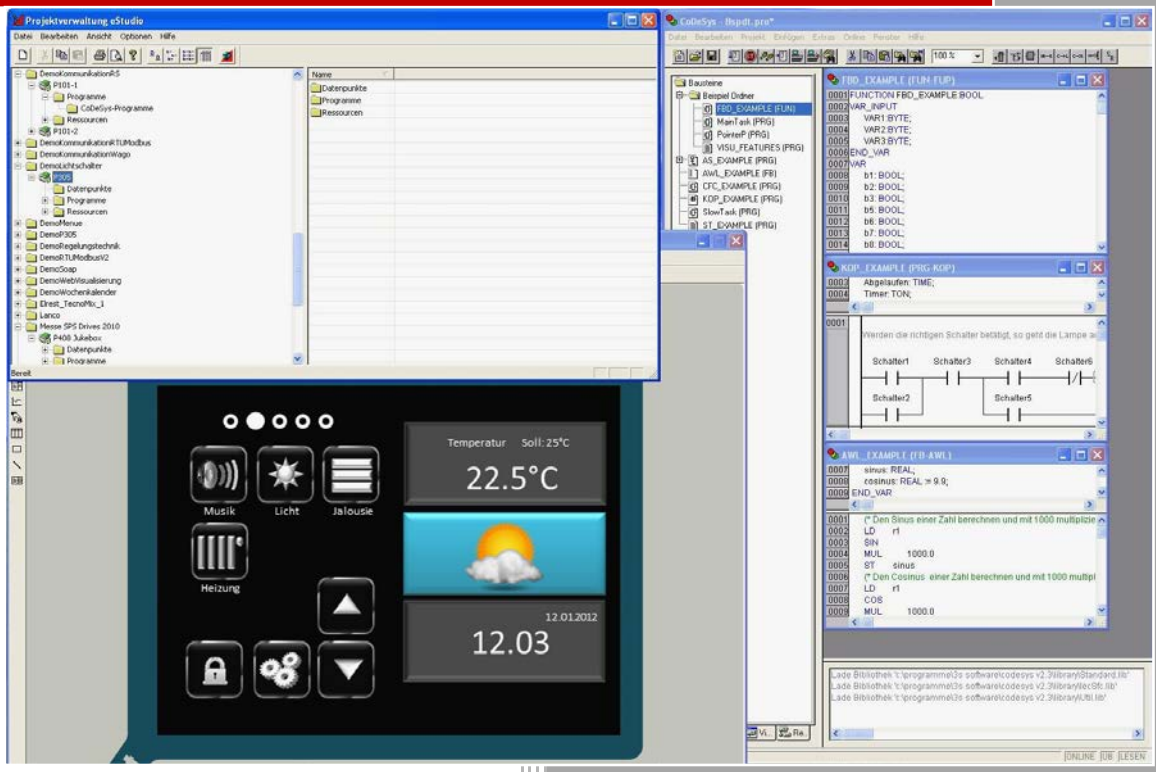
Manual eStudio 2.91
Installation and Handling



elrest Automationssysteme GmbH
Leibnizstraße 10
73230 Kirchheim unter Teck
Germany
Telefon: +49 (0) 7021 / 92025-0
www.elrest.de

Contents

1 General 7
1.1 Introduction 7
1.2 Hardware and software requirements of software products 7
1.3 Softwarelicense 7
1.4 Copyright 8
1.5 Updates 9
1.6 Manuals 9
1.7 Services 10
1.8 Scope of supply 10
1.9 Intended Use 10
1.10 Warranty 11
1.11 Security policies and protective measures 12
2 Installation 13
2.1 Overview of the eStudio versions 13
2.1.1 Upgrading from previous versions eStudio 13
2.2 Installation of eStudio 14
2.3 Additional installations to estudio 21
2.3.1 C-Compiler 21
2.4 De-Install eStudio 22
3 Overview of the Software Products 23
3.1 estudio project management 23
3.2 eStudio PLC programming 24
3.3 eStudio HMI programming 27
3.4 eStudio WEB Server 29
3.5 Tools 30
3.5.1 Versionchecker 30
3.5.2 FontEditor 30
3.5.3 Download 31
4 Project management in eStudio 32
4.1 Overview 32
4.1.1 Start of the project management 32
4.1.2 Menu bar of the Project Management 33
4.1.3 The project management toolbar 35

4.2 Project tree 36
4.2.1 Project view window 37
4.3 Projects 37
4.3.1 Create a new project 37
4.3.2 Creating a copy of a project 39
4.3.3 Project settings 39
4.3.4 Deleting a project 40
4.3.5 Importing a project 40
4.3.6 Project Device 40
4.3.7 Creating a configured device 41
4.3.8 Change settings of a configured device 42
4.3.9 Projected devices delete 43
4.3.10 projected devices copy 43
4.3.11 Cosider at a Device Data Points 43
4.3.12 Start the Internet browser (Ethernet) 43
4.3.13 FTP-start Browser (Ethernet network) 44
4.3.14 Start Telnet (Ethernet network) 44
4.3.15 Event Logger start 44
4.3.16 Configuration of the inputs and outputs read 45
4.4 Programming 46
4.4.1 Programming in C/C++/C# 46
4.4.2 Programming mit CoDeSys 46
4.4.3 Space in the target system 50
4.5 Web-Files 51
4.6 Ressourcen 51
4.6.1 Alarm Definitions 52
4.6.2 bitmaps 52
4.6.3 Fonts 53
4.6.4 Masks 54
4.6.5 Menus 54
4.6.6 Recipe definitions 56
4.6.7 Texts 57
4.6.8 Generate resource file 60
4.6.9 download Resource file 60

4.6.10 Start the simulation 62
4.7 Datapoints 62
4.7.1 Datapoints of communication partners 62
4.7.2 Creating data points 64
4.7.3 Data Point Settings 65
4.7.4 Exporting data points 66
4.8 Program Settings 66
4.8.1 Version Control 67
4.8.2 Language Development Environment 67
4.8.3 Dongle configuration 68
4.8.4 version switch 68
5 HMI-Editor Eladesign 70
5.1 Overview 70
5.1.1 Main window 71
5.1.2 Menues 71
5.1.3 Toolbar 76
5.1.4 The Panel 77
5.1.5 Button 77
5.1.6 The background 79
5.1.7 Accessibility: 81
5.1.8 Voice Switching 84
5.2 Elements in the designer 87
5.2.1 Adding graphic elements in a mask 87
5.2.2 The toolbar elements 87
5.2.3 The element input field 87
5.2.4 The element display 92
5.2.5 The key element 97
5.2.6 The element image 100
5.2.7 The element bargraph 102
5.2.8 The element Combobox 106
5.2.9 The element data logger 108
5.2.10 The member function button (for touchscreen) 119
5.2.11 The element list 125
5.2.12 The element rectangle 128

5.2.13 The element line 130
5.2.14 The element listbox 131
5.3 Default masks 134
5.3.1 !DEFAULT_DESKTOP 134
5.3.2 !DEFAULT_COMPONENTS 134
5.3.3 Creating default elements 134
5.4 The pixel-element array in the coordinate system 136
5.4.1 Fixed Fonts 136
5.4.2 True Type Fonts 137
5.5 Window in the coordinate system 139
5.6 Used image formats 140
5.7 ResGen Compiler 142
5.7.1 Generate the driver information 142
5.7.2 Creating device information 142
5.7.3 Generating the data points 143
5.7.4 Compiler process with ResGen and error messages 143
5.8 Download for the target system 151
6 Tips and Tricks 153
6.1 To ElaDesign 153
6.1.1 Data Points 153
6.1.2 Bt array instead of many individual bits 154
6.1.3 Advantages of flag variables 156
6.1.4 Advantage Fixed Fonts 156
6.1.5 Voice Switching 156
6.2 To CoDeSys 157
6.2.1 Task Configuration 157
6.2.2 Programming language 157
6.2.3 Program crash 158
6.2.4 Watchdog 159
6.2.5 Netzwork variables 160
6.2.6 Tracking from CoDeSys manage telnet parameter 162
6.2.7 virtual modules 164
6.2.8 O access without ElaDesign data points: 165
6.2.9 Analog configuration 166

6.2.10 .Backup Restore ... 168
6.2.11 Recipes ... 169
6.2.12 EStudio recipes without reading and writing ... 172
6.3 Firewall ... 173
6.4 Problems with online communication ... 173
6.5 Recommended additional programs instead of Telnet ... 174
7 What´s News ... 175
7.1 What's New in version V2.83 to V2.91 ... 175
7.1.1 Context menu ... 175
7.1.2 Support for high color depths ... 175
7.1.3 Switching to full screen ... 176
7.1.4 Changed behavior of objects ... 176
7.1.5 Changed behavior of the Z-Order ... 177
7.1.6 Base masks ... 177
7.1.7 „Stretching" of images ... 178
7.1.8 Data in CSV file ... 178
7.1.9 Grouping of objects ... 179
7.1.10 Transparent form background ... 179
7.1.11 Clickable mask background ... 179
7.1.12 Alarm entry with dynamic values ... 180
7.1.13 Backup ... 180
7.1.14 Select a target at the start of CoDeSys ... 181
7.1.15 Use of the symbol file from the CoDeSys project ... 181
7.1.16 Hierarchical folders Stukturen ... 182
7.1.17 Application error logging ... 182
7.1.18 Touch Marker ... 182
7.1.19 Advanced data logger ... 183
7.1.20 Support with Teamviewer ... 183
8 Support ... 184
9 Historie ... 184

1 General

1.1 Introduction

This guide contains texts, illustrations, and explanations to the correct installation and operation of the Visio assemblies. Prior to the installation and the use of the devices must be read this manual and be respected.

For questions regarding the installation, application and operation Please contact the Customer Helpline elrest-:

Tel. :07021/92025-33

show Fax:07021/92025-59

E-mail: hotline@elrest.de

or to your representative.

This manual will be published subject to any changes. Changes can be made without notice.

1.2 Hardware and software requirements of software products

- Microsoft® Windows XP or Windows 7
- IBM® kompatibler PC mit Pentium- Prozessor
- RAM- memory of at least 1 GB main memory
- Hard disk with at least 500 MB free Disk Space
- Mouse or Trackball Keyboard
- Dongle (for the ElaSoft tool programs Can-Hex and Eichen is no Dongle required)
- Graphic card von 1024x768 with 24-bit (True Color) Solved

1.3 Softwarelicense

The software product is protected by copyright. You purchase a non-exclusive license to use the software product. The software product includes computer software and may include associated media, printed materials and "online" or electronic documentation including accessories ("SOFTWARE PRODUCT").

By installing the SOFTWARE PRODUCT, copying or using you agree to be bound by the terms of this EULA (enduser license agreement). If you do not agree to the terms of this EULA, you are not authorized to install the SOFTWARE PRODUCT or use it.

The SOFTWARE PRODUCT is protected by copyright laws and international copyright treaties, as well as other laws and agreements on intellectual property. The SOFTWARE PRODUCT is licensed, but not sold.

The Licensor grants you a nonexclusive license charge for use of the software, if your use of the software serves the sole purpose of evaluating whether a paid license to be purchased for regular use of the software. The evaluation is limited to commercial enterprises to ninety (90) days; the review by other users subject to this limitation is not limited to ninety (90) days. Authorities (with the exception of public libraries) are not religious or educational institutions or nonprofit organizations for the purposes of this contract. If you use the software free of charge, you have no right to printed documentation, support services, or telephone counseling.

You are free:

the software on a single computer use;

the software on a second computer to use, if at any time only one (1) copy of the software used;

use the software on a network, provided that for every person who has network access to the software, a licensed copy of the software was acquired;

Copy the software for archival purposes, provided that each copy contains all proprietary notices of the original version;

All programs are available without a protection key (dongle) as a demo version available. For the use of any or all programs

1.4 Copyright

Copyright 2012 © elrest Automation Systems GmbH corporation (is subsequently "elrest'). All rights are reserved.

All parts of the Software and the documentation are subject to the copyright. The software described in this manual must be only in the framework of the license terms will be used.

No part of the documentation and software may be in any form (print, photocopy, microfilm, or any other procedure) without the written permission of the company elrest Automation Systems GmbH reproduced, or using electronic systems be used, copied or reproduced. These are the in paragraphs 53 and 54 UrhG expressly does not affect exceptional cases referred.

All efforts have been made, the accuracy and completeness of the information contained in this documentation to ensure. Nevertheless, errors cannot be ruled out. The company elrest Automation Systems GmbH can no legal responsibility or any liability for any damage caused by the use of information from this manual or by the use of the program described in this documentation.

In this guide the product names mentioned herein are trademarks or registered trademarks of their respective companies and are hereby acknowledged.

The information contained in this document are subject to change without notice and does not represent a commitment on the part elrest Automation Systems GmbH.

1.5 Updates

Tel: ++49 / (0) 7021 / 92025 - 0, Fax: - 29, Email: Vertrieb@elrest.de, Internet: http://www.elrest.de

If the SOFTWARE PRODUCT is marked as an update, you must have the appropriate license for a product that is of elrest as suitable for the update will be recognized, have, to the software product to be allowed to use. As an update a designated software-product replaces and/or supplements the product, which is the basis for the Update forms.

You are obliged to the resulting upgraded product only in accordance with the terms of the EULA to use.

If the SOFTWARE PRODUCT A Komponenten-Update is a package of software, to you as a single product has been licensed, you are only entitled to the SOFTWARE PRODUCT as an integral part of this single product package to use, and to transfer.

The SOFTWARE PRODUCT may not separated from the package on another computer to be used.

Do you have any questions about this agreement, please contact elrest Automation Systems GmbH, Leibnizstr. 10, 73230 Kirchheim,

tel: ++49 / (0) Item 7021 / 92025 - 0, fax: - 29, Email: Vertrieb@elrest.de , Internet: http://www.elrest.de

1.6 Manuals

Manuals of the individual program parts and tools in the PDF format of the data.

Program to open and print the manuals and other files in the PDF-format of the data.

1.7 Services

elrest offers services as agreed upon in conjunction with the SOFTWARE PRODUCT ("Services").

The service is governed by the provisions elrest and programs that the user guide, online documentation and / or others are described elrest materials provided, will be used.

Any supplemental software code provided to you is provided as part of the services available will be considered part of the SOFTWARE PRODUCT and subject to the terms and conditions of this EULA. elrest is entitled to the technical data you elrest as part of the services are available for business purposes, including product support and development to use.

elrest will not utilize such technical information in the strictest confidence in terms of data protection

1.8 Scope of supply

Included with eStudio includes: –

eStudio CD-ROM

– protection key (dongle), (not in demo version)

– description eStudio Quick Links

In addition, each individual agreement made after demonstration of corresponding sets including hardware and software from the sales department

1.9 Intended Use

The eStudio software is suitable for use in the field of regulation, control and automation technology. The possible applications ranging from residential and commercial applications to industrial applications. In all applications, especially when using inductive loads (motors and relays, etc.) to ensure that voltage peaks do not exceed the maximum input voltage of the inputs and outputs. Where necessary, external protective circuit components are installed

1.10 Warranty

A claim requires a professional installation and commissioning for the device after the valid assembly, commissioning and operating instructions for advance. The necessary assembly, commissioning and maintenance work may only will be carried out by competent and authorized persons .See our EULA provisions.

Manufacturers	**Mark**	**Country of origin**
elrest Automationssysteme GmbH D-73230 Kirchheim unter Teck Leibnizstraße 10 Phone: +49 (0) 7021/92025-0 Fax: +49 (0) 7021/92025-29		Federal Republic of Germany

1.11 Security policies and protective measures

This manual has been for trained and competent staff created. The qualification will be through the "European directives for machinery, Low Voltage and EMC" defined. The track and the assembly of the Visio assemblies must be at a voltage greater than the safety extra low voltage (SELV made only by a qualified electrician).

The national rules and valid safety regulations in each case are to be observed. Intervention and changes to the devices lead to the extinction of the warranty coverage.

In this manual will be used to highlight certain information different symbols are used. This receives the operators necessary instructions to the security and safety measures. At each occurrence of the icons must be read the associated note.

Indicates an imminent danger that can result in injury or property damage.

Indicates a potentially occurring hazard that can lead to personal injury or property damage

Identifies information that is easier to handle.

```
(* Comment * lines of code to CoDeSys)
a: = a +1;
```

ST

elrest Automation Systems GmbH does not under any circumstances, be liable or responsible for any damages that may arise as a result of the installation or use of equipment or accessory.

All examples and illustrations in this manual are intended only as an aid to understanding the text. For the correctness of the operations can not be guaranteed. elrest Automation GmbH assumes no responsibility for product application, which refers to the illustrated examples (eg eStudio demo).

Due to the large number of different possible applications of these devices you need to make adjustments for your particular application itself.

When circuit components should fail, appropriate safety devices to ensure that the connected peripherals are stopped.

Do not attempt to repair the units themselves visio or replace electrical parts. To do that, solely on the elrest Service Department. Contact You can contact the hotline elrest.

For the installation and use of local and national assemblies visio standards and regulations.

2 Installation

2.1 Overview of the eStudio versions

Note that projects are always upward compatible.
This means you can load older projects to a newer eStudio environment, but never vice versa!

eStudio	CoDeSys	Firmware bzw. Runtime	Operating system
V2.80	V 2.3.4.2	FW 1.53	µE
V2.81	V 2.3.6.1	FW 1.54 / FW 1.55	µE
V2.82	V 2.3.8.0	FW 1.72	µE
V2.83	V 2.3.8.0	FW 1.90	µE und CE
V2.91	V2.3.9.35	Runtime 2.20x	µE und CE

Always use the correct eStudio and CoDeSys version to the appropriate firmware.

Wrong Permuting can lead to unpredictable errors.

2.1.1 Upgrading from previous versions eStudio

You can keep your previous installation by agreeing to this question during the installation.

With the release switch, you can edit existing projects so without further conversion

Existing projects can take over the project management by "importing".

In the chapter "What's New" for an overview

At a conversion of projects might be needed reworking.

So you save your projects before you can convert these projects.

The texts used in V2.8x be the first import in eStudio automatically converted to multibyte / Unicode.

2.2 Installation of eStudio

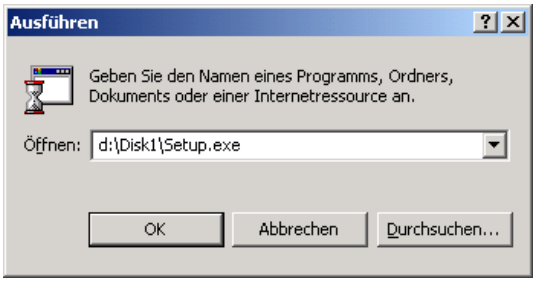
The installation must be carried out with the administrator right

This section contains the basic instructions for installing eStudio.

All files on the CD eStudio are compressed, so you can not copy them easily onto your hard disk.

Be installed prior to installing the operating system must already eStudio

The installation of the eStudio largely runs fully automatically.



Insert the CD into your CD-ROM eStudio drive.

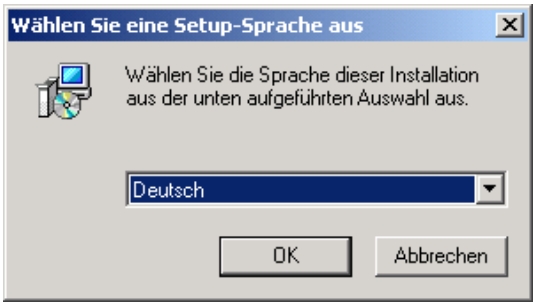
In your PC, the option "autostart" is activated, the installation will start automatically after closing the CD-ROM drive.

If this is not the case, then select Run from the Windows Start menu under the menu item and then take the field

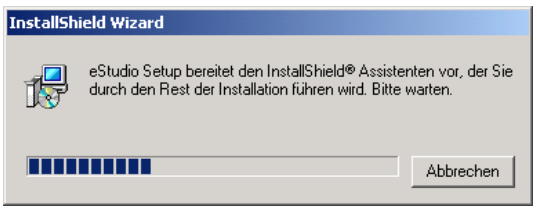
Open:> drive letter: \ Disk1 \ Setup.exe.

for example: "D: \ Disk1 \ Setup.exe".

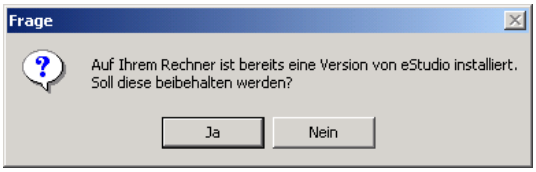
Note: To install you need the administrator rights!



Choose the language of this installation.

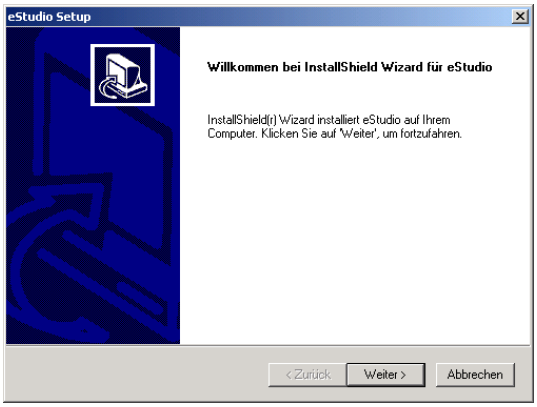


The program prepares the PC is now available for automatic installation.

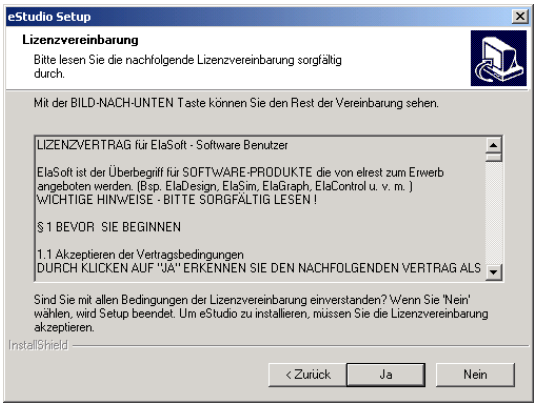


If a version of eStudio is installed on your PC, you can choose whether you want to keep the existing version.

