button click on the worksheet.

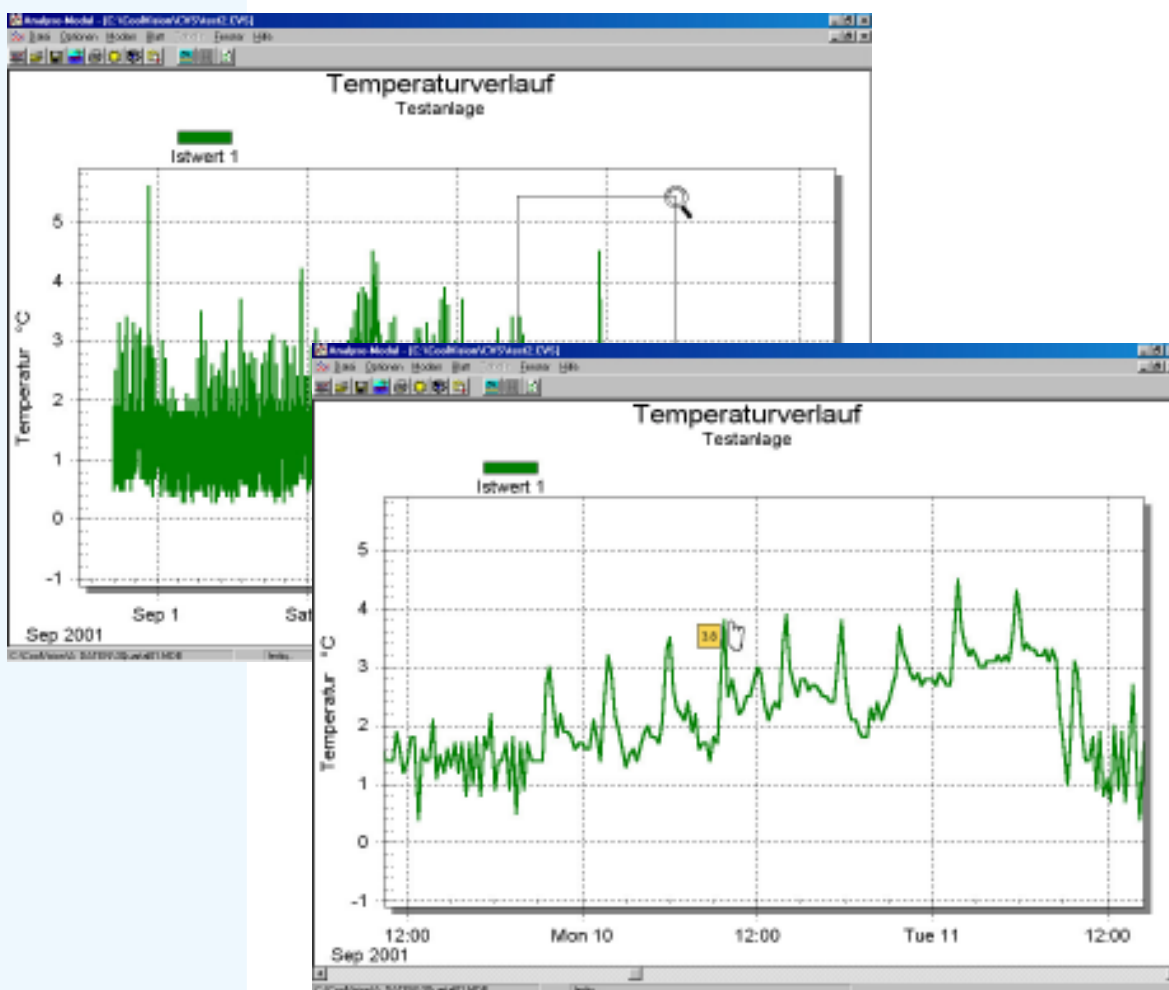
### Maximize worksheet

- Click on the square icon at the upper right side of the worksheet window
- Double click on the upper blue margin of the worksheet window
- Menu "Sheet/Maximize"

### Zoom diagram

Hold left mouse button and draw a square around the area to zoom. With releasing the button, the isolated area will be zoomed. This is the way to zoom more and more..

With "Undo zooming" (Menu 'Sheet' or right mouse button) all data will be displayed again.



### Display of exact values

If you move cursor over a value junction, the cursor changes itself to a 'hand' symbol. After a left mouse button click the exact parameter value occurs.

## Software Modules • ANA • The analysis module

### Sheet settings...

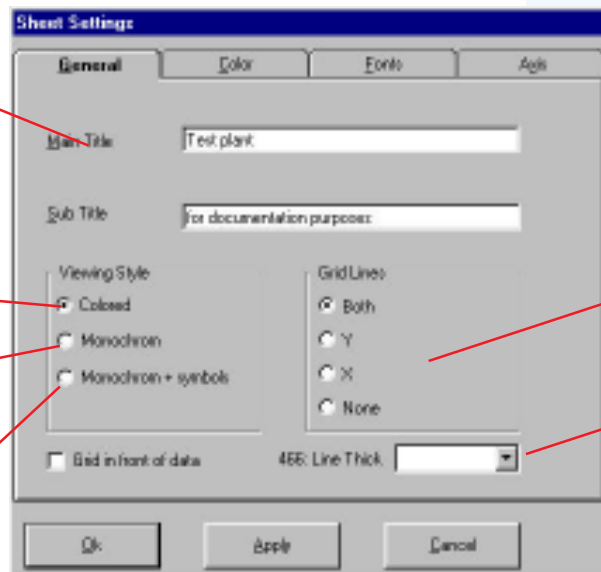
...you can find under "Sheet / Sheet Settings" or by a right mouse button click on the worksheet. By this, you are able to set scaling, designations and color of your worksheet.  
The new attributes will be used after confirmation by button 'Apply'.

Main title and subtitle of the worksheet

Curves are displayed in color

Curves are displayed black and white

Curves are displayed black and white with junctions



Kind of grid lines

Set line thickness

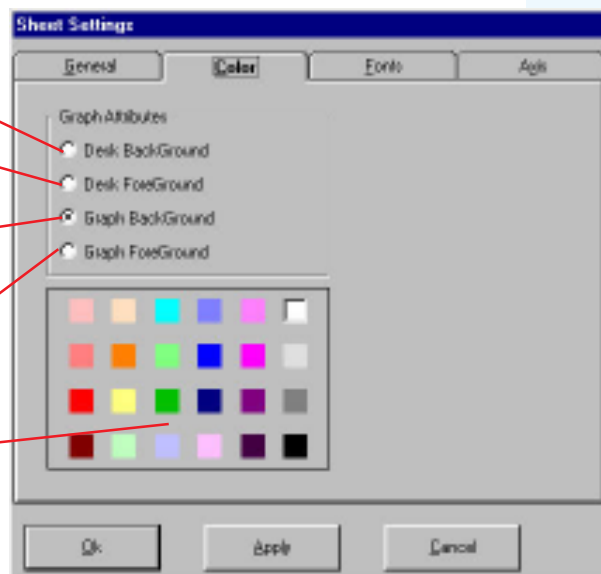
Background color

Color of lettering

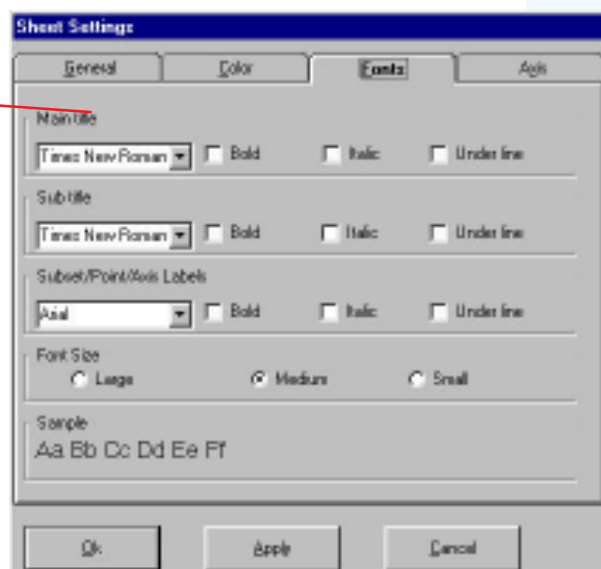
Background color of the system of coordinates

Color of grid lines

Color selection



Fonts, font size and attributes of lettering



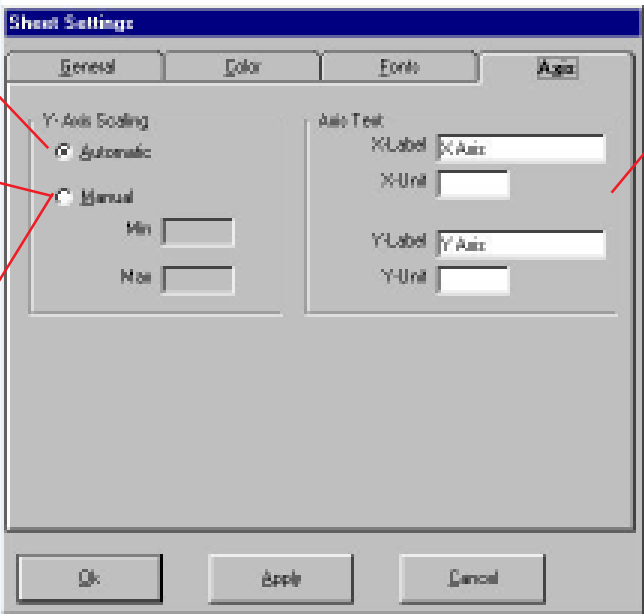
Software Modules • ANA • The analysis module