If you keep the existing version, you can switch between multiple installed versions of the installation of eStudio. Please use the version of the program change

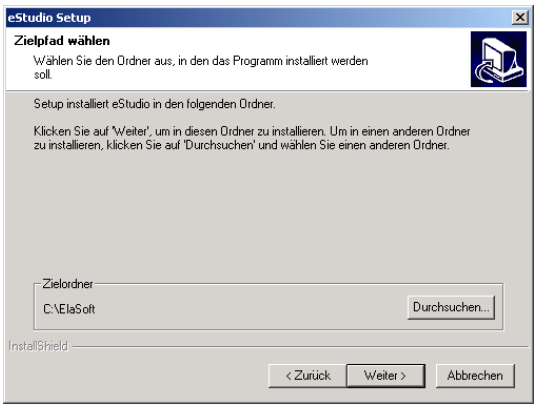


After reading the **welcome** screen to confirm this with **"NEXT"**.



A window will open with the license agreement.

Read the text in detail and confirm your agreement with **"Yes".**



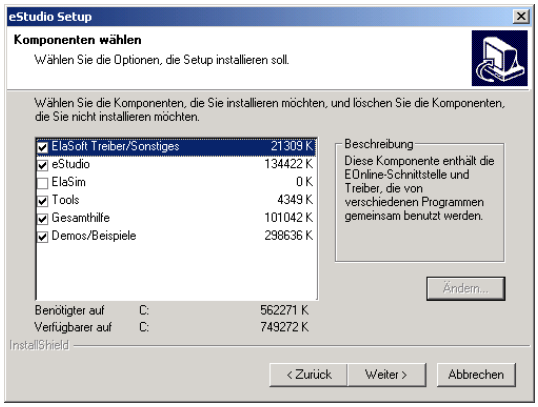
Choosing the installation path

In the next window can now be selected, the installation path for the programs.

By default, the software "eStudio" on drive **C: \ ElaSoft**. You can also install eStudio any other drive on your choice.

Choose a different installation path via **"Browse"** button

After you finish the settings, confirm with **"Next".**

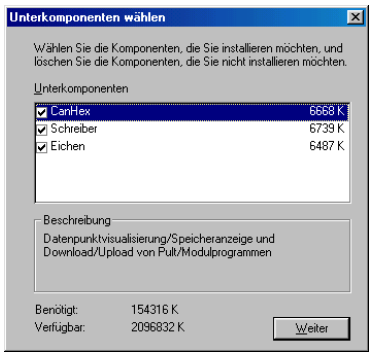


Selection of programs to install

In this window, the programs can be selected to be installed.

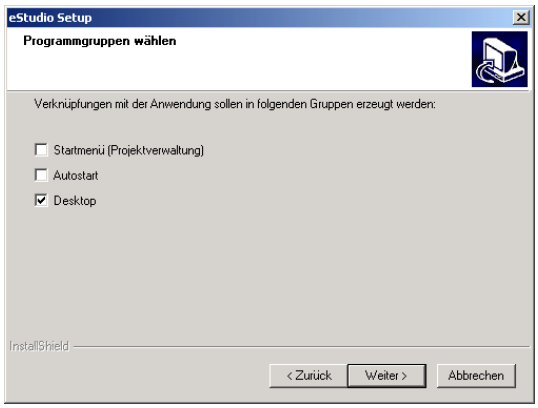
All selected programs are installed in the port.

If only a part of the programs are installed so you remove the marking hook by clicking the left mouse button.



The button **"Change"** you can program additional items such as Select a demo examples for installation

After you finish the settings, confirm with **"Next".**



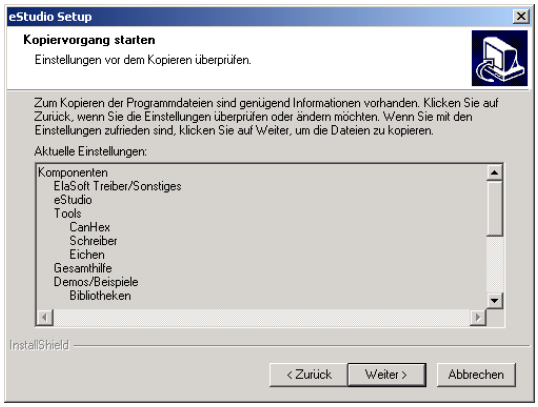
Setting Startup and Program Group

In the selection of **start menu (project management)** is in the installation the Estudio project management included in the Windows above.

In the selection of auto boot is in the installation the estudio project management included in the Windows startup menu and starts automatically after each Windows reboot.

In the selection of **shortcut on desktop**, the installer places a eStudio folder on the Windows interface.

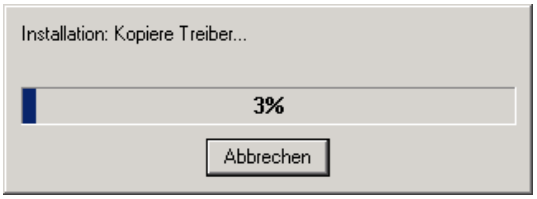
Once you have made all the settings, confirm this with **"Next"**.



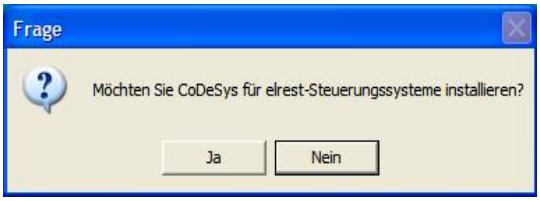
In the following window will be the information you have entered so far listed once again.

With **"Next"** the settings can be confirmed. If a correction should be necessary, you can use **"Back"** in the above window will be released.

It was with **"Next"** is confirmed, begins the installation of the selected software components.

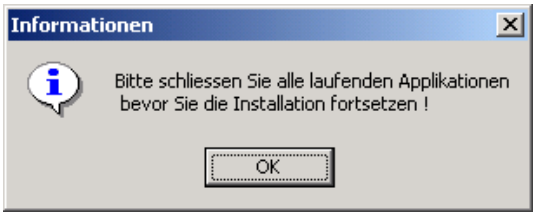


The program group and icons will be created automatically and the setup program is then terminated.

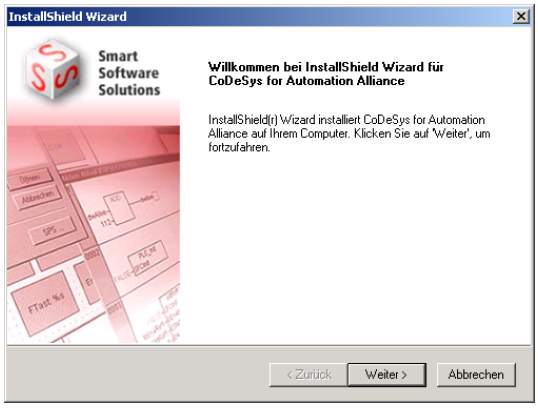


For the installation of CoDeSys confirm the start of the installation process.

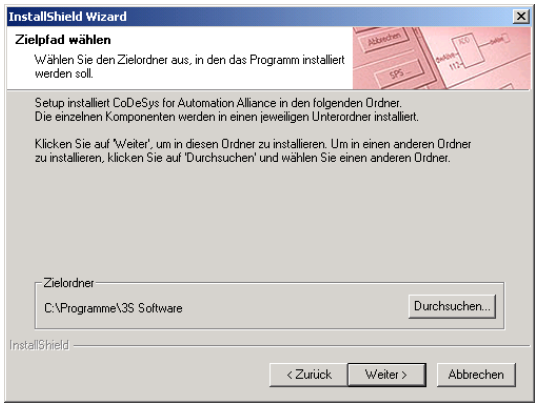
To exit the software installation: see "The installation is complete" on the following pages.



Please note the information.



After you the **welcome** window confirm you have read this with **"Next".**

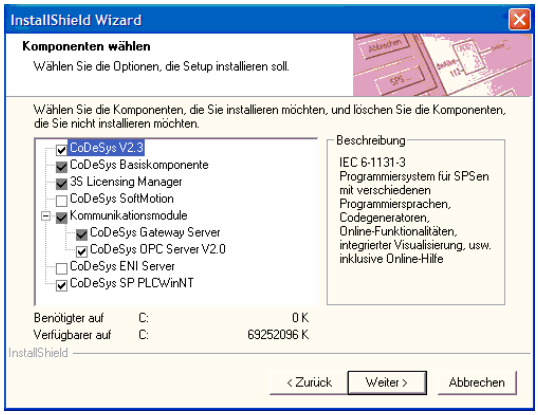


Selecting the target

Drive by default, the code Sys-Software on drive **C: \Program Files\ 3S software** installed.

Select a different installation path with the button **"BROWSE ... ".**

After you have made the setting, confirm this with **"Next"**



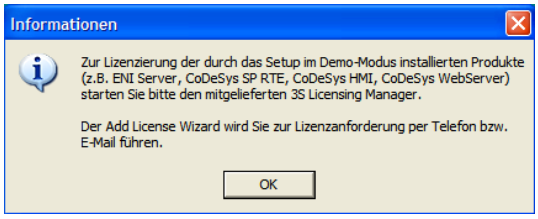
Selection of components to be installed

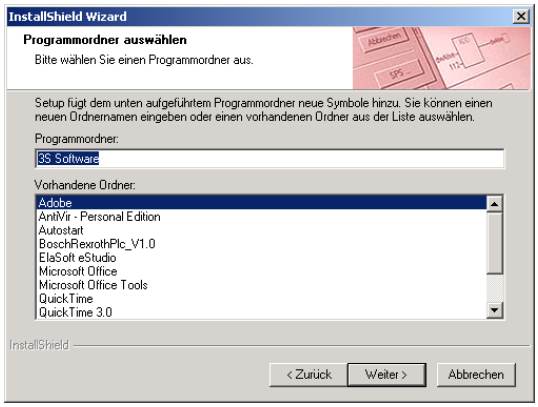
In this fixed can now be selected the programs, which are to be installed.

All of the selected programs will be installed in the track. All programs will be installed by default.

If only a part of the programs are installed, to remove the mark by a click of the mouse with the left button of the mouse in the components are not desired.

Once you have made all the settings, confirm this with **"Next".**

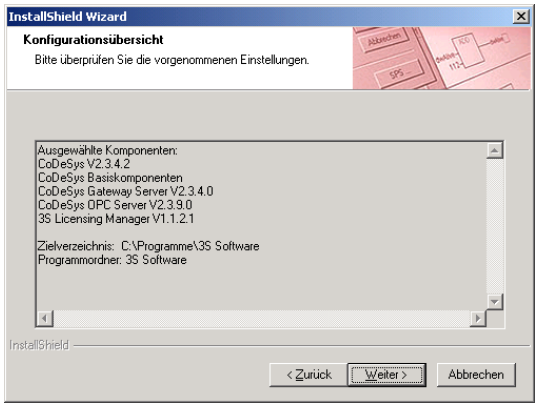




Here you enter your desired program folder.

By default, the program folder **" 3S Software "** created.

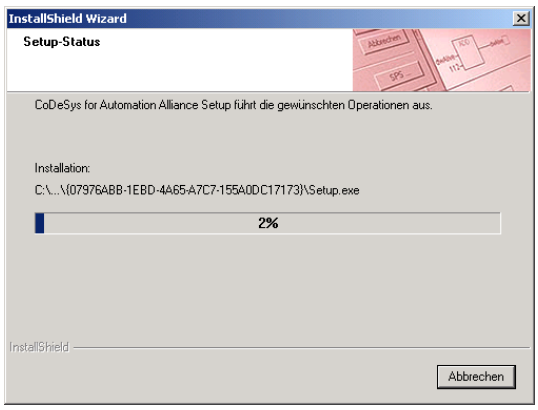
After you have named the program folder, confirm with **"Next"**



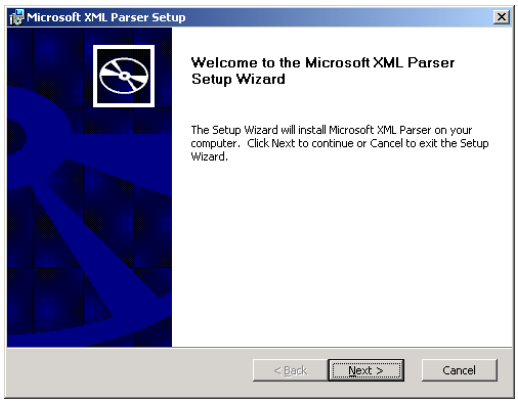
In the following window will be the information you have entered so far listed once again.

If a correction should be necessary, you can use **"back"** in the above window will be back.

With **"Next"** the settings can be confirmed. The installation of the selected software components is started.

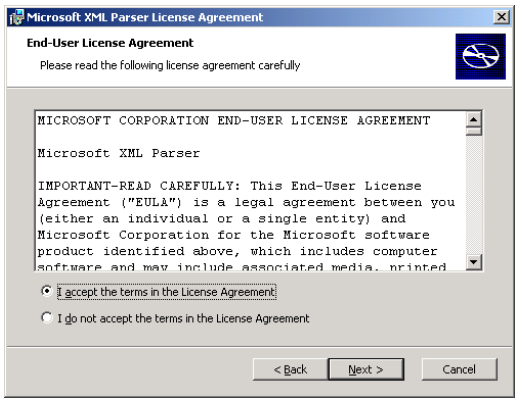


The program is now installed and the program group, as well as the icons will be created.



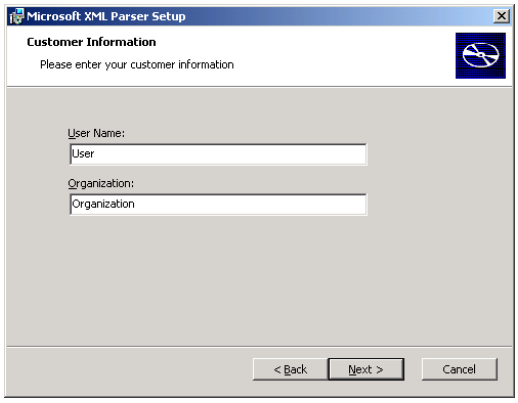
At new computerized equipment should be Microsoft XML Parser already be installed. Otherwise proceed as follows: Installation of the Microsoft XML Parser I

Install the Microsoft XML Parser using confirmation by **"Next > ".**



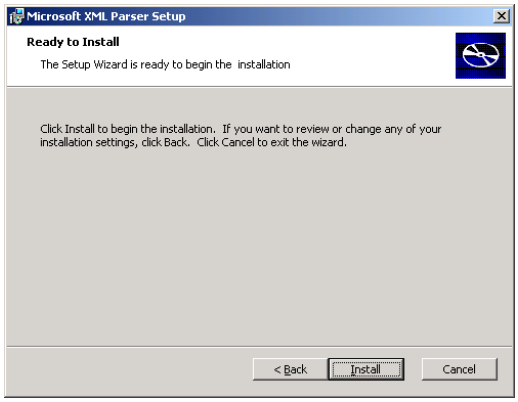
End-User License Agreement

Please read the text in detail and confirm your agreement



Customer Information

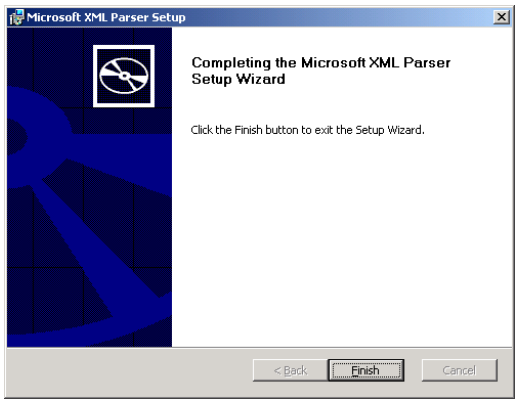
Please enter your user and company name.



Start the installation

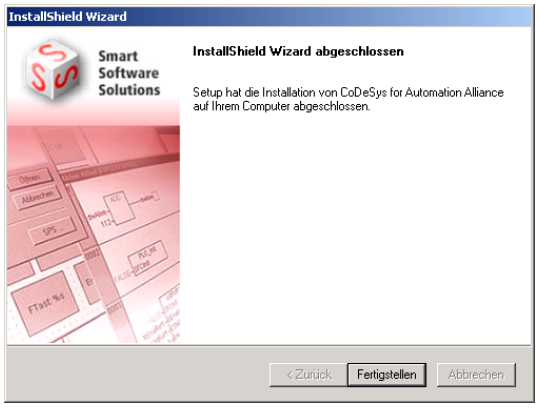
with **"Install"** the settings can be confirmed. If a correction should be necessary, with **"< Back"** in the above window will be released.

After the confirmation with **"Install"**, the installation of the selected software components begins.



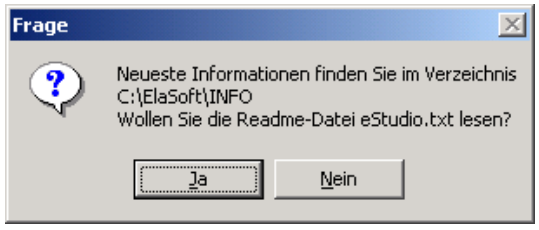
Completion of the installation of the Microsoft XML Parser

Confirm the completion of the installation of the Microsoft XML Parser with **"Finish".**

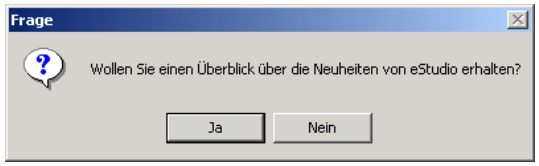


Completion of the installation of CoDeSys

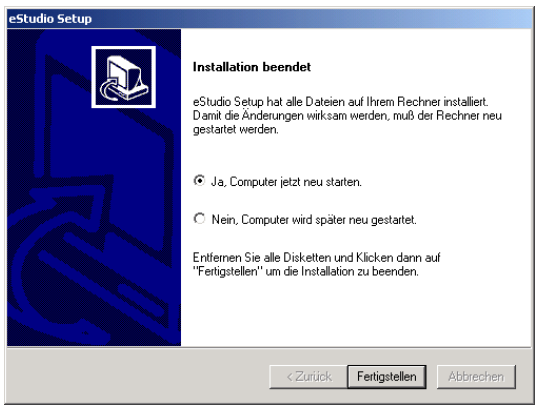
Confirm the completion of the installation of CoDeSys with **"Finish".**



If necessary, you can read the readme file by estudio.



If necessary, you can get information via “quick links”(overview of the news) to estudio.



Restart your computer now.

Please confirm with **"Finish".**

A proper function of the installed programs is carried out after the restart of your PC.

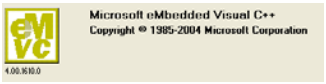
2.3 Additional installations to estudio

2.3.1 C-Compiler

C-compiler are the subject of eStudio.

The uses of ElaSim compilers are required. These are in addition to the compiler "GNU 16X Compiler V3.2" is not in this software package contains.

The installation of the compiler please run as described in the compiler manual through.

Prozessor	C-Compiler Version
8-bit CPU (80535-Prozessor)	Keil 8051-C-Compiler V4.01
32-bit CPU Xscale Prozessor	
Simulation (Win9x/NT)	Microsoft Visual Studio C/C++ /C# 2008 or more

2.4 De-Install eStudio

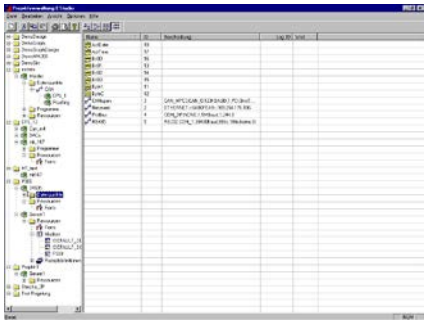
To an ElaSoft software product to remove from your computer, for Windows, click **Start**. Go to the menu item **Settings** and open the folder in the Control Panel folder **Software.**

In the field select **Add/Remove** to remove the ElaSoft software product from the list and click **"Remove".** This will now, with all paths and icons deleted

3 Overview of the Software Products

3.1 estudio project management

Project management

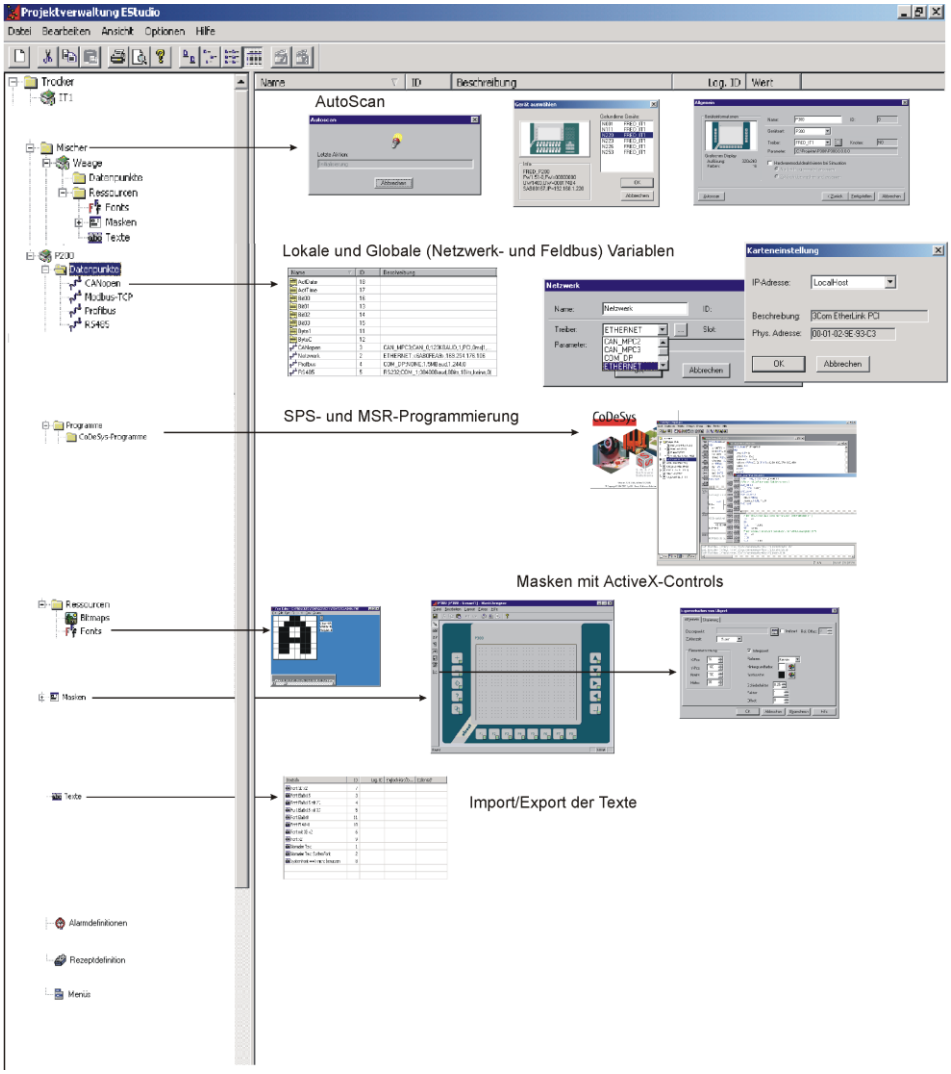


The project management is the configuration center of eStudio.