Scaling of the axis is done depending on the available values

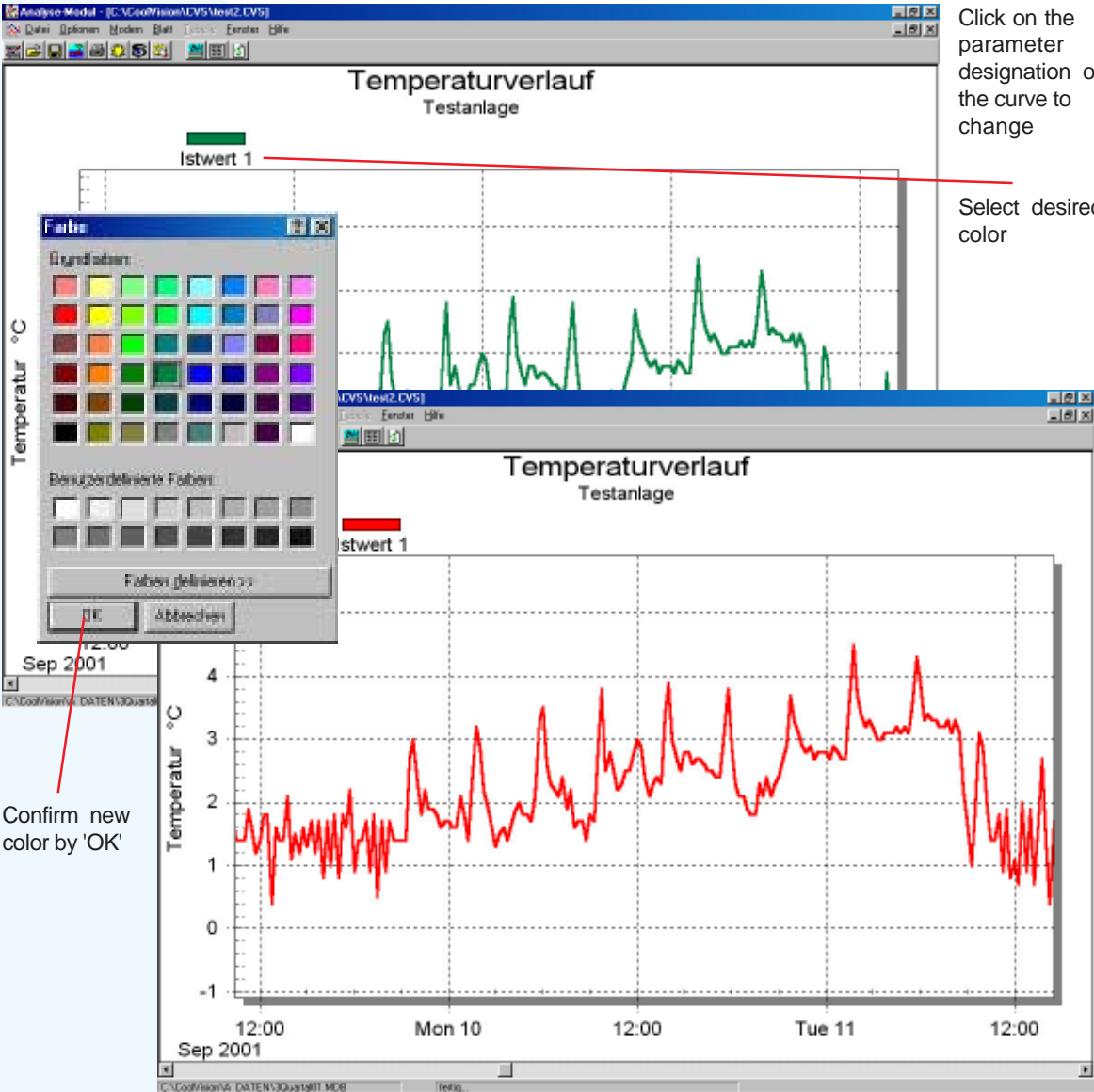
Set manual scaling, enter any values

If you have zoomed before, a manual scaling will not be displayed immediately. For this, you must switch back to 'Undo Zooming' for a moment.



Designation of x-axis and y-axis of the diagram

Color of the curves



Click on the parameter designation of the curve to change

Select desired color

Confirm new color by 'OK'

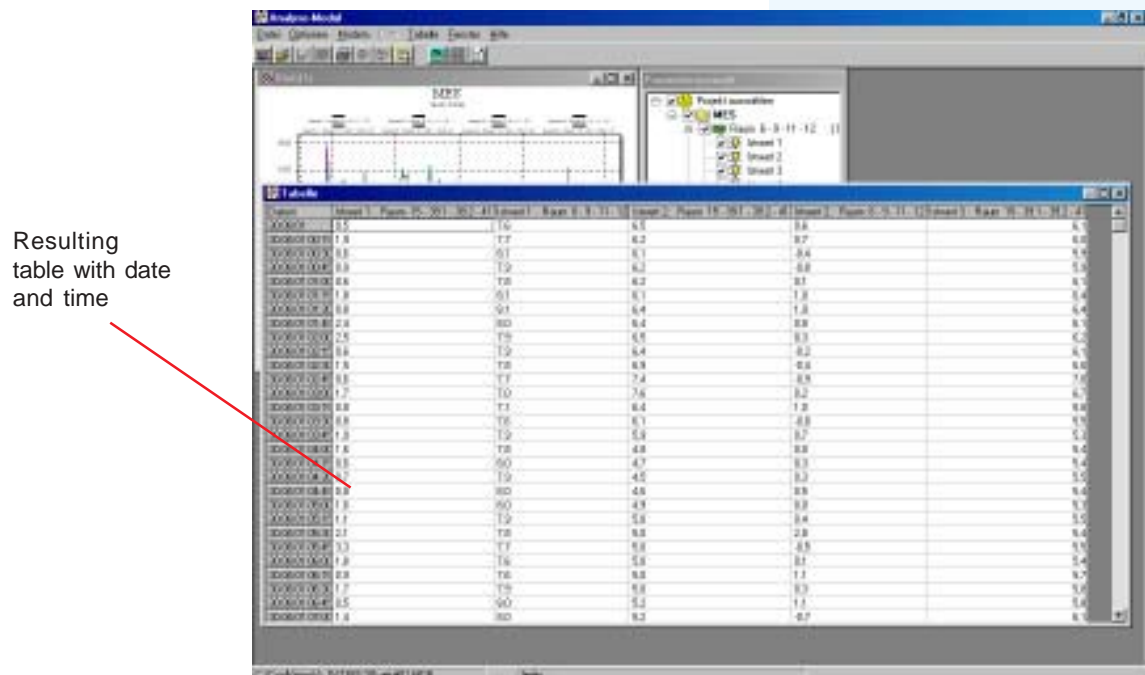
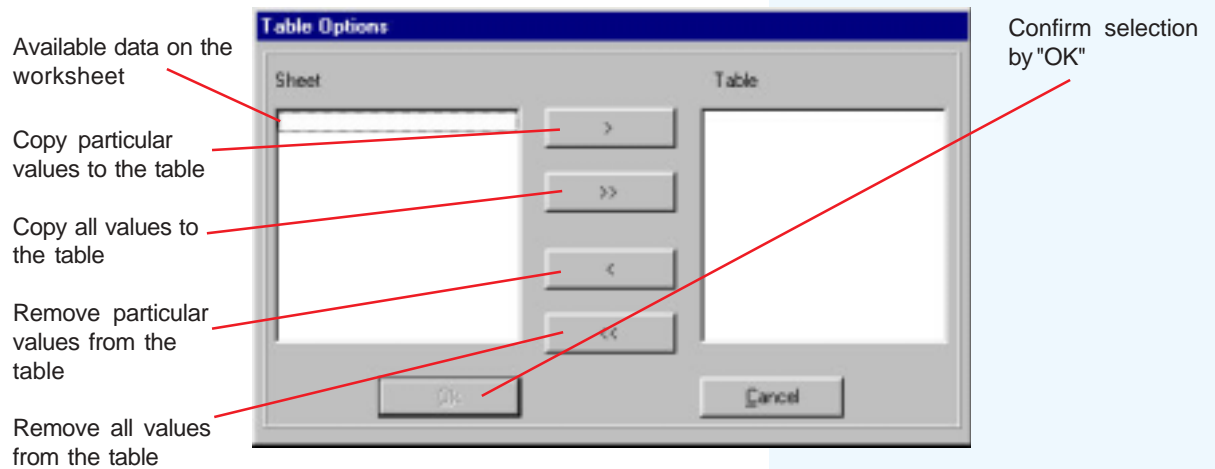


## Software Modules • ANA • The analysis module

### Create data table

Click on a worksheet and choose "Sheet / Show Table" in the main menu. In the dialog box "Table Settings" you select the parameter which should appear on the table.

You get the same dialog box by a right mouse button click on the worksheet.



By a click into the table with the right mouse button the table settings dialog box appears at any time to change the table contents as desired.

## Software Modules • ANA • The analysis module

### Choose time period:

Limit the period of time of table data

### Save table:

Select any name for the table. The table will be stored with this name as a textfile (.txt) in folder '/A\_daten'. This textfile can be printed or can be read by any text editor or spreadsheet software.

### Printing:

By using this printer dialog box, the table can be prepared for printing.

Desired printer

Unprinted paper margin

Paper position

printout font

Sheet from...to

## Remote access for diagram display

### Remote access to a PC on site with specialized software

If you want to display extensive diagrams on your service PC, we recommend to use specialized 'Remote-Software' e.g. like the product 'PC-Anywhere' from Symantec Corporation. With such a product it is possible to operate the PC on site from your office.

The screen contents of the PC on site will be transferred to your service PC, so remote maintenance is possible and a transfer of the huge databases is not necessary.

### Remote access to a PC on site with the Analysis Module

If you want to display diagrams of a short period on your service PC (e.g. 1-2 days only) and so less data must be transferred, the analysis module can also be used for remote access.

#### Precautions:

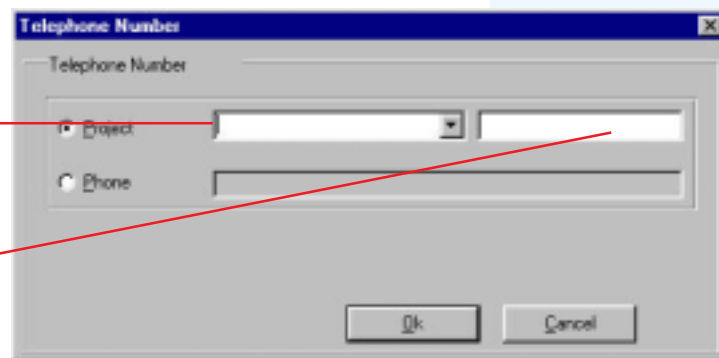
- Module MDM must run
- Plant project file (.cvi) must be available on the service PC

#### Access:

- Choose 'File/New Sheet'
- Create a new database (.mdb) with a new name, confirm the request "Database does not exist, create it" with "yes" or open an existing database. The worksheet opens.
- Open "Modem/Telephone Number" and choose a project.

All available projects (.cvi-files) on the service PC will be displayed here.

Telephone number of the modem on site

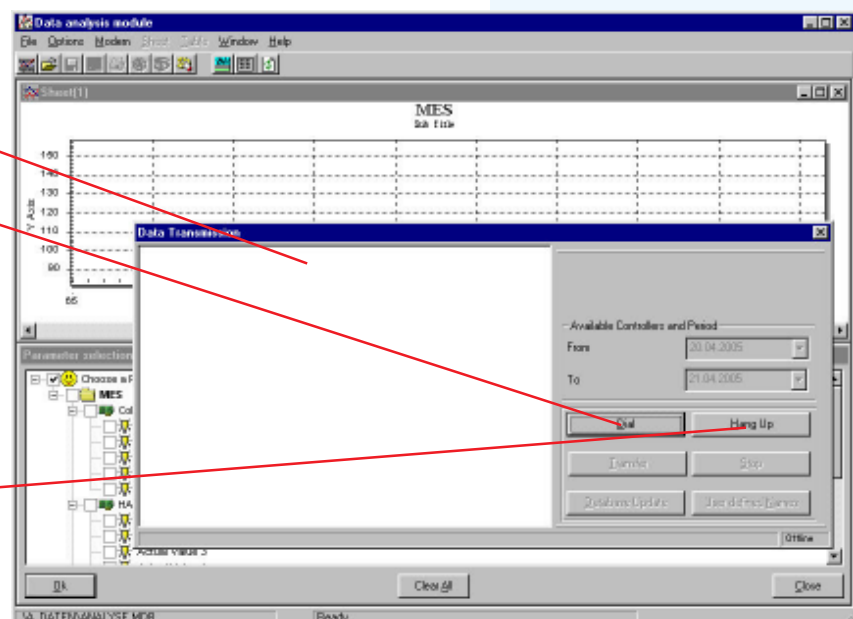


- Open "Modem/Dial", the data transmission window opens
- Confirm again by button "Dial"

Data transmission window

Dial

Hang Up

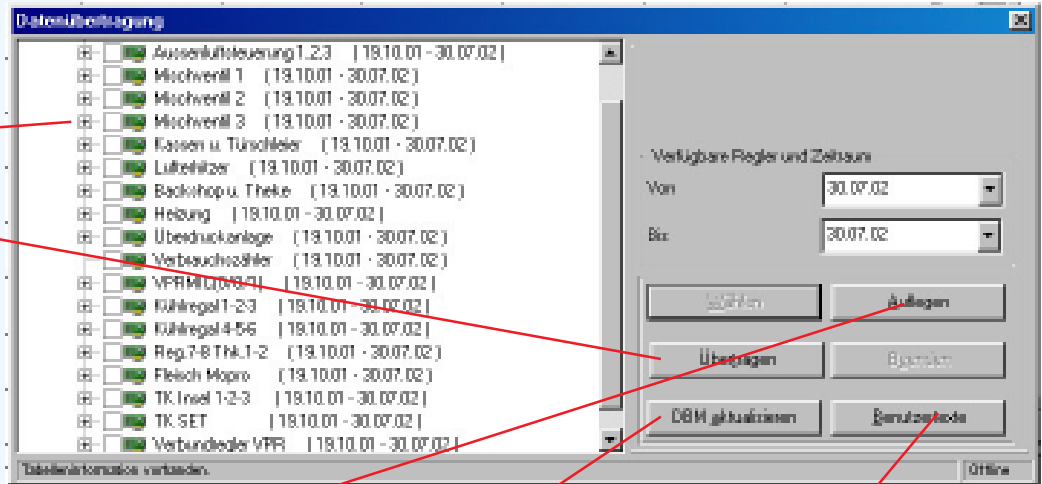


## Software Modules • ANA • The analysis module

- After a successful dial-up, you will be asked for user name and password.
- The data transmission window now shows the available controller units, parameters and recorded time periods

Controllers and parameters of the PC on site

Start data transmission



Terminate data transmission, hang-up modem

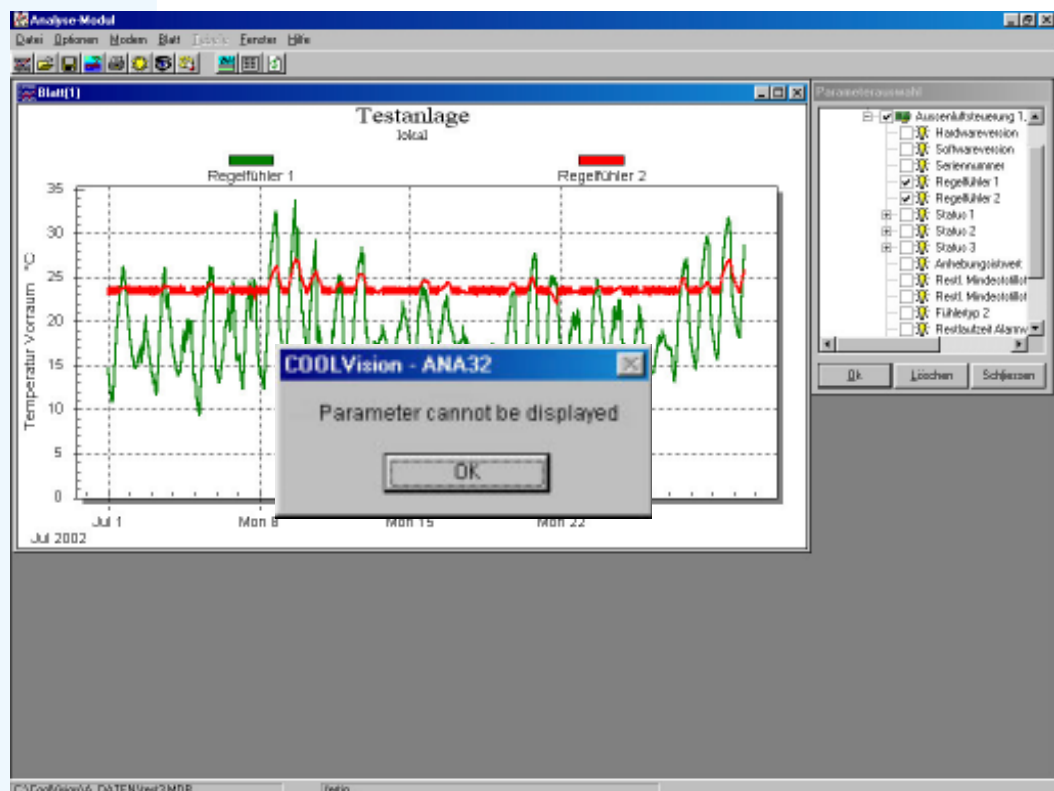
Order the DBM module to add the newest recorded data

Usually, only recorded data will be transferred and only controller designations appear in the parameter selection window. With a click, the user defined position designations will be transferred too.

- Select desired parameters and click on "Transfer"
- Terminate successful data transfer by "Hang Up"
- Now the parameter structure will be displayed in the parameter selection window and you are able to display parameters as desired



Even though the complete parameter structure is displayed, only the parameters selected for data transmission can be displayed as graphs. All other parameters deliver the note "Parameter can't be displayed".



# Appendix

Here you will find basics about the technical part of networking as well as the data sheets of the used network components like Interface Converter and Hardware-Watchdog.