Connections to all common fieldbuses and PC interfaces

for I / O signals are organized:

- interface for all common fieldbuses
- Online display
- Foreign Language Management



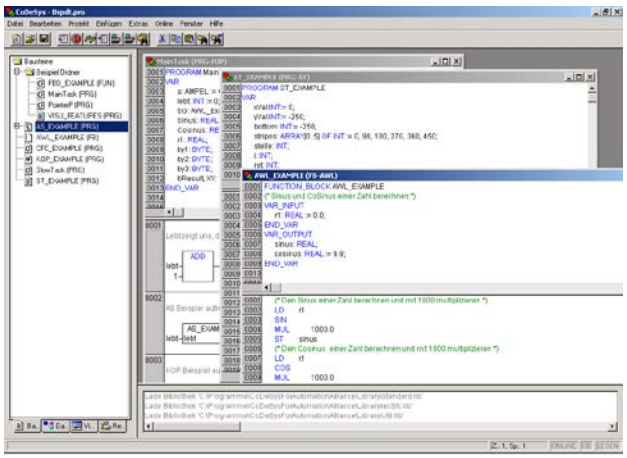
3.2 eStudio PLC programming

CoDeSys 2.3 - PLC programming according to IEC 61131-3

PLC system for vendor-independent programming to IEC 61131-3. The PLC programs can run on both the PC and on the controller.

The PLC system has very powerful features for programming and diagnostics. It works fast and has wide system boundaries

Graphic tool for PLC programming according to IEC 61131-3 programming

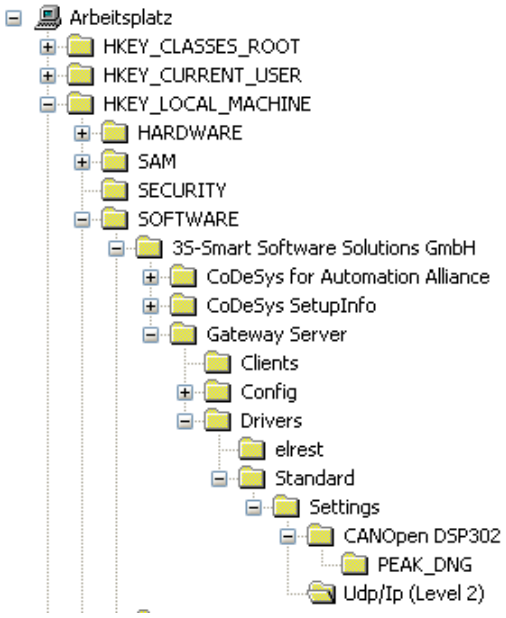


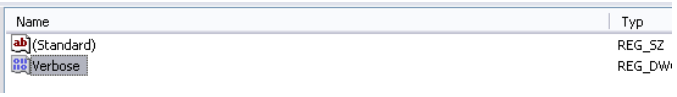
- Diagnostics
- System-wide limits
- All defined programming languages AWL, FUP, KOP, AS, ST and
- Structured programming with modular program management
- Source code stored in the target system
- Criteria Analysis
- Converting between languages
- incremental compilation
- All common data types, structures, arrays, and multidimensional
- Programming support: Auto format, autodeclare cross-reference, Search / Replace
- Project convenient comparison
- Conversion Program in Foreign Languages
- Online connections with PLC run-time system with TCP / IP or via fieldbus
- "Change Online" from the new variables, instances, programs during the term with maximum data retention

- Online monitoring of variables in variable list, watch windows, editors
- Online Status and Power Flow (accumulator) of programs and agencies
- triggering, forcing and setting variables
- Single cycle, breakpoints
- Step in, step over
- Displays the current call stack
- Watch list shows a selection of variables
- Trace function records variables on cycle-accurate
- Online management of all variable names and structures throughout the system
- Communication gateway to access other applications on the controller or the remote control
- Integrated Visualization
- Library management to create and manage custom libraries

CoDeSys

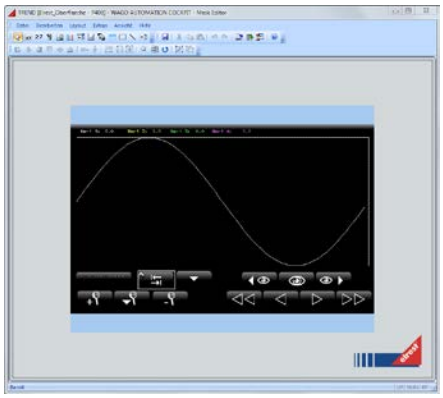
With the GDrvUdp.dll, the UDP - communications are made to the controller. If you do not want the output window, you can use the key to the "verbose" = set "0".


Arbeitsplatz
HKEY_CLASSES_ROOT
HKEY_CURRENT_USER
HKEY_LOCAL_MACHINE
HARDWARE
SAM
SECURITY
SOFTWARE
3S-Smart Software Solutions GmbH
CoDeSys for Automation Alliance
CoDeSys SetupInfo
Gateway Server
Clients
Config
Drivers
elrest
Standard
Settings
CANOpen DSP302
PEAK_DNG
Udp/Ip (Level 2)


Name
Typ
(Standard)
REG_SZ
Verbose

3.3 eStudio HMI programming

ElaDesign - graphical programming MMI



Development tool for the design and control implementation of menu structures.

Support integrated drag and drop elements and on-line simulation on the PC

- Graphic tool for MMI - Programming
- Cooperative multitasking operating system
- Integrated Simulation Environment
- Open concept driver
- Resource Workshop
- Flexible connectivity target
- Variety of Controls
- Built-in font editor
- Touch-Support
- Menus
- Password Function
- Event-/alarm lists
- Data Logger
- Multi-function Windows
- Voice Switching

Designed specifically for the programming of the MMI devices developed ElaDesign eStudio is part of the programming tools.

It is used for easy and comfortable creation mask. and the combination of menus and buttons on the control and monitoring devices

3.4 eStudio WEB Server

Web-Server

Integrated web server for visualization and configuration via a Web browser with support from:

Layer 7 protocols

FTP

HTTP

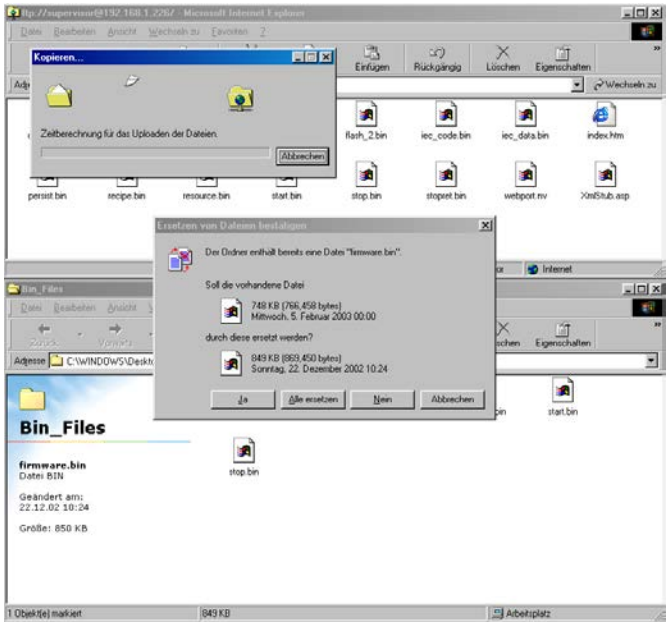
XML

Layer 7 protocols

FTP, HTTP, SMTP, POP3 (Post Office Protocol 3 for abbreviation, the standardized procedures for receiving e-mails. The POP3 server stores the messages until the user retrieves it with a so-called POP3 client.) UDP -EEP1.0, Modbus-TCP.

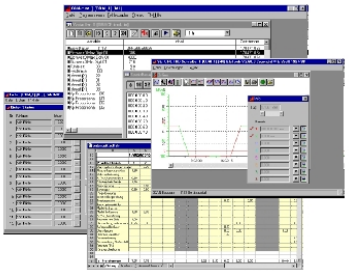
FTP – Support Using

Using the FTP - services can the data by Drag&Drop be replaced with the target system.



3.5 Tools

Tools



Tools for

debugging

calibration

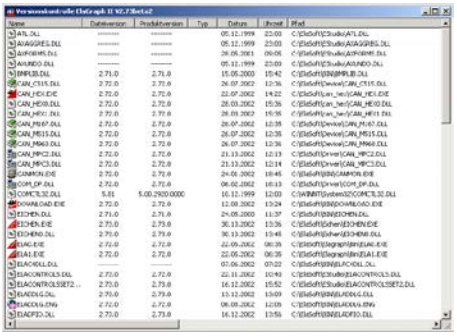
version checker

front editor

download tool

graphical data logging

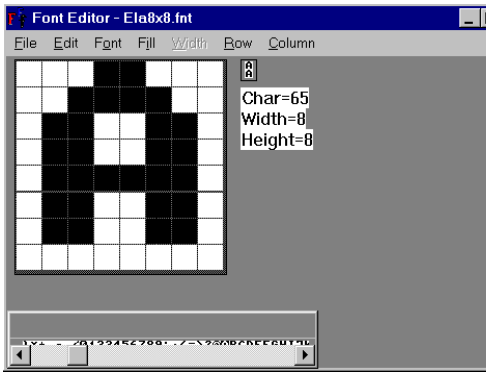
3.5.1 Versionchecker



Version control allows you to diagnose errors that occur in your system if necessary.

This program will list all your program components that are needed to error-free operation of eStudio.

3.5.2 FontEditor

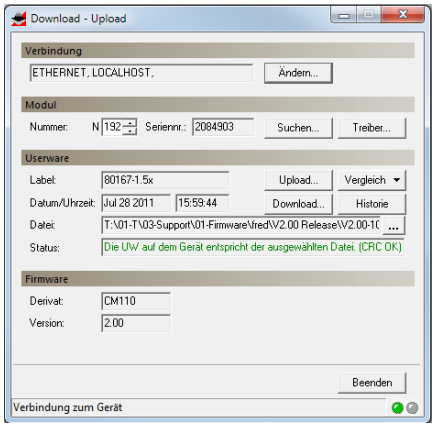


The Font Editor is a tool that allows the user of eStudio to create own fonts.

3.5.3 Download

The Download tool is designed for convenient transfer of programs (user and firmware) from the PC to the module and vice versa.

As of v1.48 firmware and user product, it is possible to store the history of the last 8 userware downloads in the module. It can be traced: Who, when and what programs have been delegated to the module.

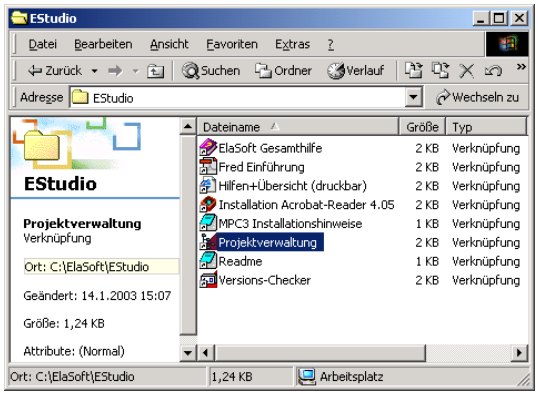


4 Project management in eStudio

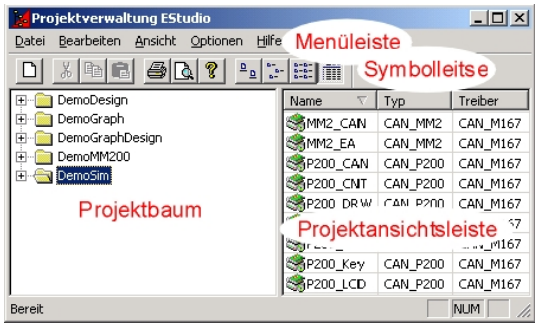
4.1 Overview

In the management of the projects are global all projects for eStudio created and configured.

4.1.1 Start of the project management



The project management is in the folder ElaSoft eStudio started.types of project management



After the start project management is the window open. From this window, you can all of the features of estudio be configured and started.

The window consists of:

- Menu bar
- Toolbar
- Project tree
- Project view window

4.1.2 Menu bar of the Project Management

The menu bar contains five pull-down menus. The call of the individual menus by selecting with the mouse or by typing **Alt + <underlined to letter>.**

4.1.2.1 File menu

New	Create a new object
Print	Printing the Project View window
Print Preview	Preview of the printout
Printer Setup	. Selecting and configuring the printer

4.1.2.2 Edit menu

Change	Change the selected object
Delete	Delete the selected objects
Cut	Adds the selected objects to the clipboard and deletes it.
Kopieren	Fügt die markierten Objekte in die Zwischenablage ein.
Paste	Pastes the objects from the clipboard at the selected location
Select all	Select all objects in the project view window.
Invert Selection	Invert Selection in the project view window

4.1.2.3 View menu

Toolbar	Hides the toolbar on or off
Status Bar	Hides the status bar on or off.
Share	Setting the split ratio between the project tree window and viewport project
Large Icons	Shows the objects in the project view window with large icons
Small Icons	Shows the objects in the project view window with small icons
List	Shows the objects in the project view window in list form.
Details	Displays additional information about the objects in the project view window.
Update	Updates the content of the project tree window and viewport project.

4.1.2.4 Menu options

Setting	Changing the program settings.
Version Control	Displays the current versions of the use of eStudio *. Exe and *. DLL files.
Language selection	Selection several languages for the program to be used
Dongle configuration	shows how the connected dongle is configured
Switching	Switches between different e Studio versions

4.1.2.5 Menu help

Overview	opens help to eStudio
Info about project management ...	Displays program information

4.1.3 The project management toolbar

..... Insert new object

..... Cut

..... Copy

..... Insert

..... Print the project view window

..... Sideview

..... Show product information

..... Display mode of the project view window: large icons

..... Display mode of the project view window: small icons

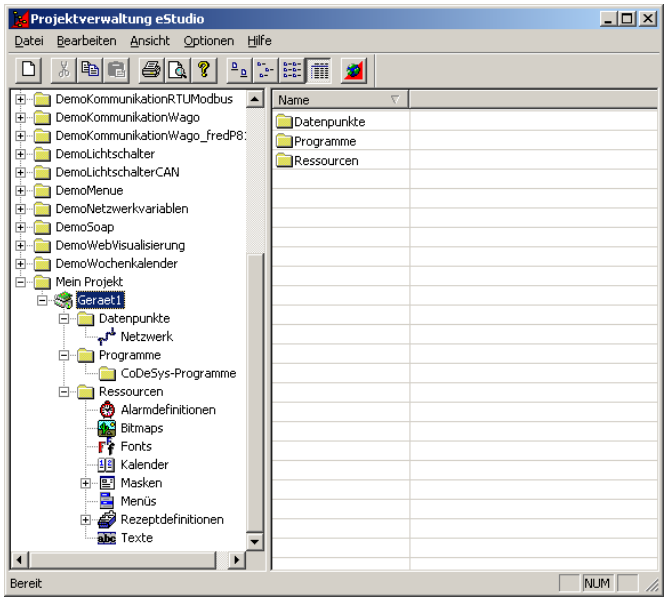
..... Display mode of the project view window: list:

..... Display mode of the project view window: details

..... Link to homepage elrest:www.elrest.de

4.2 Project tree

In the project tree, the projects and related equipment, data points, resources, etc. are created and displayed.



The project has a hierarchical tree.

The top level contains the generated projects.

In the next level, the individual devices that are assigned to a project are listed.

In the next level have folders for belonging to a device programs, data points and resources.

In all lower levels, the individual data points, resources and programs to be configured.

By clicking on the objects with the right mouse button in each level context-sensitive menus appear. About these can all be performed on the selected object possible operations

project level

- device-level
- data point, program, resource level
- configuration level

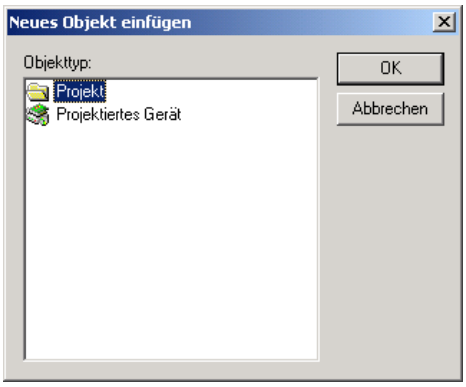
4.2.1 Project view window

The project view window displays the objects that are one level lower than the selected object in the project tree.
Depending on the type of object several columns appear in the Project View window. These columns can be moved by drag and drop between them. By positioning the mouse over the right edge of a column head can pass through the column to be resized with the mouse. By clicking on the column header, a column can be declared for the active column. An active column is visible on an upwardly or downwardly facing triangle in the column header. The orientation of the triangle tells you whether the column is sorted in ascending or descending order. The caption of the column headings is largely self-explanatory

4.3 Projects

All devices in a system with the associated programs and files are combined into one project. These are listed in the top level of the tree project, the project level. Clicking on a project in the tree associated devices appear in the Project View window. Double-clicking a project or by clicking on the '+' sign next to the project, the devices appear in a lower level in the project tree. By clicking the right mouse button on a project will see a context-sensitive menu that contains all the functions that can be executed for a project.

4.3.1 Create a new project



To create a new project, proceed as follows:

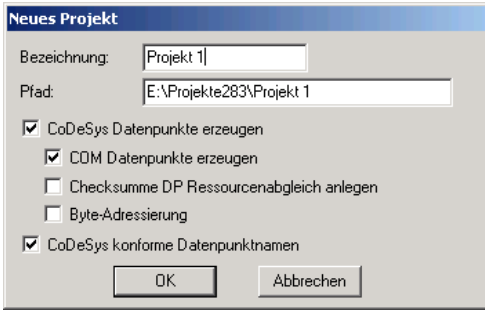
Select a project and select the **file** menu, select **new** ..., or click the right mouse button on a project and then select the menu item **new**

The following dialog will appear:

Select Project and click **ok**

- or

Click the right mouse button on a project and then select the menu item **new project**



In the name field, enter the **name** of the project.
In the **Path** field, the path in which all of the data to be stored this project are to be laid down. The default is \projects\ here proposed.

Tip:
This setting can be on the program settings change.

CoDeSys data points:
Marker data points will be export and I/O data points for CoDeSys

Create COM data points:
generates data points from a network for CoDeSys.

Create checksum DP leveling:
For CoDeSys is automatically generated a data point. This data point includes a checksum of the resource. With the help of this data point can be used to check whether the CoDeSys program to the stored resource fits.
CoDeSys compliant data point name:
Generates a point name in CoDeSys convention (no spaces, special characters, ...)

Byte addressing
If this option is selected the CoDeSys variables are created with byte addressing.
After confirming with OK, a new project appears in the project tree, the Project Manager.

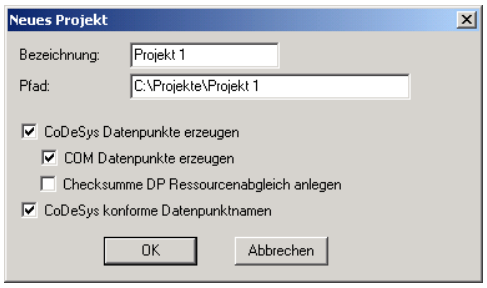
Suw about the library can be a review:

ST

```
(* check the check sum of the resource inside your code *)

a := a+1;

VAR
      psUW: POINTER TO sUW := 0;
      ressource: BOOL;
END_VAR

IF (NOT psUW) THEN
      psUW := UwGetStructPointer(0);
ELSE
      IF (psUW^.nResourceChecksum = nCheckSumResource) THEN
            ressource := TRUE;
      ELSE
            ressource := FALSE;
      END_IF
END_IF
```

4.3.2 *Creating a copy of a project*

To create a new project based on an existing project, follow these steps:

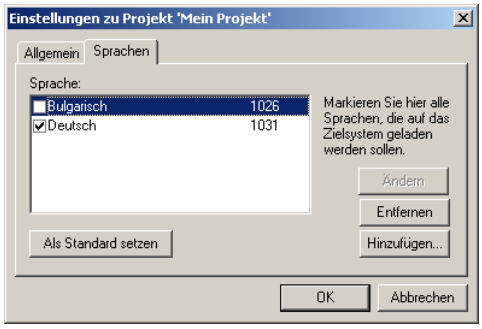


Click the right mouse button on the project that you want to use as the basis for the new project. Select the menu item **new copy**.

It replicates the settings from the existing project. The project name and path automatically by appending,_<n>' created so that a unique name is always guaranteed.

If necessary, change the settings and click **OK**.
A description of the settings, see the previous chapter.

4.3.3 *Project settings*



To change the settings of a project, select the project and select the **Edit** menu, select **Modify**, and click the right mouse button on the project and then select the menu item **Modify**

On the **General** page, you can change the name of the project later.