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## EMC-Basics

**Electro-Magnetic-Consistency**, a topic that requires more 'Know-How' and expense from electronic manufacturers year by year. Because the number of installed electronic systems increases permanently, the number of potential disturbance sources increases too. Installed electronic systems, wires of the energy providers, HF-transmitters and other communication systems produce an invisible but annoying 'electric-smog', which can take a negative effect on applications.

These disturbances take effect on all biologic (humans included) and electrotechnical systems. They cause failure currents which can have different consequences:

- Malfunctioning
- Short-time measurement errors
- Permanent measurement errors
- Short-time data-link interrupts
- Permanent data-link interrupts
- Loss of data
- System damage

The consequences for biological systems are still unexplored, but the consequences for electrotechnical systems can be measured. The most unfavourable case is that we can see them, because our system does not work as we like.

### EMC disturbance sources

Potential sources of EMC-disturbances are all electrotechnical systems like e.g.:

Relay solenoids, contact sparks, electric motors, motor speed controllers, brightness controllers, mains voltage wires, high voltage wires, radio transmitters, TV-transmitters, mobiles, microwave ovens, x-ray units,.....

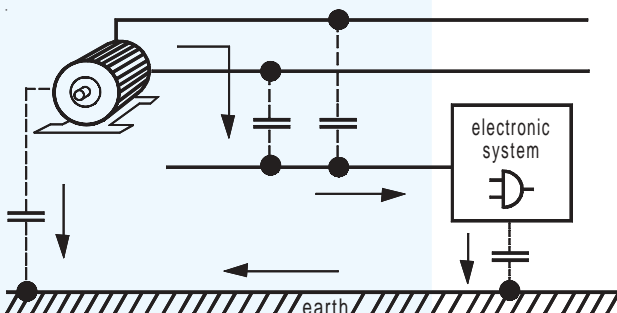
Natural phenomena can also be the source for EMC-disturbances: Thunderstorms, electrostatic discharge during low air humidity,....

### The ways EMC-disturbances reach a system

In the physical science we know different ways causing disturbances to systems; below you can see the most important ones. The arrows in the diagrams should make clear on which ways the failure currents are coupled to a system.

#### ● Capacitive Coupling

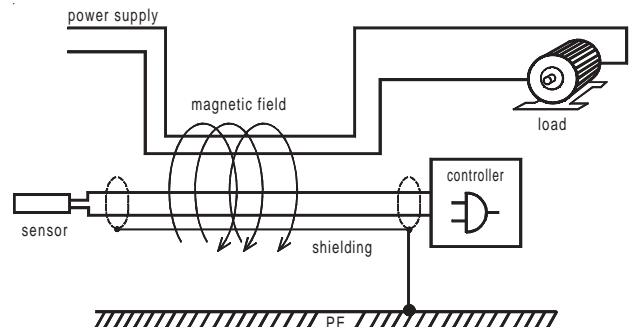
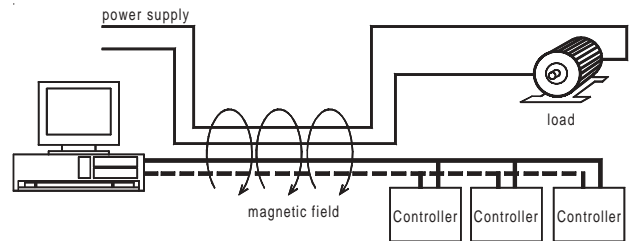
So-called "parasitic" capacities allow a current flow between plant parts which are not connected with each other. The bigger the distance between the plant parts, the smaller are the parasitic capacities.



#### ● Inductive Coupling

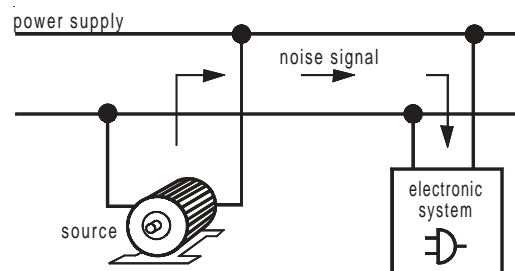
Mostly caused by mains voltage wires placed parallel to signal wires, e.g. motor power wires or similar.

The induced voltages on the signal wires can be considerably high.



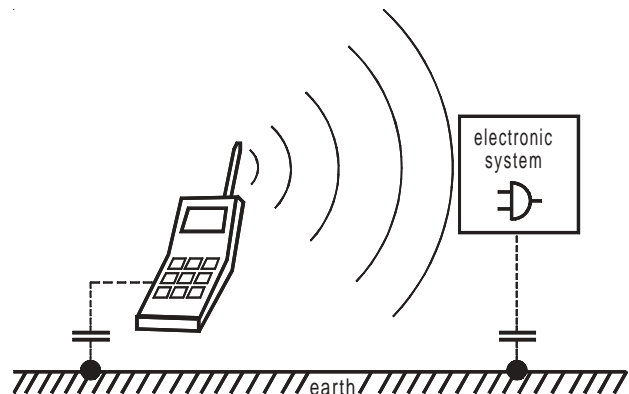
#### ● Galvanic Coupling

The disturbance reaches the system by wire.



#### ● Radiation Coupling

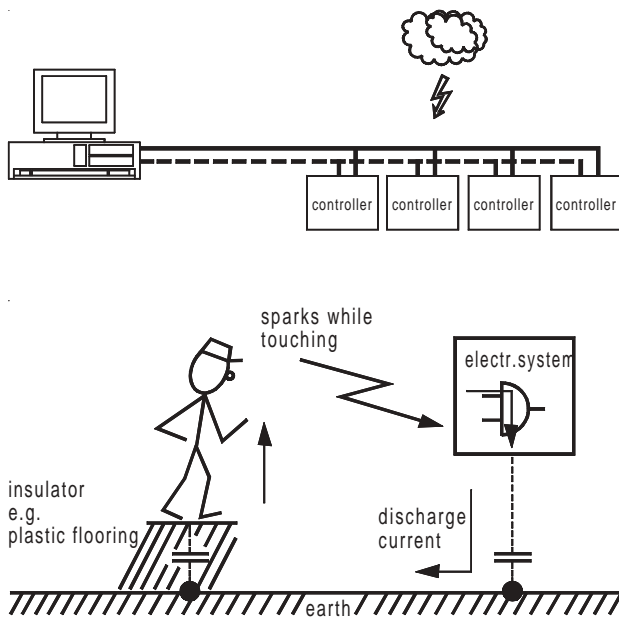
HF-radiation, produced by relay contact sparks, motor speed controllers or HF-transmitters (TV, radio, mobiles) is "beamed" into the systems with high field strength.



## EMC-Basics

### Discharges

Disturbances by thunderstorms or other discharges, called **ESD** (Electro-Static-Discharge) and surges.

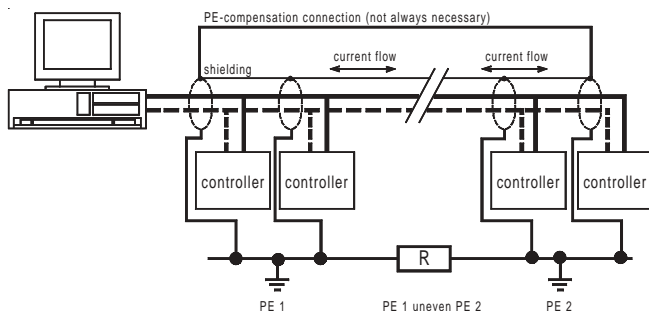


### Additional disturbance sources

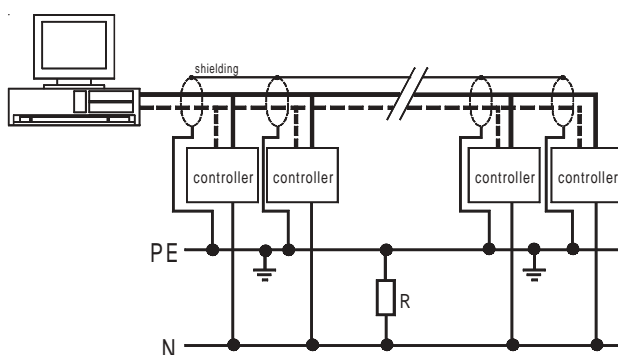
- Plant components of other manufacturers or very old components which don't keep the EMC-requirements can cause some of the named jammings.

Additional disturbance sources can arise by wiring

- Potential differences between the PE's (power earths) of different plant parts or buildings can cause a considerable current flow on the shielding of data-link wires.



- Potential differences between PE and mains neutral.



## CONNECTION & SAFETY INFORMATION

### Please read before Start-up



The guarantee will lapse in case of damage caused by failure to comply with these operating instructions! We shall not be liable for any consequent loss!

We do not accept liability for personal injury or damage to property caused by inadequate handling or non-observance of the safety instructions! The guarantee will lapse in such cases.

Servicing or repair work may only be carried out by a specialist workshop.

When setting up the product, make sure that the cable is neither bent nor squeezed.

Cleaning The use of a dry, lint-free cloth is sufficient to clean the product.

- Limit of Application:** This product is not designed nor manufactured for use in equipment or systems that are intended to be used under such circumstances that may affect human life.



For applications requiring extremely high reliability, please contact the manufacturer first

- Electrical installation and putting into service must be done from authorized personnel.

- Please note the local safety instructions !



- Before installation: Check the limits of the controller and your application. Before starting up we recommend you to read the following instructions for use, since only by doing so you can avoid damage or malfunction and you will benefit all the advantages offered by this product.