On the page **Languages** all currently languages are listed which will be used in the project. The checkmark in front of a language specifies whether all the texts in this language to the target system as a resource to be loaded. The default language (at the moment only in german language) can not be removed from the project and always will be loaded to the target system.

By pressing the button **Add** the project can be added a further language. To remove a language, select the language and press **Remove.** You can change with the name of a self-defined language change.

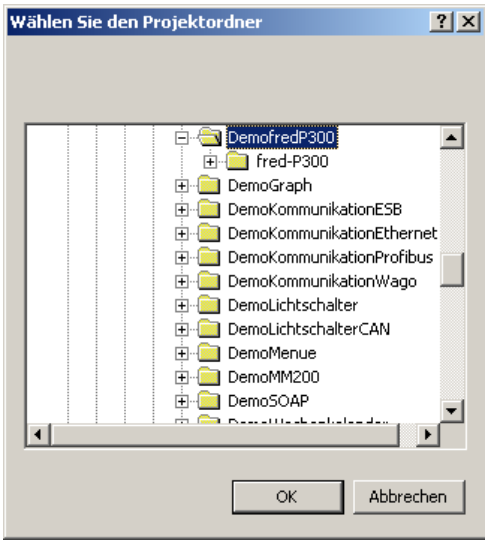
4.3.4 *Deleting a project*

To delete a project, select it and choose **Delete** from the **Edit menu** or click the right mouse button on the project and then select the **Delete** menu item.

After a query, whether you want to delete this project really is a second asks whether you want to delete all files. They remain the answer "no" to the data on your hard disk and you can resume later using the function in project management.

4.3.5 *Importing a project*

If for example a project removed for archiving purposes of the Project Manager and stored on another disk (CD, Zip Drive ...) is this project at a later date via the Import function added back into project management. Before importing the data must be copied back to disk.



To import a project, click the right mouse button on a project and then select the **Import** menu item. The following dialog will appear

Choose the path where the project is located and click **OK**. A double click opens / closes a subpath.

This function can also be projects that were created with an older version will be included in the project management. After a query, these data are converted to the current format.

4.3.6 *Project Device*

Configured devices are all devices that take place in a complex with CoDeSys ElaSim or programs, or are to be designed for those with ElaDesign masks.

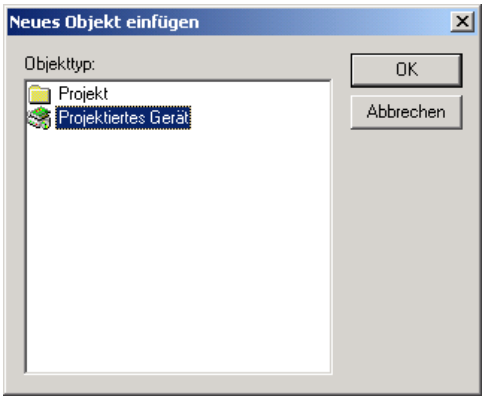
The programs, and the required resources, and the data points (via the to values in their own or in another device can be accessed), are in the Project Management in three folders below

Programs

Resources

Data Points

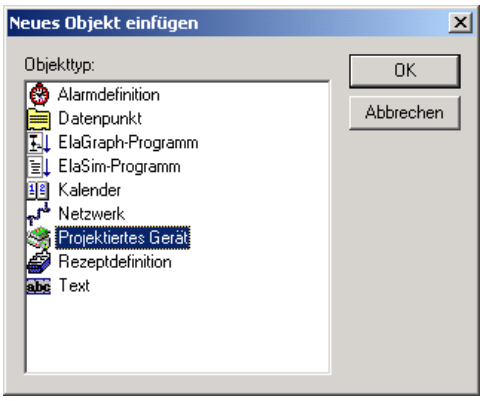
4.3.7 *Creating a configured device*



To create a new project, proceed as follows:

Select the project in the project tree that you want to add the device and select the **File** menu, select **New** ..., or click the right mouse button on the project and select **New** from the menu ....

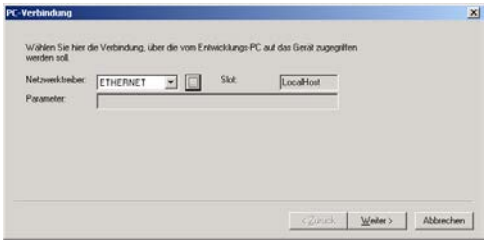
Highlight the entry **Configured device** and click **OK**



- or -

Select an existing device and select the **File** menu, select **New** ..., or click the right mouse button on an existing device and then select the menu item **New** ....

Highlight the entry Configured device and click.**OK**.

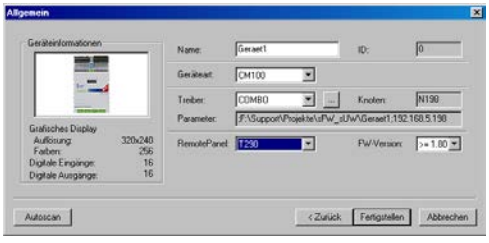


- or -

Click with the right-click on an existing device and then select the menu item **New Device**

Here you can select the interface over which the device during the development phase with the PC is connected to. In the combo box select the **appropriate driver** from network drivers. By clicking the button next to the combo box can be opened by a dialog box the settings for the selected drivers can be made. For further information, please refer to the Help for the corresponding driver.

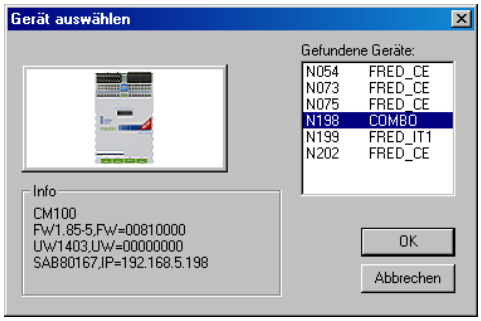
Click **Next**



In the **Name** field, type a logical name for the device.

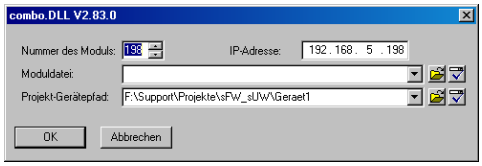
Select the **type of device** in the combobox used type of device from.

Select in the combo box **Driver** The Driver for the CPU used in the device. The button next to the combo box can be opened a dialog in the Select the network number of the device and can be more driver-specific settings can be made. For further information, please refer to the Help for the corresponding driver.



The combobox RemotePanel can be operated if the device the RemotePanel-Funktionality supports. Here the type can be selected of the connected RemotePanels

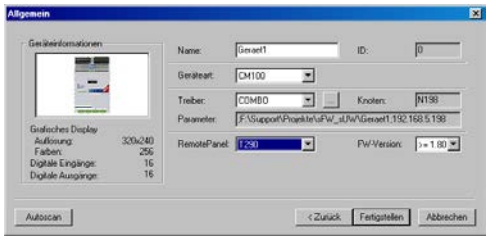
In the combo **FW version** is to select the firmware version that resides on the device. This setting is used in order for example to generate a version compatible with the firmware resource.



If you are connected during the application of the device with the target hardware, you can browse through the **auto scan** button the connected network and select the appropriate device. Except for the name then all settings are set automatically.

Click on **Finish**

4.3.8 Change settings of a configured device



To the settings of a projected to change device, select the device and then select the **Edit menu**, select the entry **Modify** or click with the right mouse button on the device and then select the menu item **Modify**

On the **General** page you can change general settings, such as Name or device driver change.

On the page **PC-connection**, you can change the setting of the connection, with the you during the development phase are connected to the device.

For a more detailed description of the individual fields, see **Creating a projected device.**

4.3.9 Projected devices delete

To delete a configured device to select this and then select the **Edit** menu, select the **Delete** entry, or click with the right mouse button on the device and then select the **Delete** menu item.

After a query as to whether you really want to delete this device is the device from the Project Management and the associated files from the hard drive.

	When you delete the files are in the Windows Recycle Bin. A device to restore accidentally deleted you highlight all the files in the folder **recycled,** the origin of the directory of the deleted product and select in the context-sensitive menu

Restore. If you then in the Project Management refresh the view, the device will be listed once again.

4.3.10 projected devices copy

You can device a configured within a project or copying from one project to another.

To do this, select the device you want to copy and select the ***Edit*** menu, select the entry **Copy,** or right-click on the device and then select the **Copy** menu item.

Now select the project in the project tree, in which you want to copy the device and then select the **Edit** menu, click **Paste,** or right-click on the project and then select the menu item **Paste.**

4.3.11 Cosider at a Device Data Points

You can directly on the Projektbau the data points with a double-click Read

4.3.12 Start the Internet browser (Ethernet)

This will open an Internet Explorer automatically to accesses the home page of the device. This can run on web pages or also for example, the Visio Web. The program to be used can be set via the Options

4.3.13 FTP-start Browser (Ethernet network)

This will open a file explorer or Internet Explorer, the automatically a FTP-connection to the device.

Here you can directly files and also firmware images will be copied.

The program to be used can be set on the options.

4.3.14 Start Telnet (Ethernet network)

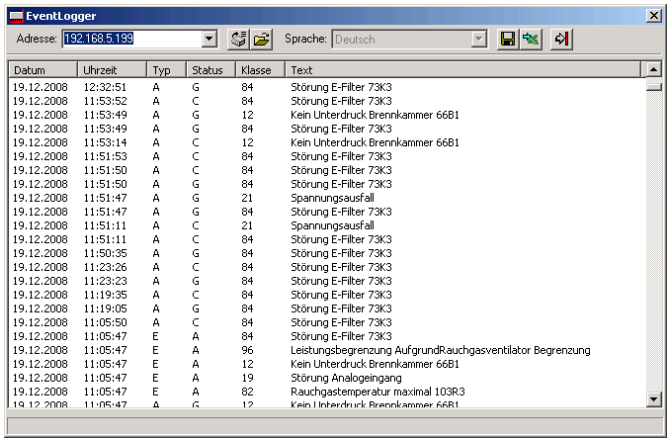
This is a Telnet session to the device settings on the device to open to perform.

- Log in as user.
- It opens an operatingprompt on which commands can be entered.
- With "help" you will receive an overview of the most used commands (General).

For more information on the telnet settings, refer to the document Platform_XX_DE.pdf in the chapter Telnet.

4.3.15 Event Logger start

The tool enables alarms and events are read from the device and displayed.



After entering the IP address and clicking the Import button, the alarms and events can be downloaded from the device. In addition, the resource of the device is loaded

Through the combo **language** can be chosen to be displayed in the language of the texts. The language needs in the resource (the device) may be present.

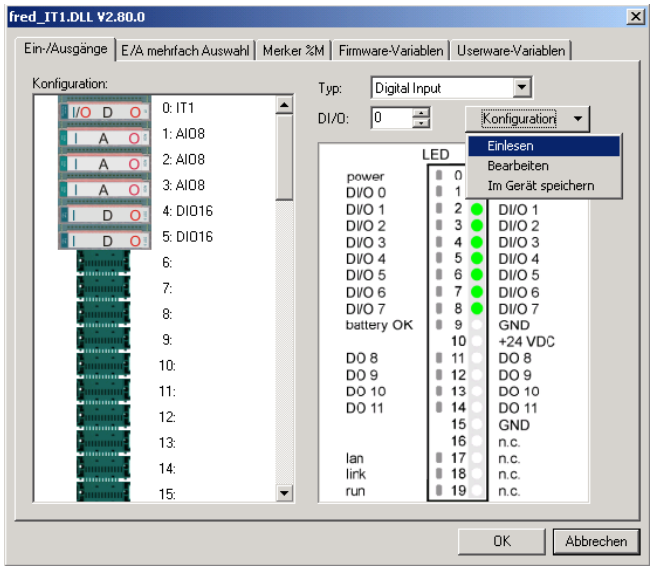
In addition, an open event that is stored on the PC list. This requires (eventlist.bin) and the event list (resource.bin) the resource may be stored in a directory. The button can **open local files,** the event list will be selected.

The Type column specifies whether there are events (E), alarms (A) or messages (M) generated by the library Eventxx) is.

The button "Save" the table is stored in ASCII form.

With "Export to Excel", the table will be exported to Excel. "

4.3.16 *Configuration of the inputs and outputs read*



Determines the current configuration of the connected components and corresponds to the "Read Configuration" in the subdirectory data points

4.4 Programming

With eStudio devices with

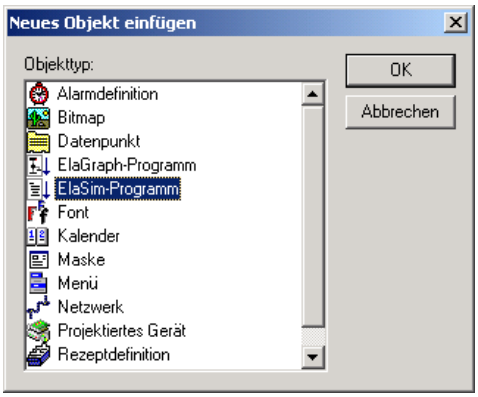
IEC 61131-3 (CoDeSys) programs or

in the programming language C '(C / C + + / C # programs

be programmed. There is also the possibility of simple user interfaces to display and modify data points to generate graphical (HMI editor).

See Resource masks.

4.4.1 Programming in C/C++/C#

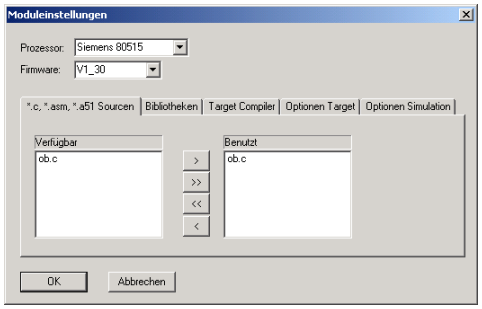


For a configured device can be created ElaSim program. ElaSim a program to create, follow these steps:

Select the device you want to add the ElaSim program in the project tree and select the **File** menu, select **New** ..., or click on the device with the right mouse button and select the menu item

New ....

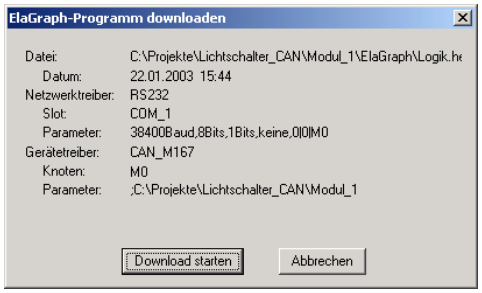
Highlight the entry **ElaSim program** and confirm with **OK**.



In this dialog, the CPU used, the firmware version, the required source files and libraries are set, and further information about compiler and code generation are shown. After confirming with OK, the ElaSim program is included in the project management.

Further information about creating and managing programs, see the chapter ElaSim ElaSim.

4.4.1.1 Download von C-Programs

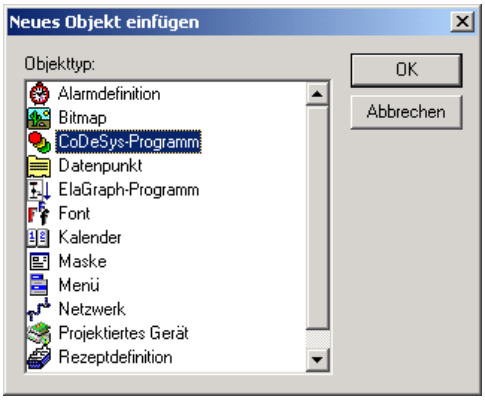


ElaSim a program to load on the target system (download), click on this project or the project tree view window with the right mouse button and select the **Download** menu item.

CoDeSys CoDeSys programs are transferred directly from out on the target system

Here, once again displays information about the file to be transferred, and the interface used on the device to which the program will be loaded. By pressing the button to **start the download** process will start. This may vary depending on the size of the file transfer rate or interface, and selected take a few seconds to several minutes.

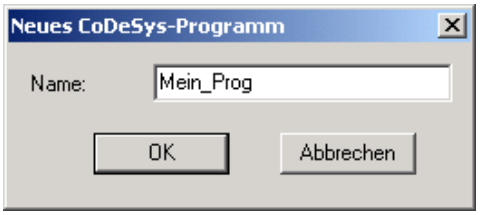
4.4.2 Programming mit CoDeSys



For a configured device can have multiple programs to be created CoDeSys. To create a CoDeSys program proceed as follows:

Select the device you want to add a CoDeSys program in the project tree and select the **File** menu, select **New** ..., or click on the device with the right mouse button and select the menu item **New** ....

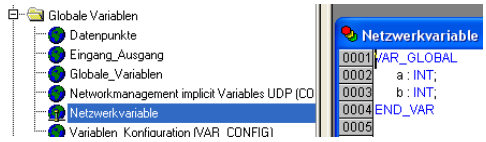
Highlight the entry **CoDeSys program** and confirm with **OK**.



Enter the name of the new program and press **OK**. The CoDeSys program is now included in the **project management** and CoDeSys is started. The new program will be put into a folder **CoDeSys-Programme** which is located under the folder **programs.**

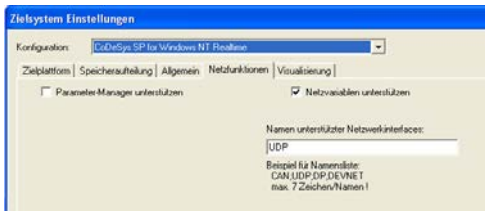
For more information on programming with CoDeSys, see the chapter "First step with CoDeSys."

4.4.2.1 CoDeSys network variables



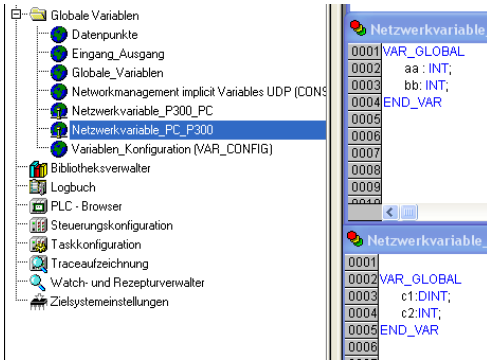
Network variables are used for data exchange of CoDeSys Automation Alliance against one another.

As the device can also CoDeSys Soft-PLC



What is important in the target settings, this network variable release.

There is currently only supports UDP.



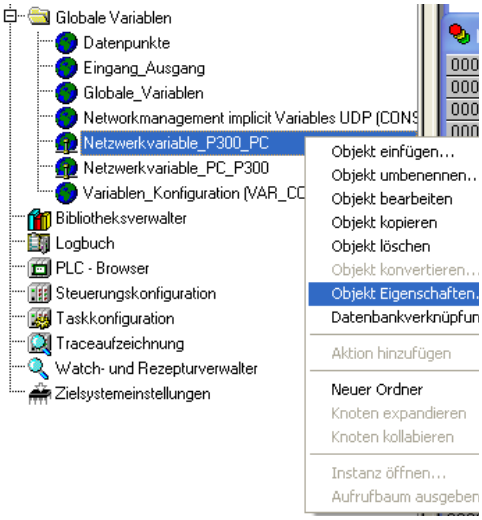
In our example, we have a list of variables:

- Netzwerkvariable_P300_PC

All these variables will be sent as a multicast UDP message P300.

- Netzwerkvariable_PC_P300

All these variables are from the PC with CoDeSys Soft-PLC as a multicast UDP message sent.

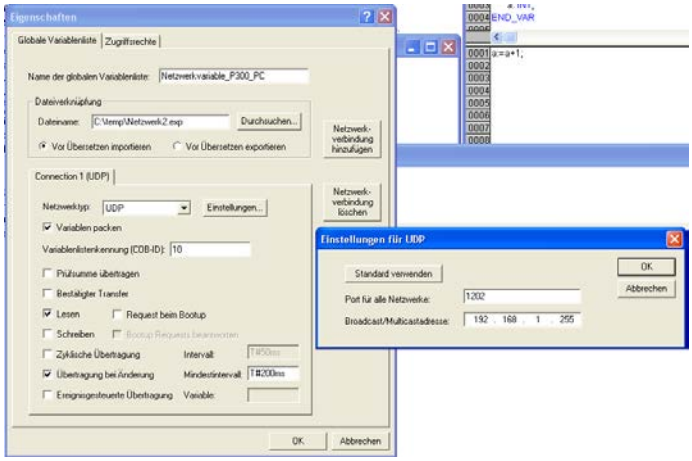


For each network variable list, the parameters must be set appropriately.

On the P300 page:

- The list "networkvariable"_P300_PC" have to be activated as reading
- The list should be.

Thus the list of variables will be updated automatically

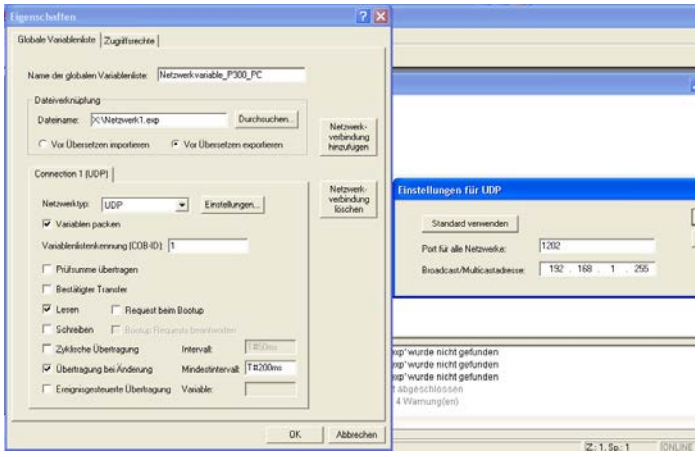


- The list "networkvariable"_PC_P300" have to be activated as letter.
- Select network settings please multicast. i.e.
  Class A : xxx.255.255.255
  Class B : xxx.yyy.255.255
  ClassC : xxx.yyy.zzz.255
- Each list must have a unique COB-ID

On the PC side :

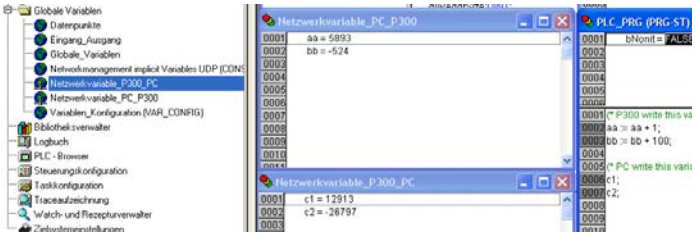
- The list Netzwerkvariable_P300_PC" have to be activated as reading.
  The list must be

- A new variable list is thus generated automatically
- The list must be "Netzwerkvariable_PC_P300" be activated as a letter

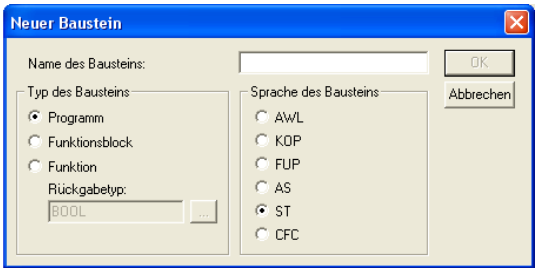


In Online debugging these variables can be observed.

Please note Pointer unter the Performance Information in the chapter "Kommunikation_Ethernet



4.4.2.2 Pointer under CoDeSys



Pointer will be used only within:

- Program
- function block

4.4.3 Space in the target system

4.4.3.1 Space under µE

In the series with the operating system "Windows µE" the following development stages for space are available :

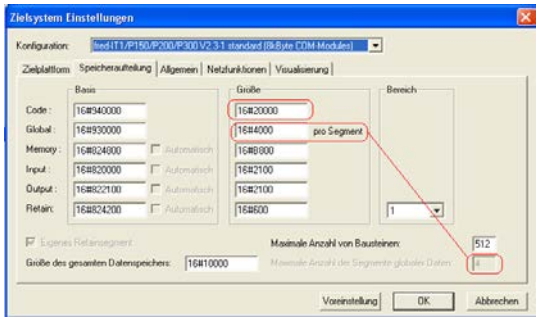
CoDeSys

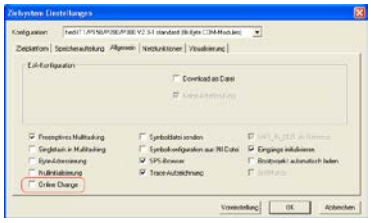
Codesize :

- 128kB - Performance of the devices under the relevant chapter "Libraries"“
- 256kB - Performance of the devices under the relevant chapter "Libraries“ without OnlineChange

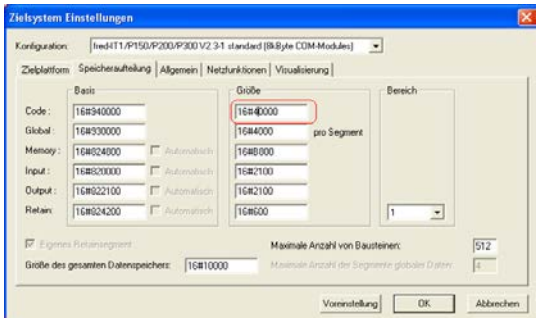
Global variable :
Listing of the applicable devices under the chapter "Libraries"

Code size 16#20000 = 128kByte





Code size 16#40000 = 256kByte,
If online change has been disabled



Ressourcen

- 256kB - Listing of the applicable devices under the chapter "Libraries”
- 512kB - Listing of the applicable devices under the chapter "Libraries”

4.4.3.2 Space under CE

In the series with the operating system "Windows CE" the following memory configuration are available:

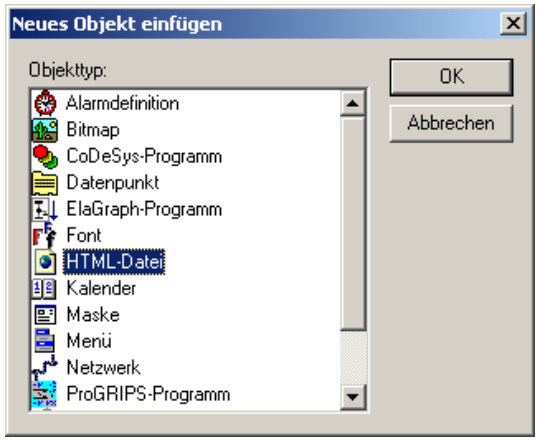
CoDeSys

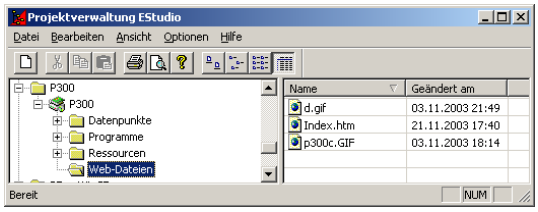
The free memory and flash memory limits the size of the CODESYS project

Ressourcen

The free memory and flash memory (' \Flashdisk' etc.) of the destination directory limits the size of the resource

4.5 Web-Files





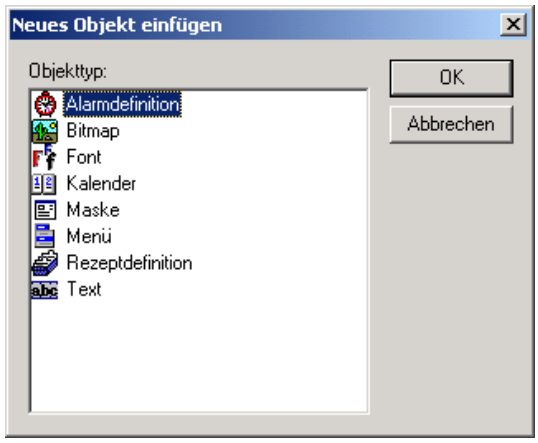
All elrest devices with Ethernet Port include a web server.

All of these resources can be managed in the Device Tree “[Project] \ [device] \web".

The files can be edited in the project management and loaded onto the device.

HTML-pages can be created and edited. The HTML editor can be modified via " options-settings -programs-HTML"

4.6 Ressourcen



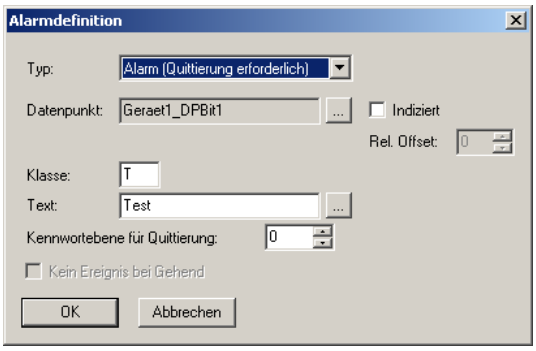
Various data are summarized as resources in eStudio, They are used by ElaSim or Code Sys-program or ElaDesign. Mostly for a graphical display on the control panel

To create a new resource, mark the **Resources folder**, select the entry “new” in the **File** menu, or click on the folder with the right mouse button and select the menu item **New** ....

Select the desired resource type and click **OK**.

For more information, see the chapter of the respective ressource typs.

4.6.1 Alarm Definitions



With alarm and event lists you can record the condition of binary data points.

Alarm definitions are listed in the project management folder: **alarm definitions**

The used data point, the alarm type, the class and the assigned text is displayed as information at the alarm definition display

To change an alarm definition, double-click in the project view window on the appropriate line.

There are two types of alarm definitions:

- actual alarms
- events
-

At the later display in ElaDesign can only be displayed in separate lists (Control in the mask).

Alarms can/ have to be acknowledged by the user so that they will be removed from the list.

If an alarm or event occurs, generates a corresponding entry in the list.

Select the data point that should be monitored. This must be a bit data point.
Select a class to set the alarm or event continues to assign a group. This group is for information only in the ad.

A later be typed text appears in the list. Multi-line texts by typing \ **n** at the point of the desired line breaks are generated.

The password level of acknowledgment is required only for alarms. If it is confirmed, all entries are removed, which represent the level of the user, or of low priority are.

At events, you can also define whether or not to be going for the event no entry.

4.6.2 bitmaps

Bitmaps are listed in the Project Management folder **bitmaps**. If the folder is selected in the project tree **bitmaps**, all bitmaps are listed, which are located in the <Project \ <device name> \ bitmaps. To add a bitmap that was created with any drawing program, in a project, you must be copied to it only in this directory

If the bitmap used in the project, appears in the column **ID** is a unique number assigned by the system.

To change a bitmap, you double click in the project view window on the appropriate line. The bitmap is then opened with the selected program in the program settings.

Each bitmap can be assigned a unique logical ID given free. The resulting bitmap can be accessed from a program of ElaSim.These log ID can be assigned when creating the bitmap. In order to subsequently assign a bitmap a log ID, click with the right mouse button in the Project View window on the appropriate line and then select **change Log ID** or double-click on that line to the **log id** column.

4.6.3 Fonts

Fonts are listed in the project management in the **Fonts** folder. If the **Fonts** folder selected in the project tree, all the fonts (. And FNT. TTF) listed, which are located in the <Project \ <name of device> \ fonts and all TrueType fonts (. TTF), the device supports the standard and already located in the directory <Project \ <name of device > \ hardware.

The TrueType fonts to a device are supported by default defined in the file hardware.xml off button

```
<Device ver="1.80">¶
 <Unicode>1</Unicode>¶
 <Fonts>¶
  <FileName>cour.ttf</FileName>¶
  <FileName>symbol.ttf</FileName>¶
  <FileName>tahoma.ttf</FileName>¶
  <FileName>times.ttf</FileName>¶
  <FileName>wingding.ttf</FileName>¶
 </Fonts>¶
</Device>¶
```

TrueType fonts are supported until there from eStudio version 2.83 and runtime version 1.80

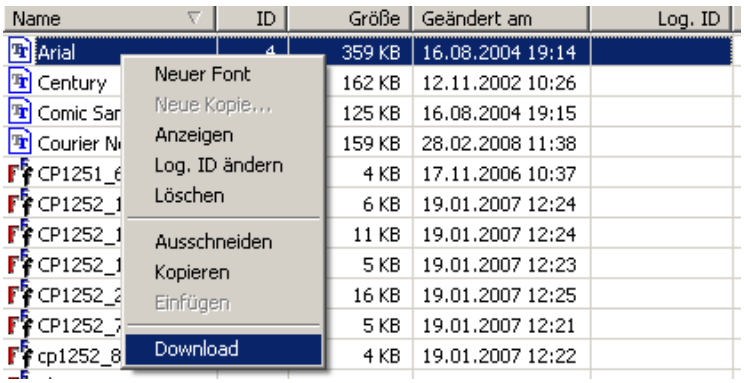
The font used in the project, appears in the column **ID** is a unique number assigned by the system.

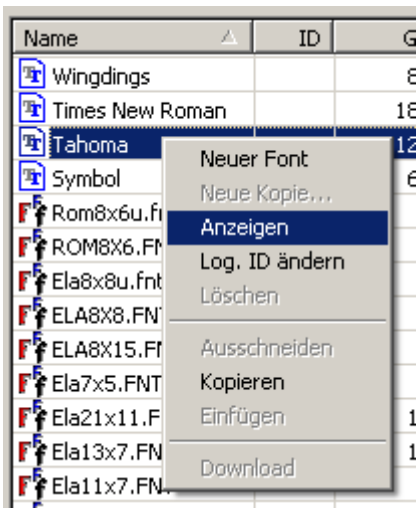
To change a FNT font, double-click the project view window on the appropriate line. The font is opened then with the selected program in the program settings.

The same procedure can be used to provide a TTF font display. The font is then opened with the Microsoft Windows Font Viewer (fontview.exe).

Each font can be given a free unique logical ID which can be addressed from a ElaSim CoDeSys program or CoDeSysout program. These log ID can be assigned when creating the font. In order to subsequently the font allocate a log ID, make a right-click in the Project View window on the appropriate line and then select **Change Log ID** or double-click on that line to the **log id** column.

All TrueType fonts from the **Fonts** folder can be downloaded to the device





4.6.4 Masks

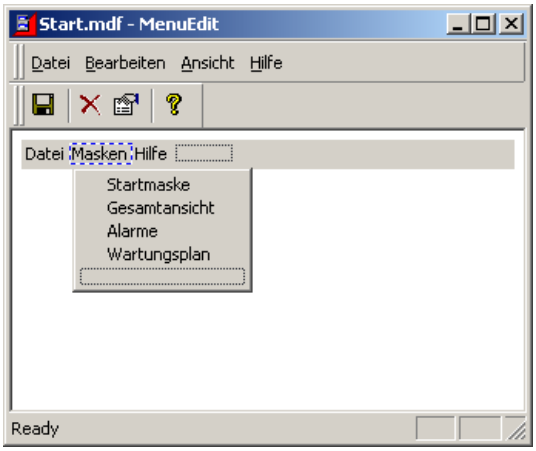
The designer of eStudio can create masks (window) for operator panel with various input and output elements. These can be used by CoDeSys or ElaSim programs or run directly without a program.

Masks are listed in the project management in the folder **masks.**

To change a mask you double-click to the appropriate line in the project view window. The mask is then opened with the program designers. For more information about creating and editing forms, see the chapter ElaDesign.

If you double-click the folder in the project tree masks or click on the '+' sign next to the folder, all masks are listed in the project tree. If you now select the project tree, a mask whose elements in the project view window will be listed.

4.6.5 Menus



With menus, you can open easily in ElaDesign certain masks.

Is assigned to make this possible even for non touchscreen enabled devices, you must define a key in the masks, the "Activate menu" as a key function. In the menu you can then use the cursor left / right / up / down procedures.

You can exit the menu by pressing Escape.

Menus are listed in the project management in the folder **menus**.

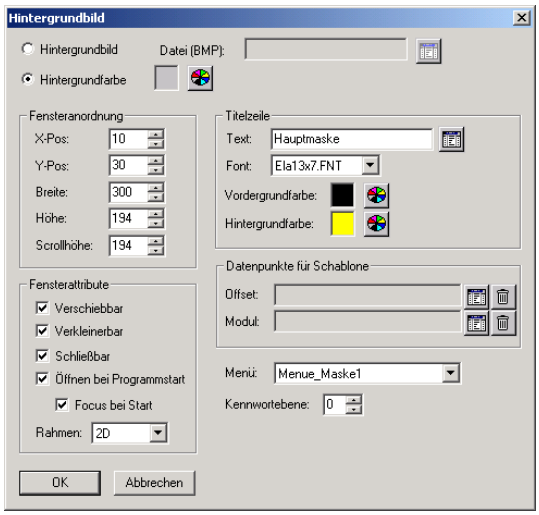
As information in the menu display e.g. the name and a log.ID displayed. The log. ID can be used with CoDeSys on.

To change a menu, double-click the project view window on the appropriate line.

It opens a new tool with which a menu can be created.

Each mask can be assigned to a different menu. Only on that mask the menu items can be selected.

With this tool you can create sub-menus, and also insert hyphens.

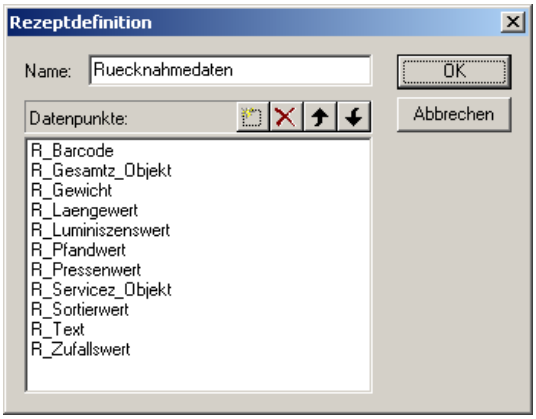


The following actions are possible

- Mask open with close: If the user select this item, the new mask will be opened and the old mask will be closed. A specified level password allows this only with sufficient rights.
- Mask open without close: Then the old mask will not be closed, otherwise see above.
- End of program: only for CE-devices; ElaDesign will be completely closed
- Dividing line: a visual hyphen is inserted
- Submenu: further menu levels can be added horizontally and vertically (vertically: on the top level).
-

In each mask in the menu title, the font and font size can be selected.

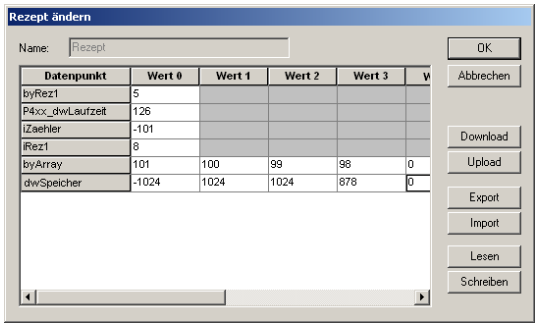
4.6.6 Recipe definitions



Recipes are listed in the project management in the folder **recipe definitions.**

With recipes you can determine a number of data points, which should be written to the device or to be read from the device.

For each recipe definition, you can now create different recipes. They can detect different values to the data points of a recipe-definition



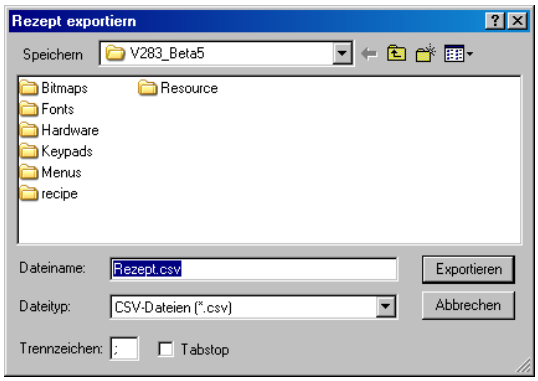
Choose the recipe definition in the project tree.

On the view page, you can create a new recipe with the right mouse button. This is initially empty.

For each data point (including arrays), you can enter a value.

The current recipe file is saved (download) or read (upload) on the device by the buttons **uploading and downloading**. The upload and download functions are executed directly from the context menu (right mouse button) of the recipes.

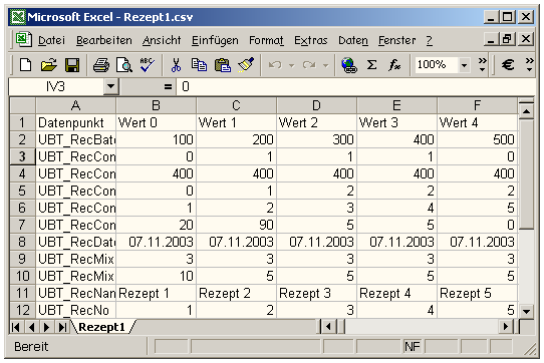
For devices without inserted or supported CF card, the menu item **"up/downloading of Compact Flash"** is to disable the context menu. Now being accessed to the internal file system of the device (path: \ vfs), for which no separate path must be specified / can.



With the button **Export** the recipe can be saved as a CSV file. In the resulting dialog box, a file name and the separator can be specified. The generated CSV file can be opened and edited in Excel. Such a file can be imported again with the button I**mport**. The export and import functions can also be executed by clicking the right mouse button on the recipe.

Note that the first row (column name) and the first column (data item name) may not be changed.

.



With the button **Write**: the values will be transmitted to the device.

With the button **Read**: the current values will be loaded on the device

These functions are also directly available by clicking the right mouse button on the prescription

4.6.7 Texts

Text resources serve in eStudio as the created projects to make multi-lingual in a simple way. All texts are stored in a table in which there is a column for each language. The texts are then accessed internally via a unique ID and the current language

Texts are listed in the project management folder **texts**. If the folder t**exts** are selected in the project tree then all texts in the chosen language for the project will be listed in the project windows list.

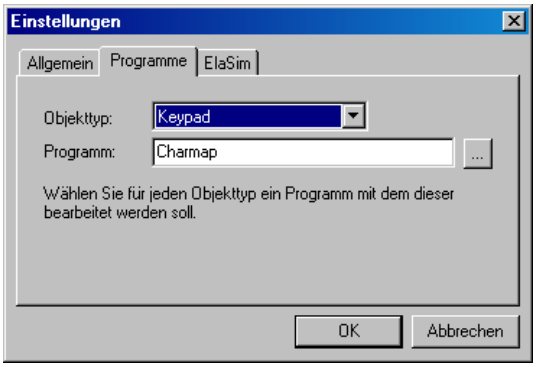
Texts can be managed in multiple languages, when in the project settings are added more languages in the project.

Select in your project: Change> languages

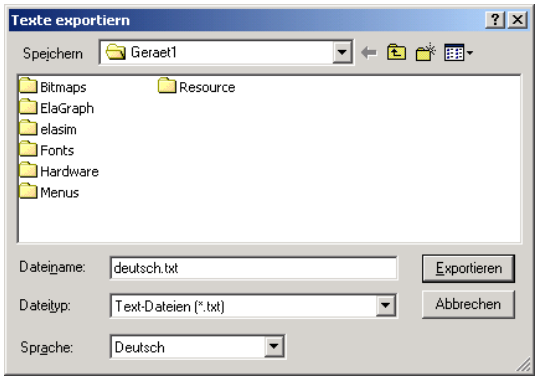
To change a text, double-click in the project view window on the appropriate line.

Log In ID field, you can assign your own unique number, which can be addressed from an ElaSim program. In the combo box **language** you can select the language and in the field **text** you can change the text. By pressing the key combination **Ctrl + Enter** you can start a new line in the text.

For not adjusting the desired language in this dialog, double-click in the project view window, in the appropriate column.



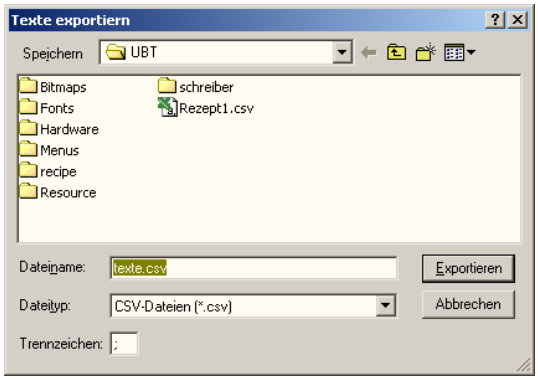
In the menu **options**-> **settings**->registration card **programs**, object type, **keypad**, an application can be defined, you can enter text with which.
Default: this is the Windows Character Map. The application is invoked either by pressing the F2 key or by double clicking in the box. The text-entry box must have the focus.