- During installation and wiring never work when the electricity is not cut-off !**

- Mounting the controller close to power relays is unfavourable in case of the electro-magnetic interference.

- Before applying voltage to the controller: Make sure that all wiring has been made in accordance with the wiring diagram in this manual. Check, if the supply voltage corresponds to the value printed on the type label.

- Connect the 'PE' terminal carefully to ground because otherwise the operation of the internal noise filter will be disabled.

- Respect the environmental limits for temperature and humidity. Outside these limits malfunctions may occur.

- Never operate unit without housing.**

- Observe the maximum admitted current rate for the relays (see technical data). Compare with the peak start-up current of the controlled devices (valve, fan, compressor, heater..)

- Sensor cables may be up to some hundred meters in length. Use shielded sensor cable only. Don't install them in parallel with high-current cables to prevent inductive interference. A cross section of min. 0,5mm<sup>2</sup> is sufficient.

- Shielding has to be connected to PE at the end near the controller

- All used temperature sensors must be identical. Never use PTC (TF 201) and PT1000 (TF 501) mixed. This will not work.

- TF-type sensors are not designed for being immersed in water for a long period of time . In such a case, always use dip-fittings.

- Be care that the wiring of interface lines meets the requirements

Hardware - Installation

Networking of controllers via databus

Service contractor	phone network	Refrigeration plant	
			Plant control and data recording on site, no remote access.
			Plant control and data recording on site. Remote access and remote control by service contractor. Transmission of error messages to a service PC or as SMS.
			Remote access to a plant with a VPR compound system also operating as frontend system, no PC on site.
			Remote access to a plant with a SMZ alarm system also operating as frontend system, no PC on site.

Networking Components

- The Personal Computer (PC)**  
 This is a computer of the Pentium™-class, running with MS-Windows™ 2000 or XP. It can be a portable or a desktop PC. Within the networked plant the central unit is also called **'Bus-Master'**, the connected controllers are called the **"Slave"**-units. The 'Master'-function can not only be practised by a **PC**, but also by central compound units like the **VPR** or **SMZ**-central alarm units.
- The serial PC-interface**  
 Every PC has one or two serial RS-232-interfaces (called COM1 resp. COM2). This interface has the disadvantage of not being designed for the rough industrial environment. It allows to connect one device only (point 2 point-connection), and the wires may not be longer than approx. 20m.

- The Interface Converter**  
 This unit converts the RS-232-signal of the PC into RS-485-signals, and reversely. This converter can be a SSC-1022 connected to the COM interface or an integrated RS-485 PC-Card. Its internal optical decoupling has two important tasks: It prevents potential difference based failures and protects the PC from damages from the plant.

Distance PC <-> SSC < 20 m, SSC <-> plant 1km max.

- i** The systems VPR-19xxx and SMZ-31xx, both able to operate as frontend systems, are equipped with both interface types, so an external interface converter is not necessary.

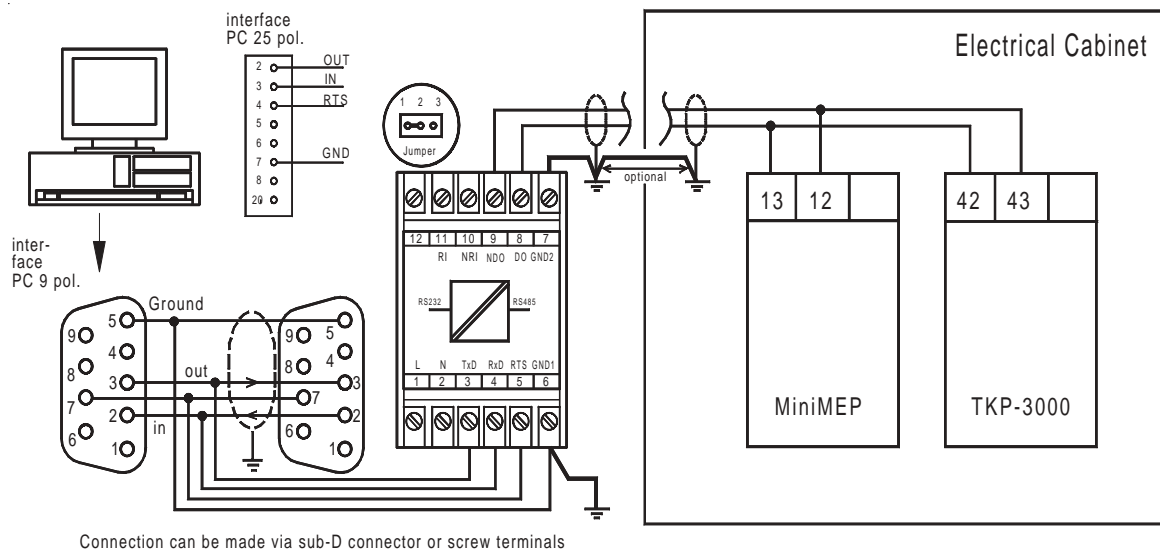


## Hardware - Installation

- 4 RS 485-Bus:**  
The RS-485 bus-system is well known as a fast and efficient data transmission medium. It has a good noise immunity because of its symmetrical data transmission. Other leading bus systems also use the good physical characteristics of RS-485. With this bus system up to 64 slave-units (controllers) are able to communicate. The single controller systems on the bus are arranged like the 'beads on the string', that means no loop line is allowed. Another name for this arrangement is '**party-line**' because the controller units are arranged like the lights on a party.

Because all controllers are connected parallel on the data wire, each unit gets a '**Network Address**' during start-up, which allows a specific data transfer.
- 5 Controller Units**  
Most of the current ELREHA-controller systems are equipped with RS-485-interfaces for remote access/remote control. Such communication interfaces are frequently called DDC-interfaces.
- 6 The Telephone Modem**  
Commercial Unit, suitable for transmitting data to / from the refrigeration plant via telephone networks.
- 7 The Transmission Protocol**  
Communication via data connection is made by a transmission protocol called **E-Link**. Imagine such a protocol as a simple language.
- 8 The PC-Software**  
The software is the interface to the user, it controls the PC's interfaces, recording and processing of data.
- 9 Central Alarm Unit SMZ 31x0**  
Alarm unit and communication unit in one product, can be used instead of a PC on site.
- 10 Compound Control System VPR 19xx0**  
Control system for compressors, condensers and chillers and central office for cold storages. Because its ability to control a modem it makes a PC on site unnecessary.

### Example for using an interface converter



Connection of a PC without internal RS-485-interface card to a RS-485 2-wire bus with multiple units connected. The internal jumpers of the SSC-1022 must be set to 1-2.

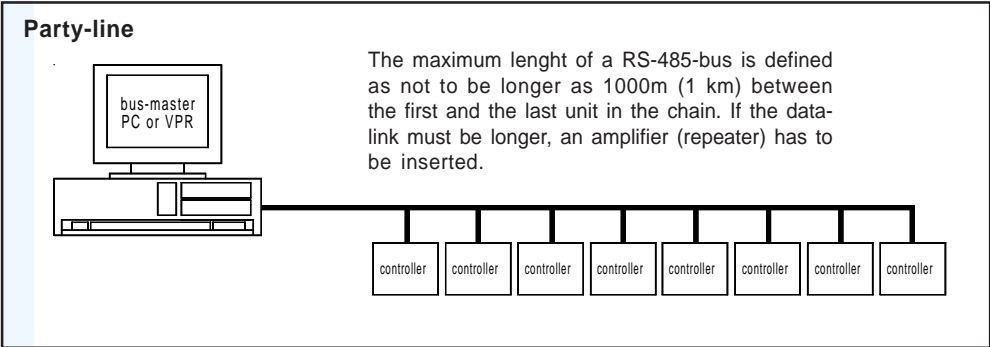
Hardware - Installation

# Communication Lines

## Data Transmission Protocol

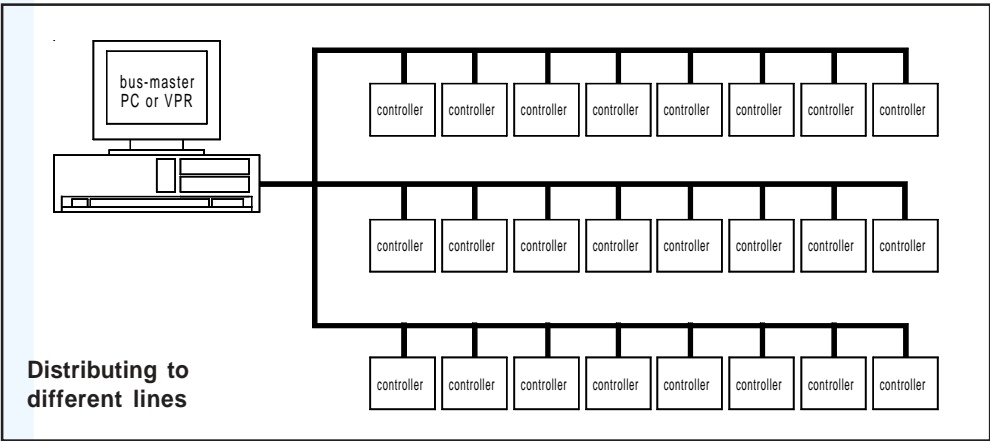
In the VPR system the Central Module works as a 'bus master' and the controllers are the 'slave' devices. Data transmission from and to the devices is made by a RS-485 bus system. The data is transfered symmetrically which makes this bus fairly uneffected by noise. Up to 64 devices can be linked to this system, communicating via the *E-Link*-Protocol. The arrangement of the controllers on this bus system is generally inline. i.e the controller units are connected parallel on the bus, similar to a party lighting system. This is the origin of the name 'partyline' data bus.

### Partyline

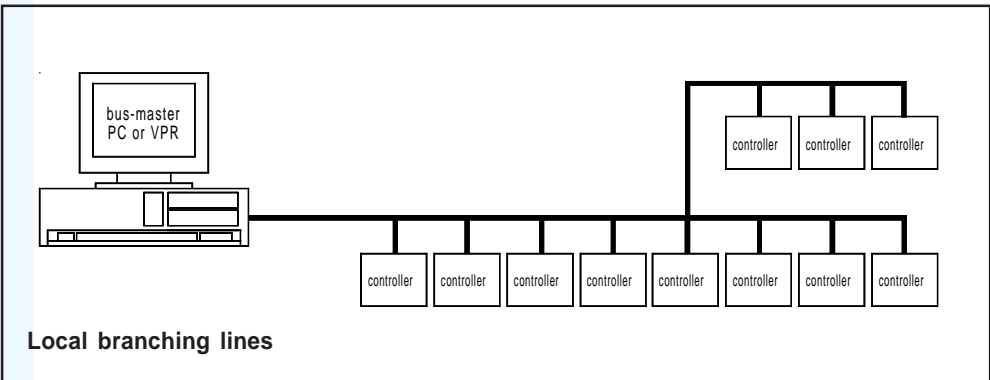


The wiring allows several lines, that means the master unit needs not to be placed at the end of the line absolutely. If necessary, branching lines from single units to the bus are allowed too.

### Bus Dividing



### Branching Lines



## Hardware - Installation

### Wiring of data connections

#### Shielding of Data wires

The data cable shieldings need to be connected to ground at every unit. Note that the unshielded parts at the ports of the controller units must be as short as possible (max. 5 cm, 2.0 inch). Additionally, connect the RS-485-GND-connector to PE. If such a connector is not available, use instead a sensor-GND connector (see below). The reason is, that interface circuits works incalculable if potential differences arise.

Examples for such connectors (cn = connector):

TAR/MSR 19xxx : cn. d21	TKP/STP/TMP/PMP 3xxx : cn. 44
TAR/MSR 5xxx : cn. 22	TKC/STC/TMC/PMC 5xxx : cn. 40
TAR/MSR 3xxx : cn. 31	TKC/STC/TMC/PMC 19xxx : cn. d21
TAR/MSR 1xxx : cn. 23	Analog PCB

#### PE-Connection

The transition resistance between PE and the mains neutral terminal must not be more than 0,1 ohms, so that no voltage can be established on that connection.

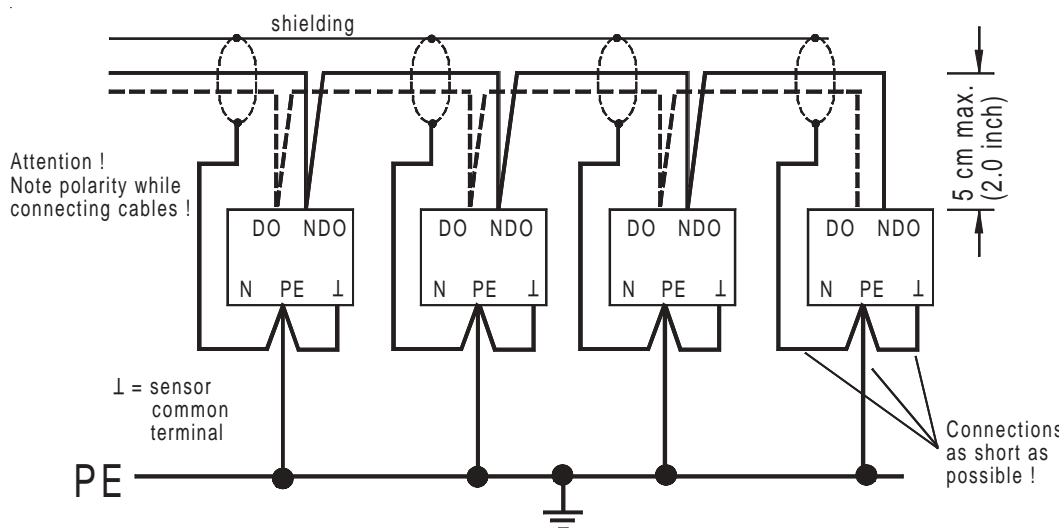
Especially in plants built on large acreages potential differences can be measured. These differences must be compensated to allow faultless data transmission.

The potential differences produce undesirable currents in the shielding which must be compensated.

If such problems occur in your installation, a **separate PE compensation** connection need to be installed parallel to the data cable.

This connection must have an adequate cable diameter ( $\Rightarrow$  6 sqmm) to ensure that no potential difference appears .

Correct datalink wiring, example shows a RS-485-bus



#### Please Note:

Max. distance PC  $\leftrightarrow$  SSC = 20 m

Max. distance SSC  $\leftrightarrow$  last controller unit on the chain = 1000m

#### Data Cable Requirements

Because there are many cables on the market with different prizes and characteristics, we don't want to advise a special product, but give some help for the selection. For data transmissions, twisted pair cable with shielding is used. This cable must have the following minimum qualities:

- Minimum diameter each core: 0,25 sqmm (.01 sq.inch)
- Damping: max. 3 dB each 100 m (328 ft.) at 1 Mhz
- Core to core capacity: max. 100 nF/km (3280 ft.)
- Shielding: min. 95 % optical cover, (ideal: foil=100 %)
- cable resistance each core: max. 60 ohms

#### That means in practice:

- If the overall capacity is below 100nF and the overall resistance is below 60 ohms, the wiring can be longer than 1km.
- If capacity and resistance are worse, (some low-priced cables) you can use the cable, but the cable length is limited.

**Data Sheet****Hardware - Watchdog****HW 101****Nr. 5310958-00/00****Allgemein**

Für Steuerungs- und Protokollieraufgaben werden häufig MS-DOS kompatible PC's eingesetzt. Jeder, der mit einem solchen Rechner vertraut ist, hat schon einmal erlebt, daß dieser "ausgestiegen" ist. Dies bedeutet, daß er in einen Betriebszustand gefallen ist, aus dem er aus eigener Kraft nicht mehr herausfindet.

Dieser Fall wäre unangenehm, wenn eine Software über längere Zeit unbeaufsichtigt ihren Dienst verrichten soll.

Der Hardware-Watchdog HW 101 arbeitet mit der laufenden Software zusammen und erhält, solange diese zuverlässig arbeitet, laufend bestimmte Informationen. Bleiben diese länger als ca. 20 Minuten aus, weil die Software bzw. der Rechner "ausgestiegen" ist, dann trennt der HW 101 den Rechner für ca. 20 Sekunden vom Netz.

Nach dieser Zeit wird die Netzspannung wieder eingeschaltet und der angeschlossene Rechner kann wieder in einem definierten Zustand hochlaufen.

**Anschluß**

Der HW 101 wird zwischen die Steckdose und den Netzanschlußstecker des PC's geschaltet. Der Anschluß an den Rechner kann sowohl an die serielle als auch an die parallele Schnittstelle erfolgen.

Für jeden der beiden Fälle wird ein spezielles Kabel angeboten.

- Für die serielle Schnittstelle: Kabel **HWKS 101**
- Für die parallele Schnittstelle: Kabel **HWKP 101**

Bringen Sie den Schiebeschalter in Stellung "Manuell" und schalten Sie den Rechner ein.

**Bedienung**

An der rechten Gehäuseseite befindet sich nur ein einziges Bedienungselement. Mit diesem Schiebeschalter wird in Stellung "AUTO" die Watchdogfunktion eingeschaltet. **In Schalterstellung "MANUELL" ist die Schutzfunktion abgeschaltet, dies muß geschehen, wenn der Rechner für andere Aufgaben verwendet wird und die gerade laufende Software (z.B. ein Textverarbeitungsprogramm) den HW 101 nicht bedienen kann.**

**Technische Daten**

Betriebsspannung .....	230V / 50Hz
Umgebungstemperatur .....	0...+60°C
Leistungsaufnahme .....	ca. 2VA max.
Steuereingang .....	RS 232 oder Centronics
Relaisausgang .....	potentialfrei, 10A Nennstrom
Gehäuse .....	Kunststoff-Steckergehäuse mit Schutzkontakt-Steckverbindungen
Abmessungen .....	ca. 65 x 120 x 50 (B x H x T)
Schutzart .....	IP 30

**Vorraussetzungen für den Betrieb**

Die laufende Software muß ein Watchdog-Modul enthalten.



ELEKTRONISCHE REGELUNGEN GMBH

D-68766 Hockenheim  
Schwetzingen Str. 103Telefon 0 62 05 / 2009-0  
Telefax 0 62 05 / 2009-39**Data Sheet    Interface Converter****SSC 1022****Nr. 5310950-00/02 E****General**

The interface converter SSC 1022 was designed to enable safe data connections over longer distances. The specification of the RS-232C-interfaces in PC's allows a max. distance of 20 meters only, so these interfaces are unqualified for an extensive network. If the connection should be longer, one must work with an alternative data connection method.