To save all texts of a language in a text file, for example, they translate to outside eStudio is project management in an export function available. To perform this you click the right mouse button on the folder **texts** and select the menu item **export** and then the record **a language.** It appears a dialog similar to a standard "**Save dialog**".

In addition, you can select the language, the texts are to be exported. Is in the foreign language no text is specified, automatically the text in the default language will be exported.

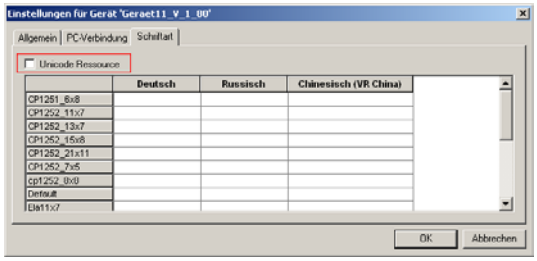
To record the translated texts into the project management, click the right mouse button on the folder **texts** and select the menu item **import** and the entry **a language**. In the resulting dialog, select the language which will import the text.



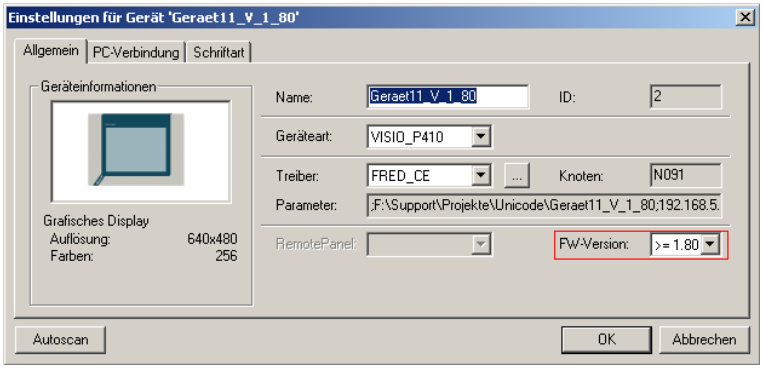
You have the option to save the texts of all languages in a CSV file. Right-click the folder **texts**, select the menu item **export** and select the entry **copletely in, csv' file**. .It appears a dialog similar to a standard "Save dialog". In addition, you can still find the separator / select tab stop.

The produced CSV file can be opened and edited in Excel, for example. It can change texts as well as new texts are added. It should be noted that the first row (column name) and the ID column have not be changed. In addition, no further languages (columns) are added or removed. If a new line must be added to the **ID c**olumn is left blank and the value of the column **Log.ID** be unique

To resume texts in the project management, you click the right mouse button on the folder **texts**. Select the menu item **import**, and then the entry **completely from csv' file.**



Unicode is supported only from eStudio version 2.83 and runtime version 1.80.



For space optimization can be needed to unicode translation on and off switch.

4.6.8 Generate resource file

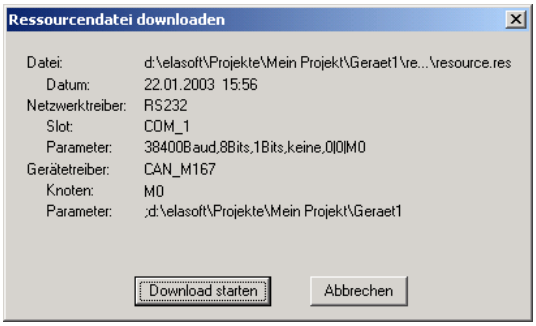
Before the different types of resources can be loaded on the target system they must be merged into one file. Therefore the program ResGen will be delivered with eStudio. This searches the configured device for all resources used and creates a resource file. In addition, it stores information about the used networks, devices, and data points in the file

To create out a resource file from the project management, click the right mouse button on the **resources** folder and select the menu item **create resource file.**

For more information on creating a resource file, see the help for the program ResGen.

4.6.9 download Resource file

To load a **resource file** on the target system (download), click in the project tree or project view pane, right-click the Resources folder and select the menu **download resource file.**

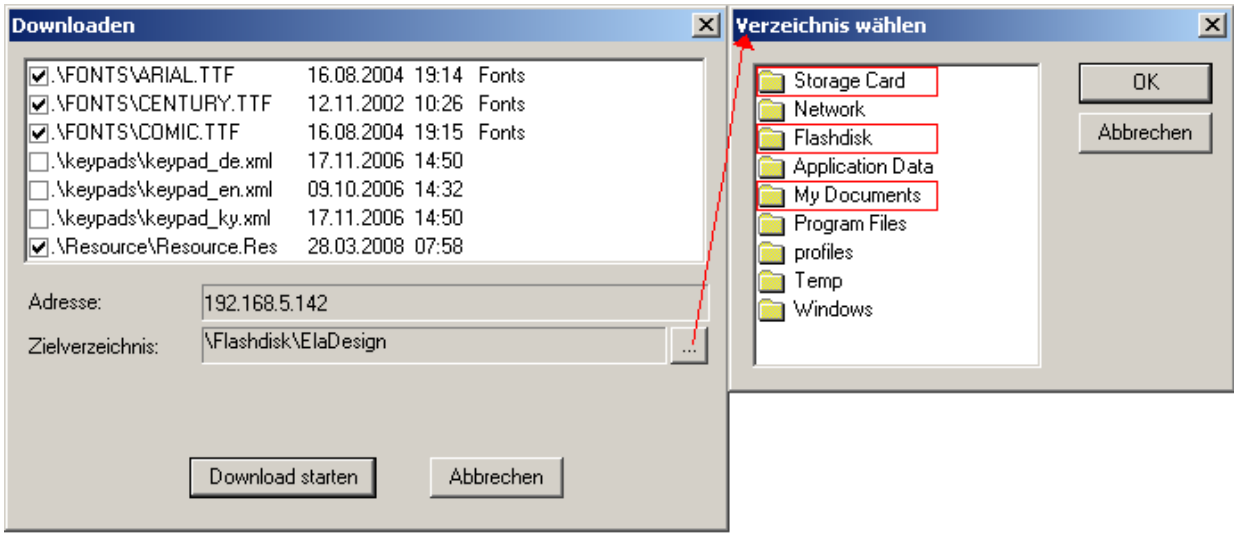


Here again the following informations are displayed:

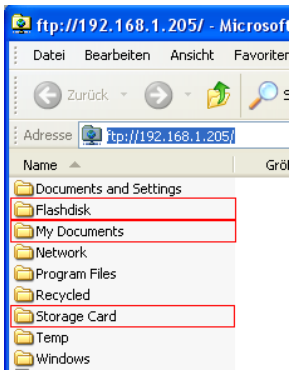
- the file to be transferred,
- the interface used to
- about the device to which the resources are to be loaded.

By pressing the button **to start download** , the operation will be started. This may vary depending on the size of the file transfer rate or interface, and selected take a few seconds to several minutes.

When downloading to a Windows CE.net device can be determined, the download directory:



With "Resource creating" are all necessary files will be provided for the operation, with the exception of the IEC codes". These are for "Resource download" in a selection box provided. It is not necessary to transfer all the files constantly, as not all change, can be individual except, for example keypad.



Download on WindowsCE-devices:

Enter the destination directory on which the download should take place. This destination path is stored for future downloads

<u>The Resource.res file can be stored under :</u>

- "My Documents"
  this is only in RAM and volatile after a power failure. The advantage is, during the development phase you can test without a flashing process faster.
- "Storage Card"
  this is the external CF (CampactFlash). It is strongly recommended that the data for ease and change of application for performance reasons on the CF to save.
  Downside, it must be a CF present.
- Flashdisk"
  data are stored on the internal flash. Because on this Flash is the operating system is also of the flashing process is slower than for CF. A further disadvantage is the slow access to the internal CF, especially in connection with the CoDeSys. One advantage is that the CF can be omitted
  elrest recommends the use of a external CF.

After the start of ElaDesignCE.exe on the Panel is in the order:

- „\My Documents\resource.res"
- "\Storage Card\ElaDesign\resource.res"
- „\Flashdisk\ElaDesign\resource.res"

For the file "resource.res" sought and executed.

4.6.10 Start the simulation

In eStudio you can with the help of ElaDesign graphically simple operating masks, the then without additional program are run on a panel. To these masks on the PC to simulate click with the right-click the folder **resources** and then select the menu item **start the simulation**.

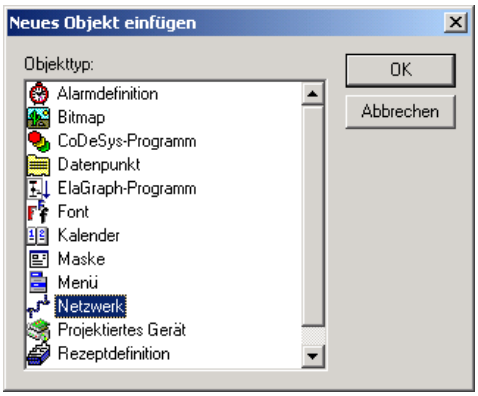
4.7 Datapoints

Data points are the logical structure of the data in their own or in another device can be accessed. This data can, for example as actual values Firmwarevariablen analog inputs or program variables be a ElaSim program.

In the Project Management data points will be below the projected device listed in the folder **data points**.

4.7.1 Datapoints of communication partners

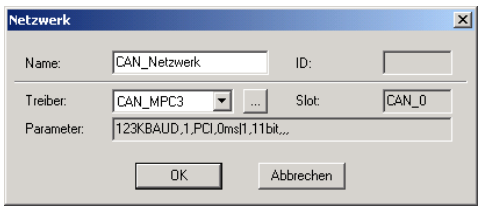
In order to access data points from another device it is necessary in the project management to define the connection between the two devices and the network. In addition the device to be accessed whose data points, have to be created.



Select the configured device in the project tree and select in the menu **file**, the entry **new** ..., or click on the device with the right mouse button and select the menu item **new** ....

In the dialog that appears select the type of object network and confirm with

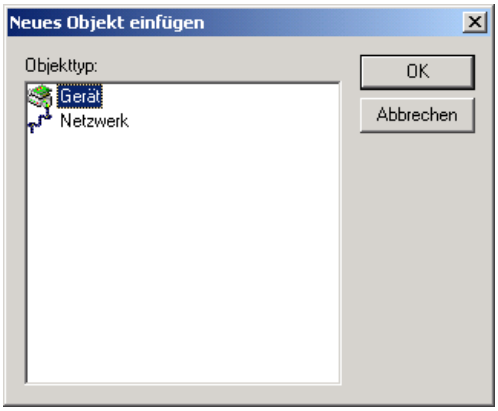
OK.



In the field **name** , enter a logical name for the network.

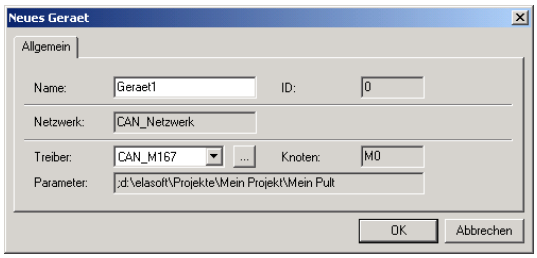
In the combo box select **drivers** the network driver for the desired interface. Via the button next to the combo box can be opened a dialog, in the driver-specific settings can be made. For further information please refer to the help of the appropriate driver.

Confirm your entries with **OK.**



Data points appear in the folder now the newly created network. In order to create the device, select the network in the project tree and select the **File** menu, select **New ...**, or click on the network with the right mouse button and select the menu item **New** ....

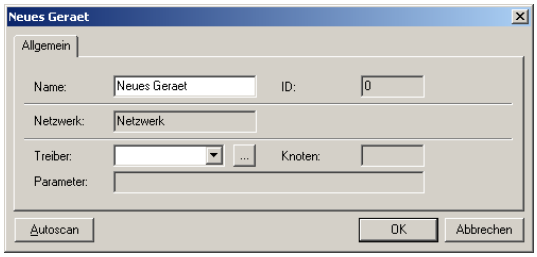
Select the object in the resulting dialog box type **device** and click **OK**.



Input a logical name in the field **name** for the appliance.

Select the combo box **"driver**" the driver for the device used in the CPU. The button beside the combo box can be opened a dialog in which to select the network number of the device and can accept additional driver-specific settings can be made. For more information, see the Help for the appropriate drivers.

Confirm your entries with **OK**.

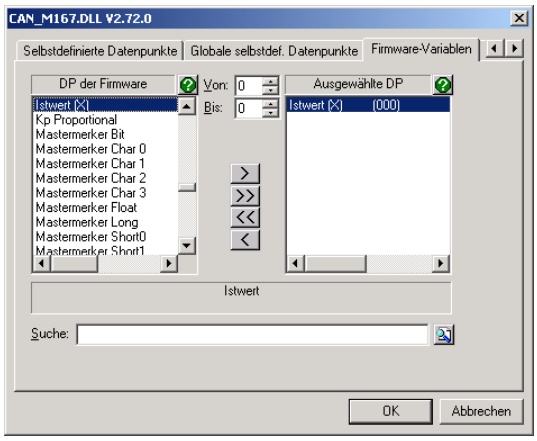


In the Project Manager will be displayed below the network, the newly created device. You can create here, as with a configured device data points.

Auto Scan: Has created an identical network as the main device, the connected device also be searched by autoscan.

4.7.2 *Creating data points*

To create a new data point, proceed as following:



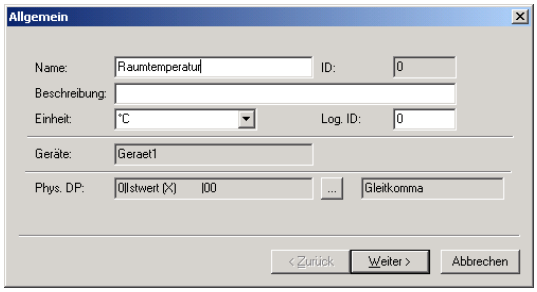
Select the device for which you want to create a data point in the project tree and select the **File** menu, select **New** ..., or click on the device with the right mouse button and select the menu item **New ...**.

Select in the dialog the object type **data point** and press **OK.**

A dialog box will appear from the selected device drivers for the device.

Here you can select the data points which you need and confirm with **OK**. (In the Project Management it is possible to create several data points in a process.

For more information about the data point selection dialogs, see the Help for the respective device drivers



In the Name field, enter a logical name for the data point.

This name is unique within the data points of a configured device and appears in ElaDesign in every data point selection dialogs. For CoDeSys, when this is in the project settings, configured variables created with this name.

In the **Description** field can take place an additional description of this data point.

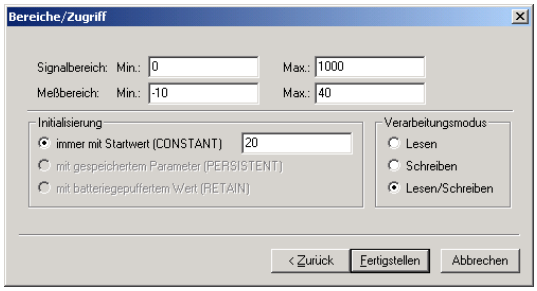
In the combo box **unit** you can enter a physical unit or a select from a predefined list. When you open the dialog appears here always the specification from the device drivers

In the field **Log. ID** field, you can give the data point has its own unique number, with which it can be approached from a ElaSim program.

In the field **device**, the device appears to create the data point.

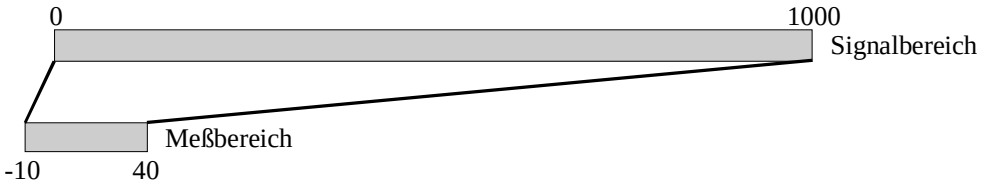
In the field **Phys. DP** will be shown the physical name of the data point that you have chosen in the selection dialog of the device driver. With the button next to the field, this selection dialog will open again. Behind it is still displayed, the data type of the data point.

If you have made all the inputs on this page: press **Next>.**



About the values in the fields of **signal range**, and **measuring range** can be limited range of the data point and scaled. For example, is for the range of signal 0 - 1,000 entered, so the values will be available in the device as you limited to this area. Then for the measuring range is -10 - 40 entered in this way there is a scaling of the values, such as you in ElaDesign be used, to this area instead.

The limitation and scaling does not affect in the CoDeSys programming.



Is entered in all four fields 0, there is no limitation or scaling of the values instead.

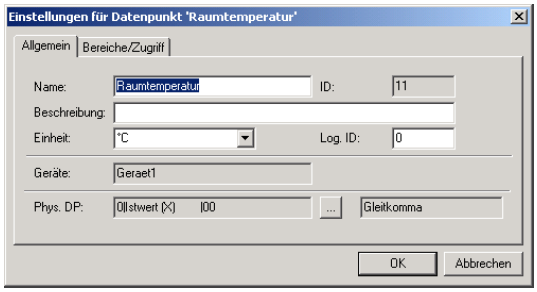
In the field **starting value**, the value is entered, to be used as long as no value was read from the device.

In the group **processing mode**, the access rights as specified by the device driver will be further restricted.

To complete your entries, press **Finish**.

If you have created only one data point (or was it the last data point to be created), this appears now in the project management under the selected device. Did you select more than one data point in the data point selection dialog of the device driver: The **General** page appears again with the values for the next data point.

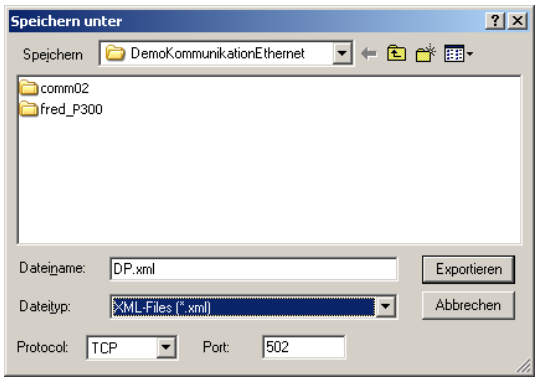
4.7.3 Data Point Settings



To change the settings of a data point, double-click the project view window on the appropriate line.

The inputs are on the two sides of **General** and distributed **areas / access**. For more information about the input fields of this dialogue and its importance in the chapter you create data points.

4.7.4 *Exporting data points*

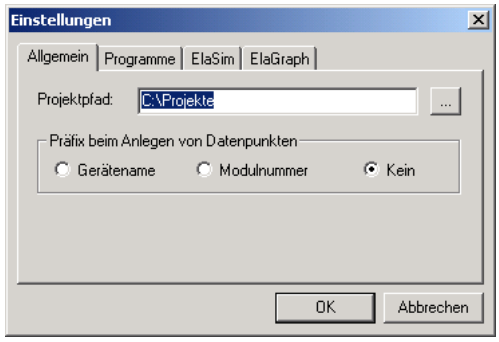


You can export all data points of a project to an XML file. This file can then for example be read into a "Wago" OPC server.

Highlight the desired project and select in the context menu, the entry **Export data points** ...

4.8 Program Settings

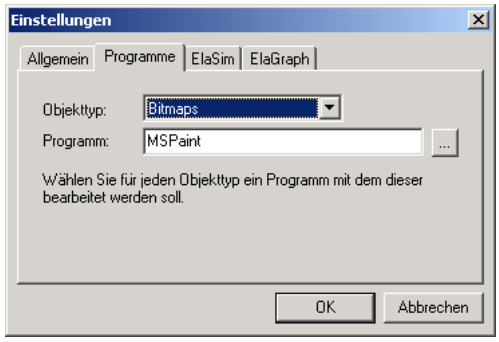
In the Project Management adjustments can be made the independently of the project, or applies to all projects.



To do this, select **Settings** in the **Options** menu,

On the **General** page in the field **project path** can be entered the path which will be used as the default if you create a new project

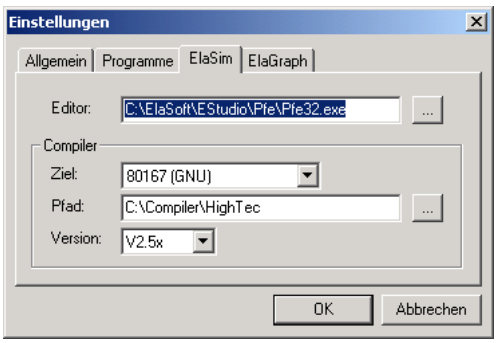
Prefix when creating data points: Here can be defined how is the specification for the log name from the Phys. names formed when a new data point will be created



On the **Programs** page the programs can be set with which bitmaps, code Sys-Programme , fonts, and HTML-pages to be edited.

By default, for bitmaps the program supplied with Windows Paint, for fonts with eStudio program supplied the fontedit and for HTML-pages used Notepad.

Further you can set which program for HTTP and FTP connections will be used.

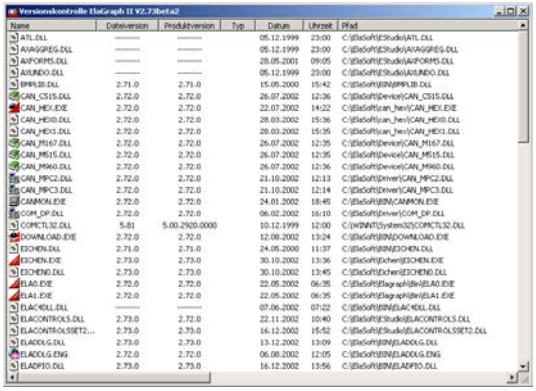


On the side **ElaSim** field **editor**, the editor can be set to be processed with the source files ElaSim

With the fields in the group **Compiler** (CPU-type and simulation) can set for each target the path for the used compiler and the version.