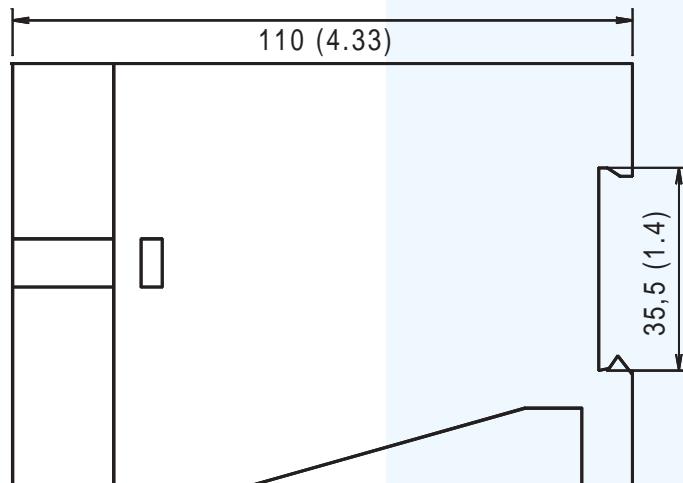
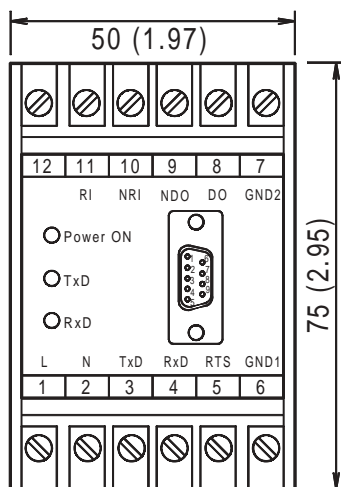
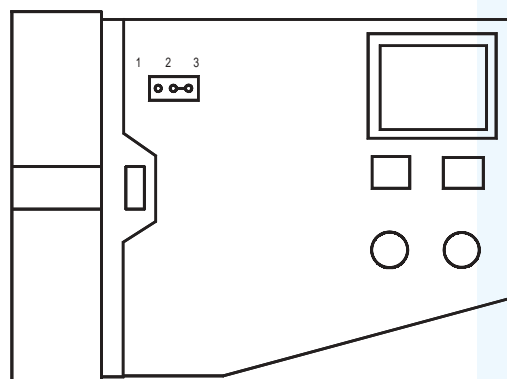
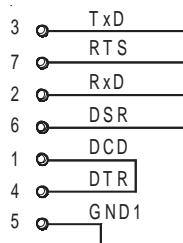
For this the SSC 1022 is suitable. It converts the signals of a V24(RS232C)-interface from a PC or controller to a RS-485-Signal and reverse. RS-485 is a 2-wire bus system with 1000m cable length max. To prevent problems caused by potential differences input and output of the unit are separated galvanically.

The V24(RS232C)-connection can be done by screw terminal as well as by a standardized SUB-D9-female connector. The SSC is suitable for DIN-rail mounting and owns an integrated power supply.

By an internal jumper the converter unit can be prepared for a 2-wire connection or a 4-wire connection (factory set = 2-wire connection).

**Technical Data**

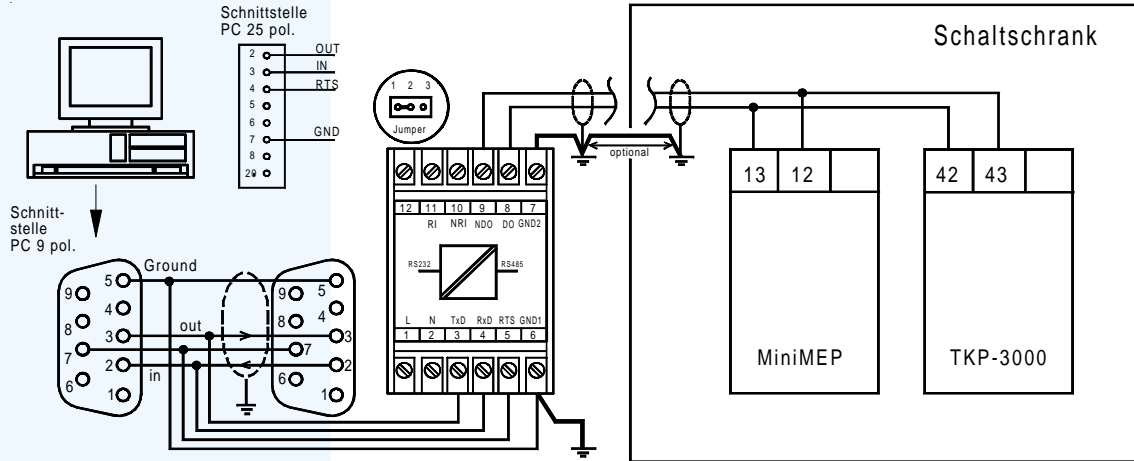
Supply Voltage .....	230V 50Hz
Power Consumption .....	2VA max.
Inputs/Outputs .....	1 x V24(RS232C), 1 x RS485
Isolation voltage between	
Input and Output .....	min. 2,5 KV
Cable length V24 .....	20m max.
Cable length RS485 .....	max. 1000m
Transmission speed .....	Depends on installation, maximum is 38400 Baud
Ambient temperature .....	-10...+60°C
Conformity .....	CE

**Dimensions / Wiring****SUB-D9-female connector****Position of the internal jumpers**

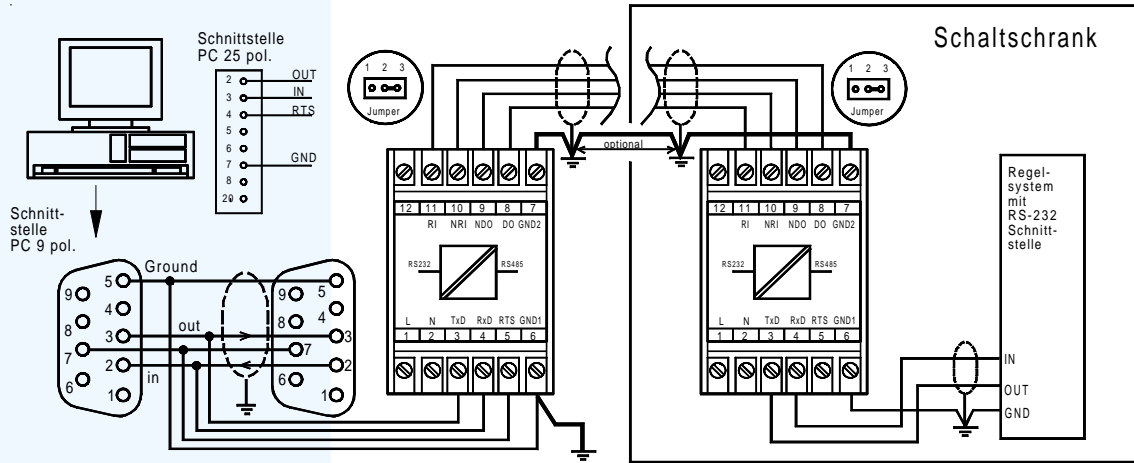
PIN 1-2 closed  
= 2-wire connection  
= factory set

PIN 2-3 closed  
= 4-wire connection

## Application Examples

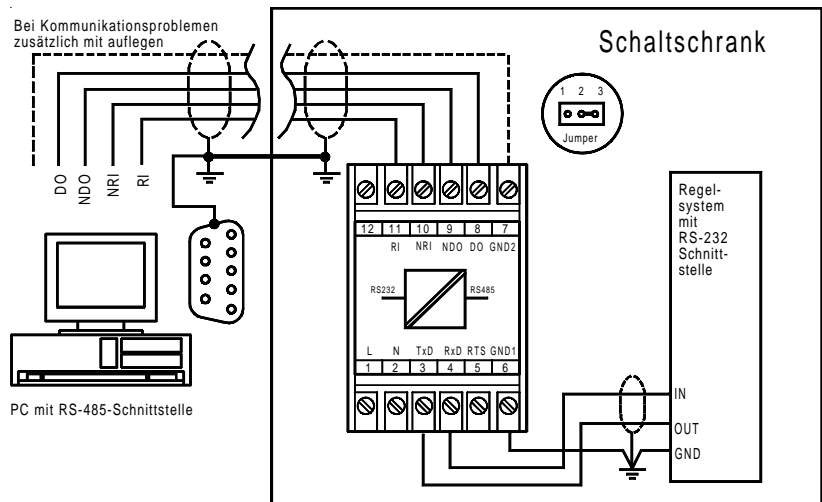


Connection of a PC without internal RS-485-interface card with a RS-485 2-wire bus and several controller units working on it. The internal jumper of the SSC-1022 is set to 1-2.



Connection of a PC (without internal RS-485-interface card) with a Controller unit or a PC which owns a RS-232-interface also. The internal jumper of both SSC-1022 must be set to 2-3.

Connection of a PC with internal RS-485-interface card with controller unit with RS-232-interface. The internal jumper of the SSC-1022 is set to 2-3. the shielding of the data cable must be connected to the metal of the connector on the interface card. If a lot of communication problems occur, the GND-connection (broken line in drawing) can be connected too.



# Help for Troubleshooting

Controller Hardware  
PC-Hardware  
Software

## Tips for Troubleshooting on controllers with simple tools

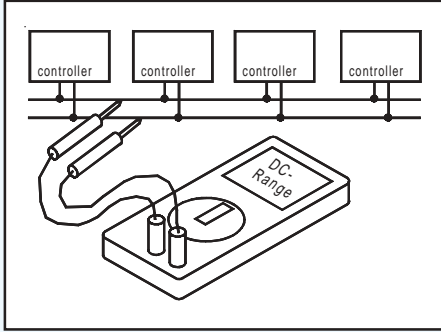
### Data Wires

The data transmission is made in the low-voltage range.

**Measuring of signal voltages can only be made with a modern, high impedance multimeter.**

The voltage ranges are: RS-485, 1...5V; RS-232, 7...15V. The transmission intervals are up to some seconds long.

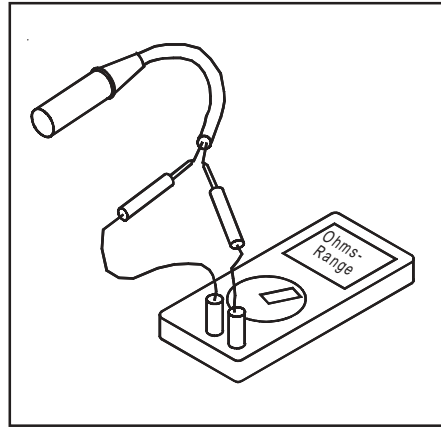
You have a correct wiring, all components are switched on, but data transmission does not work:



- If you can't measure a 'moving' voltage on the data-cable, which resides in the range explained above, then probably data-transmission does not work.  
RS 485 --> between DO and NDO  
RS 232 --> between RxD and GND respectively TxD and GND
- If you can measure a 'moving' voltage on the data-cable (by multimeter with DC-range) a data transmission probable exists and the effect needs to find other reasons.  
Be patient while measuring, because the transmission intervals can be up to a few seconds long.
- Switch off the plant, hold the units connected and measure the resistance between DO and NDO at any position (RS-485 only).  
The magnitude of the resistance must be some hundred ohms.
- If a data transmission seems to run, but a controller does not 'understand' anything, then check the correct polarity of the data cable connected to this unit.
- If a data transmission seems to run, but a controller does not 'understand' anything, then it is possible that you forgot to select the 'address' of the unit.
- 99% of all failures occur because the described recommendations and installation instructions are not observed.

### Temperature Sensor Wires

If you have the feeling that something is wrong with a temperature sensor, then separate sensor and controller and check the electric resistance of the sensor with a multimeter (ohms range). The polarity doesn't care. Please compare with the resistance value table.



At wires with long distances you can measure at 2 different points:

- directly at the controller
- at the connection near the sensor pod

By comparing the two values you can discover a discontinuance or a loose connection on the wiring.

### Pressure Transmitter Wires

Our standard-pressure transmitters forward their information on two wires by a 4-20 mA-current signal.

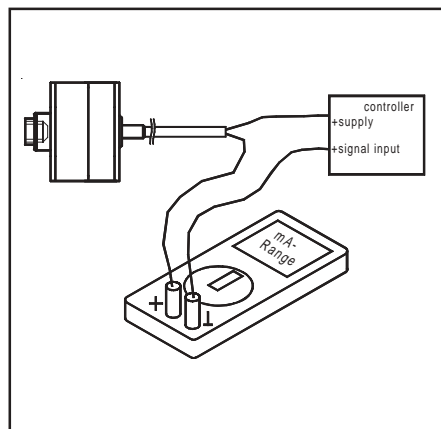
To check this signal, rip-up a cable and measure the current with your multimeter in the "DC-milliamperes"-range.

*Signal < 3 mA:*

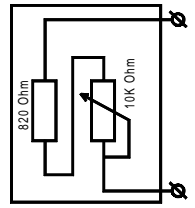
- Supply voltage from controller is missing
- No pressure on the transmitter
- Transmitter defect

*Signal > 21 mA*

- Pressure too high
- Supply voltage too high
- Transmitter defect

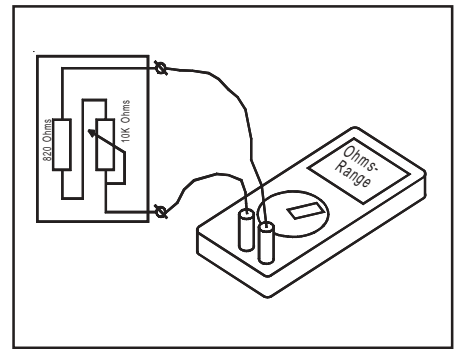


Sometimes you have to test controller units without having a matching sensor. To simulate the input signals this "household remedy" is well tried, this consists of a potentiometer and a resistor.

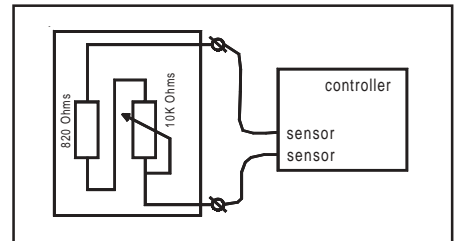


### Controller Units with Temperature Sensor Input

Adjust the a resistance value at the potentiometer which corresponds to the resistance of the sensor at a desired temperature.



Connect potentiometer instead of the temperature sensor. The controller must show the right temperature now.



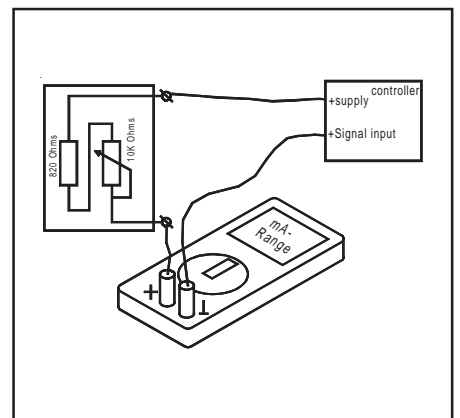
### Controllers with pressure transmitter input

A 4-20 mA signal can be simulated by connecting the supply voltage to the signal input via the potentiometer.

#### ATTENTION !

Please always measure the signal current with your multimeter.

At 4 mA and 20 mA the controller must show the values which were adjusted by parameters before.





## Software Troubleshooting

### No connection to controller units

- Check cable connections to controllers
- Check polarity of the bus cable at the controllers
- If an internal RS-485-card is used: Check driver and operation mode and check if the prescribed connections in the RS-485 cable connectors are available.
- If an interface converter SSC-1022 is used:  
Do you use the correct cable "PC <> SSC"?  
Check the correct jumper position of the SSC, this must be set to "2-wire-connection".
- Check in MES under "Parameter/Plant configuration" if the correct COM-Port is selected
- Check in MES under "Parameter/Plant configuration" if an incorrect baudrate is selected
- Check in MES under "Parameter/Plant configuration" if a wrong controller type is selected.

### A connection to a SMZ operates, but the controllers connected to the SMZ can't be seen in MES

- Select in MES under "Parameter/Plant configuration" the connection "via SMZ"

### A selected controller shows not all parameters

- Check in MES under "Parameter/Plant configuration" if a wrong controller type is selected, in particular because several different TKP and TAR types exist.

### Transfer disturbances with modem

- Frequent interrupts while data transfer with the modem, reduced transfer speed or modem hangs up automatically.

Data transmission problems may occur if no FIFO-buffered UART (16550) with active Hardware-Handshake (RTS/CTS) is used for communication with the modem. Fast modems work with on-fly-compression of data. If data is compressed by factor 2, the modem expects double the data per second via serial interface as its highest transfer speed. By using modems with 33kBit/s the serial interface must be set to 57,6 kBit/s Minimum, better to 115,2 kBit/s, if the interface is suitable for that.

If the disturbances occur in reproduceable time intervals, the reason could be an "Advice of Charge" (fee pulse) of your phone provider. Some modems don't tolerate such a pulse.  
If that is the reason, the pulse must be switched off or an additional pulse filter must be installed.

If the disturbances occur in irregular intervals, the block mode of the IDE-Harddisks could be the reason, which locks all interrupts while data transfer. Also UART-Chips with FIFO-Buffer may lose characters while such lock cycles, especially with high bitrates. The Block-Mode-Feature can be switched off in the setup of the ROM-BIOS (IDE-HDD-Block mode disabled), but sometimes it will be switched on automatically by some EIDE drivers without being asked. If you switch off the feature, data transfer of the harddisk will be reduced by about 10%.

### Modem does not dial

- Modem module MDM does not run
- Modem driver of MS-Windows not installed or not installed properly

### Modem dials, but no connection

- Do you have a private branch exchange which expects a specific number (e.g. 0) before dialing ?

### Plant cannot be connected from outside

- Modem module MDM does not run
- Wrong telephone number of the modem on site  
How to check the phone number: Replace modem on site by a regular phone and call a phone with a display which is able to show the number.

## Software Troubleshooting

### Error Message Central Office:

### Error message module SMM accepts no error messages

- Standby module SBM does not run  
or
- MES runs (you must close it)

### Data recording is switched on, but no analysis database is available

- Database module DBM does not run
- Not enough data available yet

### Analysis data cannot be opened

- Database file cannot be opened, if the "write protect" attribute of the file is set.

### License file is neglected

- Remove the "write protect" attribute of the license file

It may occur that the license file is neglected by COOLVision, but only if the file is copied later from a data medium, because mostly the "write protect" attribute is set.

Remedy: Use the Explorer, select license file ('customer.lic') and uncheck "write protect" in the context menu.

If you got a new license file, please remove the old one so only one license file is available in this folder.

### Program window cannot be closed

The user has no allocated right to close the window.