4.8.1 Version Control

eStudio is composed of many individual components, such as executable programs, libraries or drivers. To provide an overview of the problem case or just use the installed version of the individual components is eStudio supplied with the program version.



This can be called from the project management of version **control options**.

Here are all the used components listed with information about the version and path. This list can be printed on the system menu of the program.

4.8.2 Language Development Environment

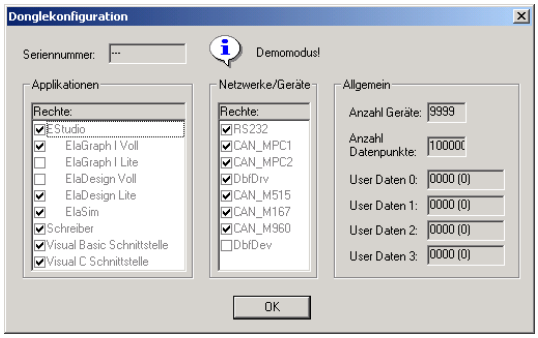
eStudio has the ability to change the program in other languages, too

This can be called up from the project management of **language selection options...**

Here you can select your preferred language.

4.8.3 *Dongle configuration*

About the dongle configuration all rights of the plugged dongle shown and the serial number and general information.



This can be called from the project management through **options dongle configuration**

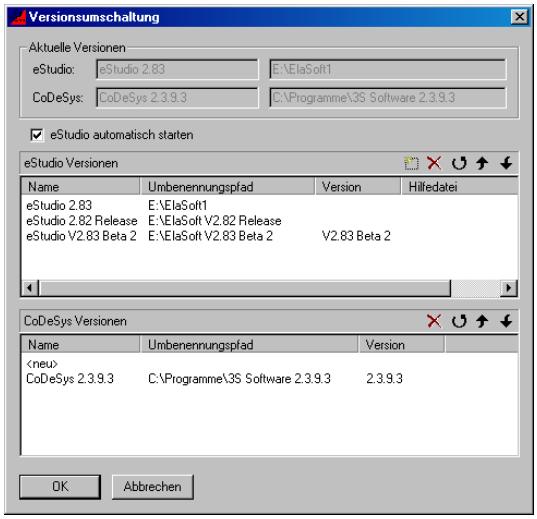
4.8.4 *version switch*

You can use the version switch several eStudio/CoDeSys installations use simultaneously on your computer. Important is, that these installations on the computer were always in the same directory.

On this directory now also run all versions, which are not required versions renamed in a different directory.

Attention:

Then delete the registry entries of older installations for the current user under software \ ElaSoft, the entries are removed for the version change. So do not install old versions (prior to V2.73) after the fact. Complete the entries again, but also old versions run smoothly



By double-clicking a displayed eStudio version you can change the renaming path and the path to help.

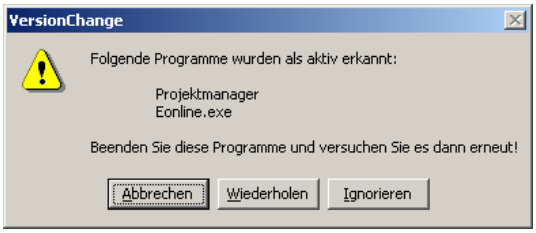
Do you want to start automatically eStudio with an update, select the corresponding checkbox.

If you want to change the eStudio version, select the appropriate version from the list and then click

.

Same applies toCoDeSys.

Do you want to install a new version without CoDeSys eStudio, then select from the list, <new> 'and then perform a change. CoDeSys can then be installed. Then the version changer reopened so the new version of CoDeSys is entered automatically.



If the version change does not work, it is usually because programs are still running the old version. This is automatically detected and reported. Shut down those programs and try again.

Furthermore, a version change usually fails because you may have a file explorer open, which opened a directory of the installation path. Also, could for example an editor (text, bitmap, ...) with a file of this path to be open.

Close that

Finally, there are sometimes situations in the system, where the operating system has references to paths/files of the installation paths open. Here then, is there no way to switch more in the current operation. In this case, shut down the computer (often enough also log out) and try it again. Hereby the version change always works correctly.

5 HMI-Editor Eladesign

5.1 Overview

ElaDesign offers:

- Workshop for resources oriented draft of masks with static elements (fields, input fields, bitmaps, etc.)
- Full graphic with Windows technology
- Free font design
- Integration of bitmap files.
- TrueType fonts for CE d• evices
- Unicode text for CE devices

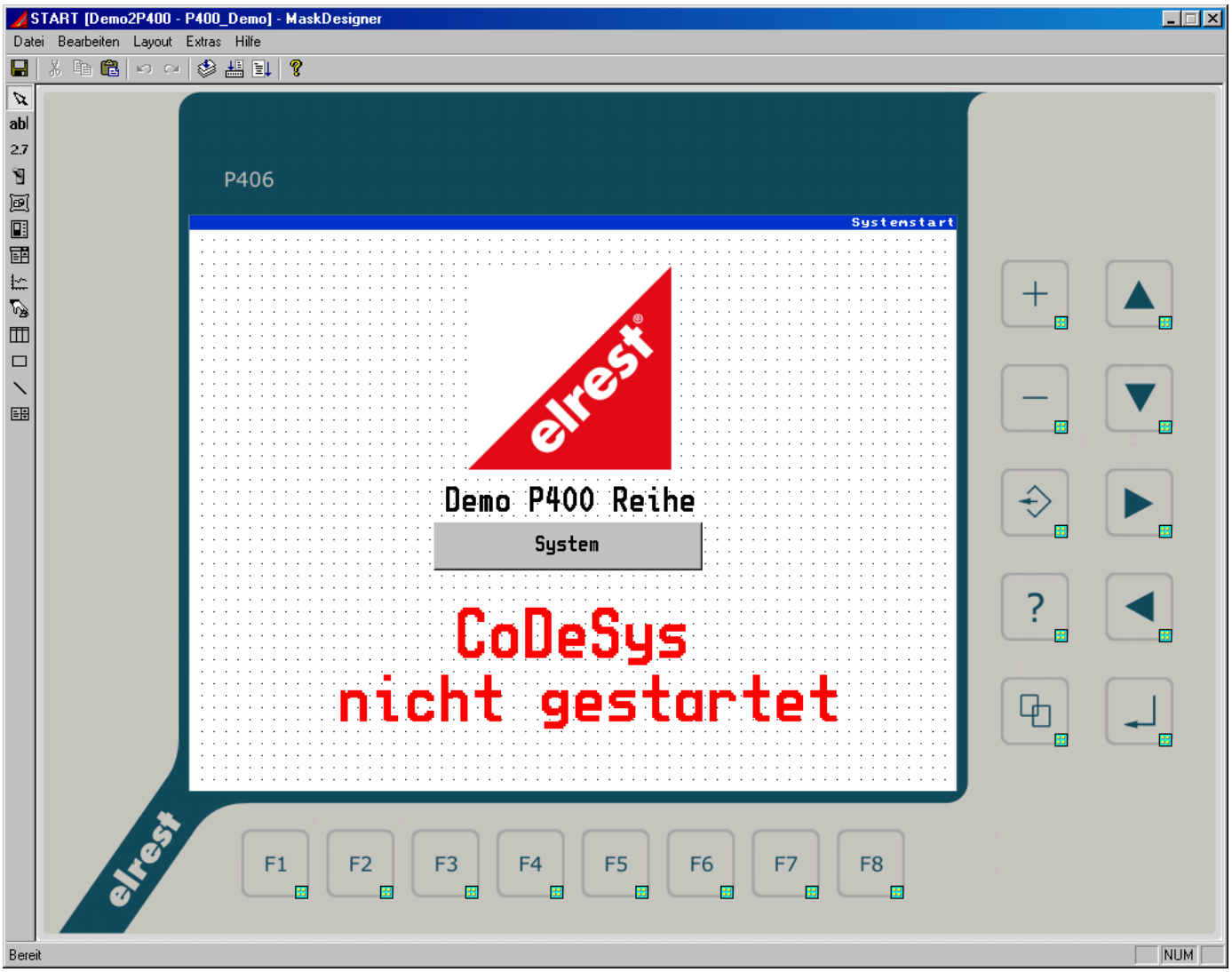
The designer is used to create masks which can be used to display and input of data points of a system control.

The designer can be processed simultaneously multiple masks. It can be a hierarchical structure of the masks are generated each other. The hierarchical structure is random, so that is not a classic mother-child structure necessary.This is desirable for example, if each level in the hierarchy from access to a special basic data screen there is to be.

A quick change between positioning of the elements in the mask and the test of the masks allows an interactive work with immediate recognition of the process.

Drawn will be set on a grid (eg 5 pixels).

5.1.1 Main window

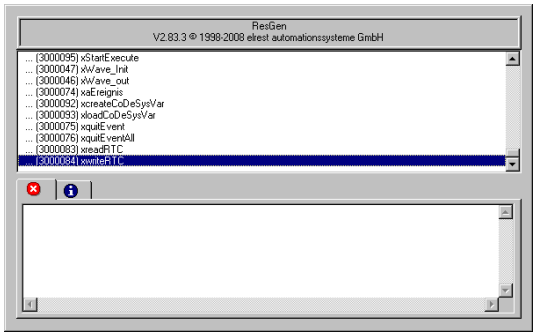


5.1.2 Menues

5.1.2.1 Safe menue

With this menu item is the currently active masks stored Window

Create resource file



The program Resgen.exe is started. ResGen is a target-system independent tool for generating Resource Code

Occur during code generation error remains, the issue in the foreground and displays them as plain text.

Some errors can be opened directly by double clicking on the error that element in the mask.

Resource file download

The download routine is started and will last with ResGen generated program code transmitted to the target system.

Start simulation

Using simulation, the mask can be represented with all the elements inserted and operated. During the simulation assumes the development PC the communication of the simulated control panel.
Here, the internal data points of the control panel to be replaced with this, so that others can access modules still to data points of the control panel. A possibly on the control panel running userware program can be stopped by setting the device is selected from the Project Manager that option

END

The program is terminated.

5.1.2.2 **Edit Menu**

Undo
Taking the recent changes to the control back.

Restore
Sets the undo steps restores

Cut out
Deletes the selection and copies it to the clipboard

Copy
Copies the selection to the clipboard.

Insert
Adds the elements from the clipboard.

Delete
Deletes the selection.

Assign a default item
Saves the settings of the current element, and refers to those settings each newly inserted element.

Assign a default mask
Saves the current settings of the mask and has these settings at any newly created mask.

Properties
Calling the settings dialog of the element. Same functionality as double-clicking the

5.1.2.3 Meue Layout

It allows you to edit various arrangements of the elements in the mask.

Alignment

Alignment to a position of a plurality of selected elements based on the main element (this is particularly highlighted).

The same distance

Orientation to each other several selected elements (at least 3).

Same size

Adjusting the size of multiple selected elements based on the main element (this is particularly highlighted).

Align to Grid

Elements can not be automatically aligned to the grid. Press F2 for selected elements and each element aligns its upper left corner of the nearest grid point.

Tab order

With this menu item, the order of elements is changed in a mask. This set is drawn in what order the elements are and how between the various elements back and forth can be cracked. By default, the items in the order of placement will be numbered in the mask. To change the order, click with the mouse, the elements (not the numbers!) According to the desired order. Exit this function by re-selecting the menu item

Element array to correct

Menu item to the arrangement of the elements which were placed outside the mask to correct.

5.1.2.4 Meue Extras

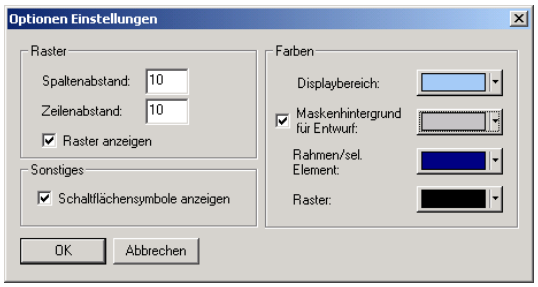
Option

Opens the dialog box “options settings” here can be made the program settings.

grid:

The fields 'Line spacing' and 'spacing', the grid spacing set to Grid View:

If this is selected, the grid defined above is shown in the background. Elements can not be automatically aligned to the grid. Press F2 for selected elements and each element aligns its upper left corner of the nearest grid point.



colors:

About the radio button to specify your preferred colors for the layout design.

Display area (total available stationary LCD screen on)

Form Background for design (alternate color to mask the background color, or bitmap, the color box on the active, otherwise the actual mask used background)

Frame / selected elements

Grid

Other:

View button icons:

If this selection item selected, the icons in the control panel buttons that reflect the set function as an icon.

5.1.2.5 Menue hep

Overview
Usage of the contents of the Online Help

Info
Information about ElaDesign

5.1.3 Toolbar

(Starting from left) The functions of the toolbar are:

- Save screen
- Cut the selected item and place it in the clipboard
- Selected item to the clipboard
- tem from the clipboard
- Undo
- Restoring
- Generate resource file
- Start Download
- Start simulation
- About ElaDesign

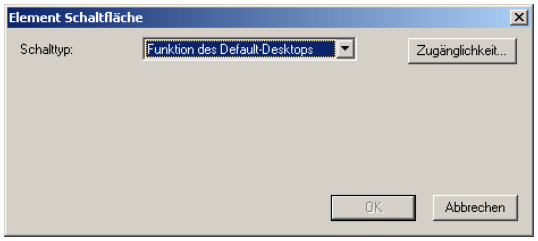
5.1.4 The Panel

When you edit a mask always the control panel of the control panel is displayed as a backdrop.

About this panel you can assign to each key of the control panel functions. If the option selected in the View button icons, program settings, are the keys for which an award function is possible to display small icons.

5.1.5 Button

By double-clicking a button on the control panel, a dialog window opens in the key of a function can be assigned.



Switch Type:
Here, the function type can be set. According to the selection are then the other fields of the control of meaning. The following switch types:

Not used:
The button has no function in this screen.

Next dialog with Cancel:
About the radio button for follow-mask, a mask can get selected, press the button to open the. The current screen is closed.

Follow-mask without Cancel:
About the radio button for follow-mask, a mask can get selected, press the button to open the. The current form is not closed.

Mask include:
The current screen is closed.

Window function:
Scroll window up, down, left, right: scroll the canvas of a window in that direction. It is horizontally to the width of the system fonts and scrolled vertically to the height of the system fonts.

Move the window up, down, left, right:
Moves a window on the screen in either direction. It is horizontally by the width of the system fonts and moves vertically by the height of the system fonts

Enlarge the window width, height:
Enlarges a window to the right by the width of the system fonts or down to the level of the system fonts.

Zoom window width, height:
Reduces a window from the right by the width of the system fonts or from below the level of the system fonts.

Selecting window next, previous:

Sets the focus to the next / previous window. Here, the window is brought to the forefront and set the input focus to the first input field of the window.

Magnify window diagonal:

Enlarges a window to the right by the width of the system fonts. down to the level of the system fonts.

Zoom window diagonal:

Reduces a window from the right by the width of the system fonts and below the level of the system fonts.

Data point function:

Data point to change: change a data point corresponding to the selected operator (+, -, =), and operands

Further function:

Menu, select: the mask is assigned to a menu; it can be activated via the key. Within the menu can be moved using the cursor keys. Stops will be escaped.

Password Reset level:

Herewith, a user can log out of his rights. Controls for with password level is now absolutely necessary to re-input

Keypad open:

Opens the window when an input field has focus.

End of program

(CE only): End of ElaDesign

Function of the default desktop:

The button receives the function to it in the mask! DEFAULT_DESKTOP has been assigned. Note: Not available in the mask DEFAULT_DESKTOP!

Virtual key code:

- If you have chosen as switch type "key function" you can assign a function to the control. The following functions are available
- Number 0 - Figure 9: inserts the number 0-9 in an input field.
- ENTER: confirms input in a field and writes the data point value
- Decimal point: inserts a decimal point in an input field.
- Increment +: increases the value of the input field that has the input focus to first
- Decrement -: decreases the value of the input field that has the input focus to first
- Default: inserts into the input field that has the input focus, the initial value of the associated data point name.
- Cursor left, right, up, down: sets the input focus to the next / previous field.
- Escape: leaving a field without modification.

Specific feature:

If you define a form as a template (more on this below “background image”), you have the ability to control the template accordingly

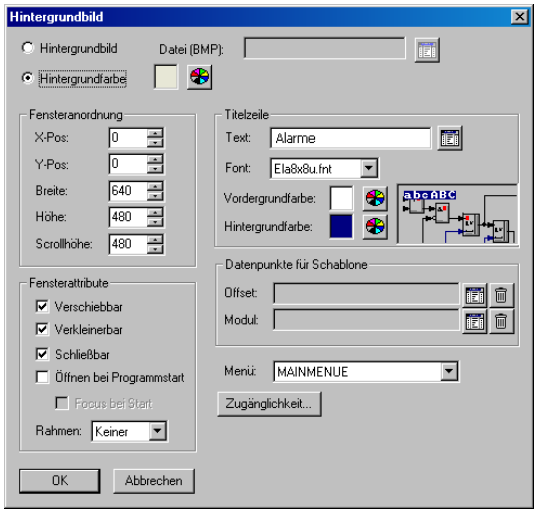
Generate a mask with a template function and assign data points that reflect each of the module number and / or offset. If such a mask opened, all data points that are templates capable (array data points or many variables firmware) exchanged with the corresponding index.

About the Item button, you can now control the template data points and thus simple functions such as Next / Back with a mask and generate the same data at different target points.

Select order as switching type "sequence mask Cancel" or "sequence mask without Cancel" and an operator with the correct value.

5.1.6 The background

Window for the basic settings of a mask. This window will be opened by double clicking on the screen background.



Background:

If the "background" can be selected by the radio button next to the field a bitmap as the background of the mask can be selected.

Background color:

About the radio button, , the background color of a mask can be selected·

View layout:

X-Pos, Y Pos: The position of the left upper corner of the screen in pixels relative to the upper left corner of the screen.

Width, height: width and height in pixels of the mask without a frame and title bar

Scroll height:

Total height of the mask: If the scroll height is greater than the height of the visible range (value in the field 'height') then the mask can be scrolled within the visible range

Title line:

- **Text field** for entering a title bar. If this field is blank no title will appear.
- **Font**: Setting the font for the text to be displayed. For TrueType fonts can also (bold, italic), the font size and font style can be specified.
- **Foreground:** Color: Choice of text color palette.
- **Background**: color: select the background color range.

Attributes window:

- **Moveable:** This option is allowed to move the mask on the screen.
- **Shrink:** This option allows changing the size of the mask are approved.
- **Closable:** This option allows the closing of the mask are approved
- **Open at startup:** If this option is selected, the screen opens automatically at startup.
- **Focus on startup:** If this option is enabled receives this mask after starting the program the input focus. Make sure that this option is enabled only when a mask
- **Frame:** Select the frame around the screen (no border, under 2D, 3D frame).

menu:

Each mask can be assigned to a separate menu. These menus can be opened easily masks.

Using a function key, the menu can be opened. Within the menu can be moved using the cursor keys. Stops will be escaped

Data points for pattern:

Define a mask as a template, if several data points to be exchanged dynamically during the run time for opening the mask. You can control the target data point about its offset (eg artificial influence of the array indices or the control channel number) and its module number (other device).

It is a useful function especially for the definition of control channels or for the input of large array data points.

- **Offset:** Specification of the data point for the offset function
- **module:** specification of the data point for the function module

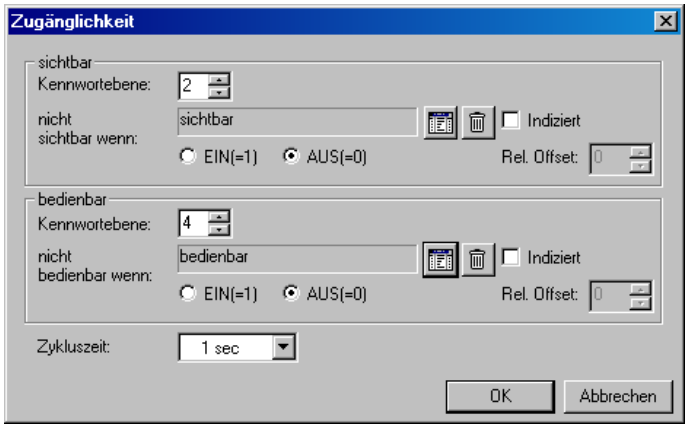
Offset and the module must be defined as data points of type word or double word in project management.

Accessibility:

This specification defines the access rights to the mask.
See chapter “accessibility” for more information.

5.1.7 *Accessibility:*

The visibility/ operability can be administered about the password levels and / or dependent on a bit data point



Password level:

Total of 15 password levels are available in ElaDesign
These can be specified for acknowledgment in writing controls, in masks and alarm lists.
Only users with sufficient rights are then able to use these or to see.

The following values are available:

0 = all released
1 = highest privileges for the user (supervisor)
15 = lowest rights for the user

Is a password not enough, the user is prompted for a password, which meets at least the level of the control

Thereby the level was set, is then permanently continue to re-start the system or until the next password

If the password entry to a higher level instead of the password is entered a lower level than it currently has, nevertheless remains the current level is still valid.

Unsubscribe is possible with the element key or with the touch key "Reset Password level" .Only element with the password level 0 can be served than.

Upon receipt of a device, the following default passwords

level	password
1	1111
2	2222
3	3333
4	4444
5	5555
6	6666
7	7777
8	8888
9	9999
10	1010
11	1011
12	1012
13	1013
14	1014
15	1015

These passwords are stored in EEPROM and can be changed at runtime in CoDeSys or ElaDesign.

Describe the firmware data point "EE nPassword 0-15".
4-digit numeric values are used in ElaDesign. Although the data point is a double word, please put only a 4-digit value
For each level there is a data point. The data point with index 0 is ignored, as here also no password prompt is necessary.

CoDeSys

You need the library sFWXX.lib
Here, use the structural element "uRemanent.sMasterEEprom.nPassword".
The following parameters must be set:

ST

```
PROGRAM PLC_PRG
VAR
   bInitialized: BOOL := FALSE;
   psFW: POINTER TO sFW
END_VAR

IF NOT bInitialized THEN
   bInitialized := TRUE ;

   psFW := FwGetStructPointer(0);
   psFW^.uRemanent.sMasterEEprom.nPassword[1] := 1234;
END_IF
```

As offset value, enter the password level.

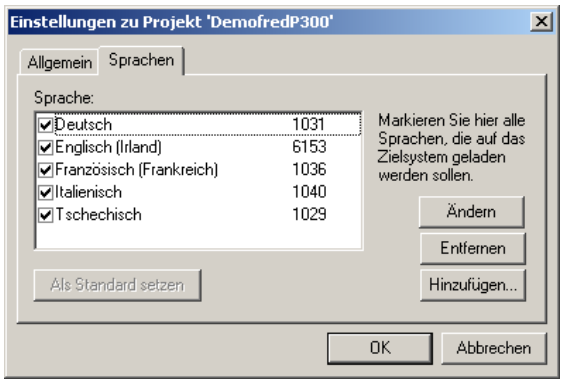
- **Not visible / operable if:**
  Selection of a bit data point. Depending on the value of the element is not visible / or operated.

- **Indexed / Relative Offset:**

For array data points, the relative offset = index of the data point can be specified. Activate the checkbox "Indexed".

- **Cycle time:**
  Cycle time at which the bit data points to be queried.

5.1.8 *Voice Switching*



During the term of ElaDesign the language can be switched.

The userware data point "nPrimaryLanguage". is served for. The value of the data point is automatically stored in EEPROM and is available after the automatic restart

Make yourself e.g. a mask in which the user can select the language of a combo box.

A mask with bitmaps of the available countries flags looks visually good. Set the flag as a key to. Here, however, can only bit data points are written. Use CoDeSys and then insert the language accordingly.

The value for the variable Userware "nPrimaryLanguage" set the country code that is displayed on the project management for the language.
The system constantly checks these data point to change. If a new value exists, it is automatically stored in the EEPROM and the system automatically initialized with the new language.

The language switch can also be done via the user-product variable "nlanguage". The minimum value of PrimaryLanguage will be assigned the value 0. Example above

Language	nPrimaryLanguage	nLanguage
German	1031	0
Czech	1029	1
French	1036	2
Italian	1040	3
English (Ir)	6153	4

Cross-references:

Information on language change can be found on the documents below:
Plattform_XX_DE.pdf, and under
Tips and Tricks

5.1.8.1 Language-dependent switching of fonts

For some languages it is necessary the use of other fonts

Language-dependent switching of fonts.

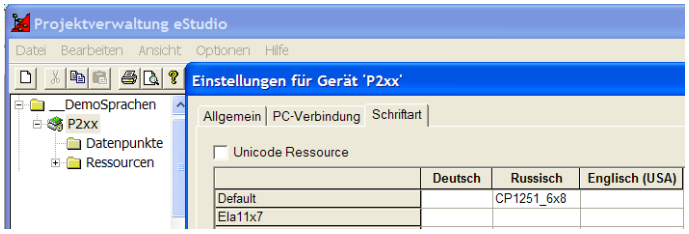
When using some languages use a different font is required.

E.G. Cyrillic, Hungarian: This font can be switched depending on the selected language.

Therefore choose in the Device Settings "font" in the table, which should be changed to the respective font when switching to another language.

The front vertical range corresponds to the available fonts in the default language. (here, German

The example, now is the default font switched (Here CP1252_8x8) in CP1251_6x8 for selection of Cyrillic.

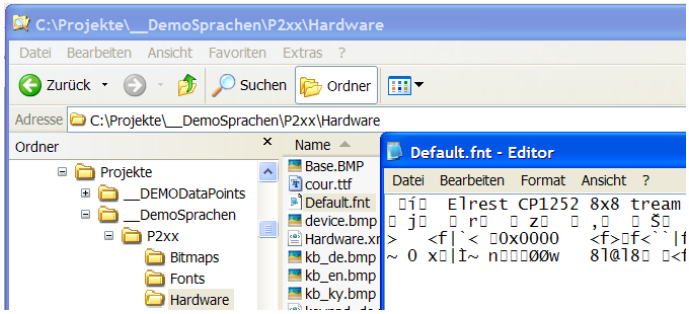


5.1.8.2 Using the default fonts

The default font is system-for example used in numpads and keypads.

It is stored in the hardware list.

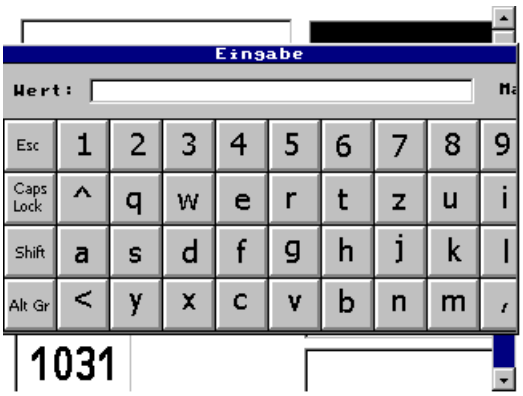
In order to change him, please copy your desired font in the directory and name of him in Default.fnt.



Example:

German

The font CP1252_8x8 is used



Russian

The font was switched on CP1252_6x8

How num- and keypad can be set individually on CE panel, please refer to the document

Plattform_CE_DE.pdf

5.2 Elements in the designer

5.2.1 Adding graphic elements in a mask

In the following chapter the described graphical elements can be arranged just inside the mask, using the left mouse button at the desired location.

Using a drag and drop elements can be moved.

Elements can be resized by clicking on one corner

Thus, the positioning of various elements can be accomplished more easily, a character grid was introduced.

If the option "elements align to grid" is activated, so only the elements can be positioned in the Set Grid. Settings for the grid can be done in the menu item "Options | Settings'

The elements of a mask are numbered upon creation.

Based on these numbers, the processing is done on the mask. Overlapping individual elements, it depends on the order of processing, which final appearance is created.

The menu item "order to determine", a renumbering of the mask elements can be made

5.2.2 The toolbar elements

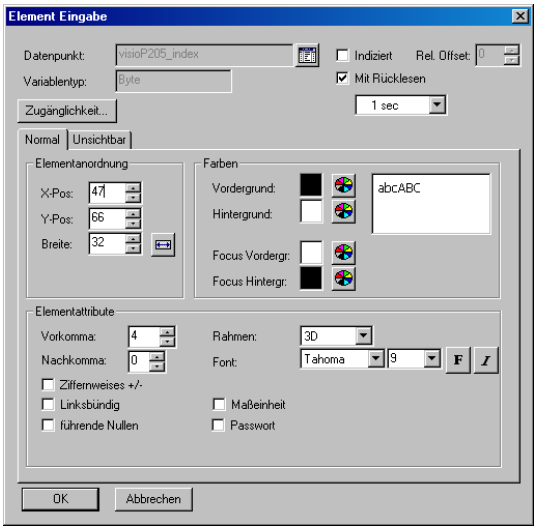
The elements:

- Processing
- Input field
- Display panel
- Press
- Image
- Bargraph
- Combobox
- Data Logger
- Functions buttons
- List (alarm and events)
- Rectangular
- Line
- Listbox

5.2.3 The element input field

The element input field is used to input a value for data points with the following types of variables:

- FLOATING POINT (FLOAT)
- • DOUBLE WORD (LONG)
- • WORD (LONG)
- • DATE
- • TIME
- • CHAR
- • TEXT
- • VARIABLE TEXT
- • BIT



Data point:
Selection of the edited data item.

Variable type:
Indicates the type of the selected data point

Accessibility:
This specification defines the access rights and visibility of the element.

See chapter accessibility 'for more information.#

Indexed / Relative Offset:
For array data points, the relative offset = index of the data point can be specified. Activate the checkbox "Indexed".

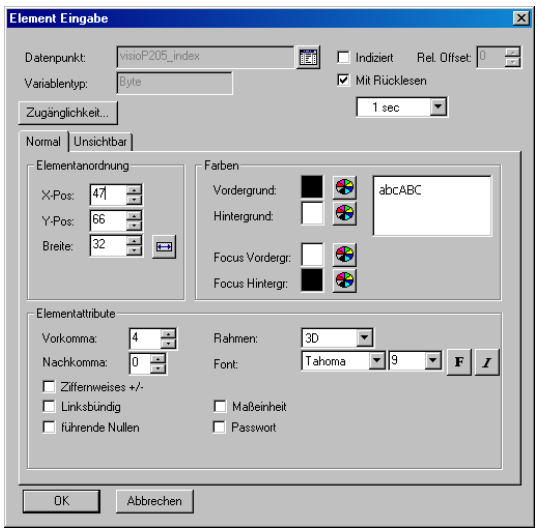
By reading back:
If this option is enabled, the data point is read in the cyclically adjusted time and updated the input field.

By double-clicking on the element is an options window opens in which the element is configured

In which element input field will be decided between the type "normal" and "invisible". A selection of the type by selecting The appropriate tab.

By double-clicking the item an options window is opened where the element is configured.

The input field element has a distinction between the types of "normal" and "invisible". A selection of the type done by selecting the appropriate tab.



Data point:
Selection of the edited data item.
Variable type:
Indicates the type of the selected data point.
Accessibility:
This specification defines the access rights and visibility of the element.
See chapter accessibility 'for more information.

Indexed / Relative Offset:
For array data points, the relative offset = index of the data point can be specified. Activate the checkbox "Indexed".
With reading back:
Is this option enabled, the data point is read in the cyclically adjusted time and updated the input field

Element array:

X-Pos., Y-Pos.:
Coordinates of the upper left corner of the input field on the mask.

- **Width:**
  adjust the width of the input field to the desired size or automatically adjusting by clicking on the buttons (to right field is zoomed in / out) or (Field is enlarged to the left / reduced.

Colors

- **Foreground, Background**
  color selection of the input field.
- **Focus priority, focus background**:
  Selection of the colors of the activated input field. (Input field has the input focus)

Element attributes:

- **places before, decimal:**
  Specifies the number of pre-decimal and fixed

- **Digit-by-step + / -: (only for ElaCAN units):**
  Increases, decreases a number only in the appropriate location (potency). Forwarded to other locations will have separate keys (cursor left / right).
  The use of this option is only available with the option of leading zeros and right justified possible.

- **Left-aligned:**
  Left-aligned orientation of the input in the input field.

- **Leading zeros:**
  Represent numbers with leading zeros (maximum retail price-points)

- **Frame:**
  Select the frame to the box (no frames, 2D frames, 3D frame)

- **Font:**
  selection of fonts, with the value to be displayed in the input field.
  For TrueType fonts can also (bold, italic), the font size and font style can be specified.

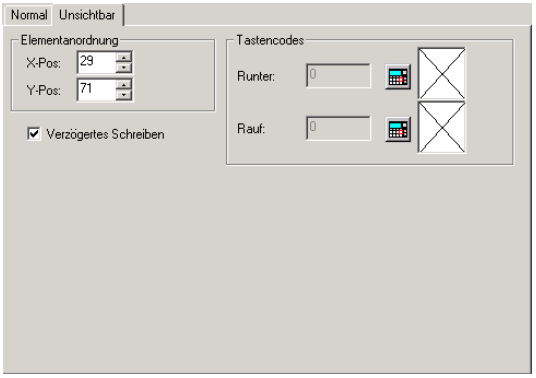
- **Font Factor:**
  factor to be enlarged to the selected font will be displayed. Not possible with TrueType fonts

- **Unit of measurement**:
  If this option is enabled, the unit of the data point after the input box is displayed within the frame.

- **Password**:
  • Displays all the letters and numbers as X.

5.2.3.1 Type "invisible “

In type invisible the value of the data point is not displaying on the screen. There are two keys are defined by the value of the incremented or decremented in steps of 1. This type can for example to realize be used in conjunction with the element bargraph a kind of slide.



Element array:

- X-Pos., Y-Pos.:
- Coordinate the upper left corner of the input field. Serves only to represent the element in the designer.

Key codes:

- Up, Down:
- This will set keys with which the data point value increases or decreases .The key code can either be chosen from any of the existing hexadecimal values in the combo box, or from the button, a window can be opened .That displays shows the layout of the console. Here you can by simply clicking the mouse on a button.

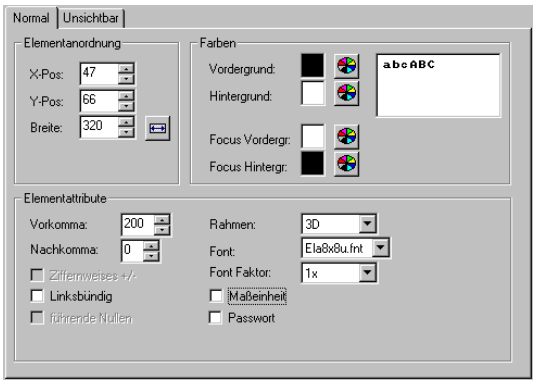
Verzögertes Schreiben:

- The changed value of the data point is not immediately written with each keystroke, but only 4 seconds after the last touch of a button

5.2.3.2 Type "normal“

In which **normal** type, the value is similar to a display appears on the screen. The input is the number buttons and the [+] / [-] - keys on the console. After confirming with [ENTER] key, the value is written. The buttons for the input fields must be configured in the mask! "DEFAULT_DESKTOP".

For devices with touch, by tapping on the element an input window or an on-screen keyboard will be opened.



5.2.3.3 Display of time formats.

The EleaDesign presentation format for the type of time is based on the Microsoft Windows

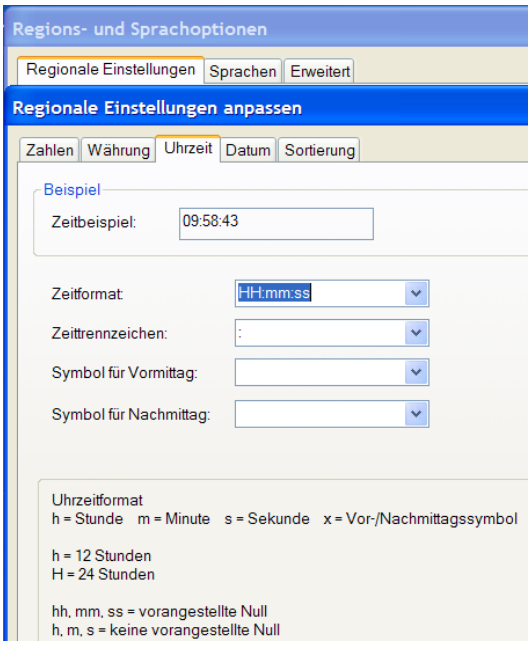
This provides the details:

Upper / lower case
h = 12 hour
H = 24 hours

double label:
h = normal display (1,2,3..9,10,11,12..)
hh = leading zero (01,02,03..10...)

xx = Display of am / pm an (English representation)
h,H = hours
m = minute
s = second
l = tenth second

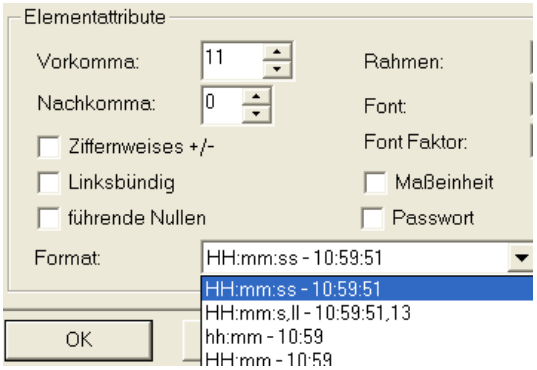
In windows:



For example:

You want to ElaDesign a time representation matching:
standard
German : 16:00:00
English: 4:00:00 am

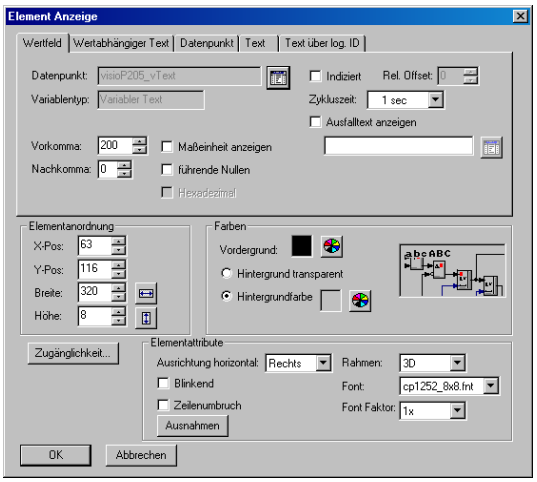
with ElaDesign:



Both should be rendered identically:
Enter the "texts" on the Germans and the English side of the same format:
e.g.

HH:mm:ss

5.2.4 The element display



The display element is used to output display fields.
The element is positioned at a position X, Y

The height can be adjusted depending on the font by clicking on the button.

The width is calculated automatically by selecting the data point

If an adjustment, e.g. Font factor changed later, a left-width adjustment can be carried out or flush right.

Double-clicking the item opens the "display item" open configuration in which the item is.

In the display element "value field" between the types is "value-dependent text", "data point", "text" and "Text of log. ID "distinction. A selection of the type done by selecting the appropriate tab.

element arrangement

- X-Pos, Y Pos.:
- Coordinate the upper left cornr of the display
- Width / Height:

Adjusting the width and height of the display panel by entering the width and height.
By pressing the buttons of the input fields can be resized automatically to the length or height of the text.

colors:

- Foreground
- Select the text color on color palette
- transparent background:
- Text is placed on a transparent background on the mask.
- Background color:
- Choice of background color on color palette

Element attributes:

- Horizontal alignment:
- Horizontal alignment of the text. (Left, Right or Centered)
- Flashing:

- Flashing display of the text
- Line break.
  automatically inserts a line break when the text exceeds the right margin of the element.
- .frame:
- Selection of the border around the text (no frame, 2D, 3D)
- Font:
- Setting the font for the text to be displayed
  for TrueType fonts can also (bold, italic), the font size and font style can be specified.
- Font Factor:
  factor in order to increase the font of the selected are displayed. Not possible with TrueType fonts.accessibility:

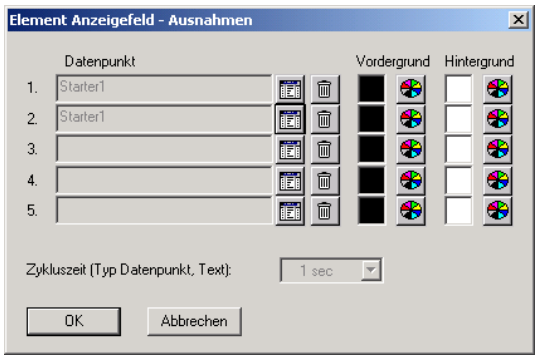
Accessibility.

This specification defines the access rights and visibility of the element.

See chapter accessibility 'for more information.

The settings are displayed in the preview window

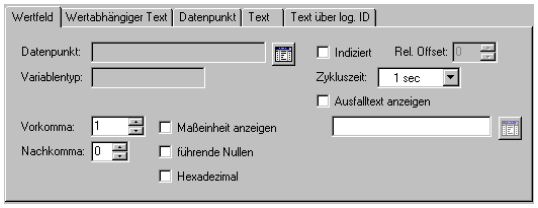
5.2.4.1 Exception



By pressing the button **exceptions**, a window will be opened where multiple data points of type bit can be selected. These data points can vary a foreground and background colors are assigned to be adopted by the display when the value of the data point is equal to 1.

Data point:
Selection of data points cause the color change (type of variable-bit)
Foreground, **the background**:
Selecting the color palette on Text-/background color
Cycle time:
Is only activated when the display type "text" is selected. Cycle time at which the data points to be queried.

5.2.4.2 Type: "field value"



In the type **value field**, the value of the selected point will be issued as a text in the display field.

Data Point:
The selection of the data point

Variable Type:
Indicates the type of the selected data point.

Before and after the comma:
Setting the required accuracy.
Is specified at a point one decimal integer data it will be interpreted as a power of ten. Is e.g. data set at a value of 1437 decimal point to 2 appears in the display field, the value 14:37.

Indexed / Relative Offset:
For array data points the rel.Offset = the index of the data point can be specified. Activate the checkbox "Indexed".

Unit View:
Enabling this option displays extended to the projected data point for the unit.

Leading zeros:
Represent numbers with leading zeros (max VK-digits).

Hexadecimal:
display is in hexadecimal representation

Cycle time:

The cycle time with the data point is queried.

Failure display text:
If this option is activated in the event of a failure of the data point (e.g. failure can-bus) a freely definable text displayed. This text can be entered in the input field or from existing texts will be selected.

5.2.4.3 Type "value-dependent text"

In type **dependent text value** can be displayed for a data point of type bit two texts depending on the value.

Data point:
Selection of the data point

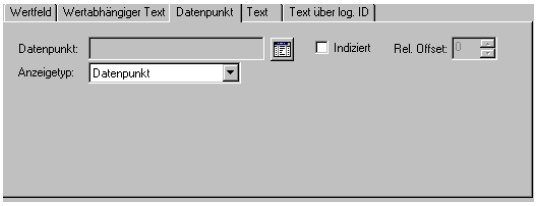
Text0 / Text1:
Here are the two texts entered or selected to be displayed. Is the value of the data point 0, the text 0 is output, otherwise Text 1.

Indexed / Rel Offset:
For the array of data points can be specified the rel.Offset = index of the data point. Activate the checkbox "Indexed".

Cycle time:
Cycle time at which the data point is queried.

Failure display text:
If this option is activated, in the event of a failure of the data point (e.g. failure can-bus) a freely definable text displayed. This text can be entered in the input field or from existing texts will be selected.

5.2.4.4 Type data point"



In type **data point** can be either the name or description of a data point are displayed.

Data point:
Selection of the data point

Display Type:
Select whether the name or description will be displayed

Indexed / Relative Offset:

For the array of data points can rel.Offset = index of the data point can be specified. To do so, checkbox fileld "Indexed".

5.2.4.5 Typ "text“

At type text there will be displayed an arbitrary fixed text.

Text:
Here, the text to display can be entered or selected.

5.2.4.6 Type "text via log. ID”

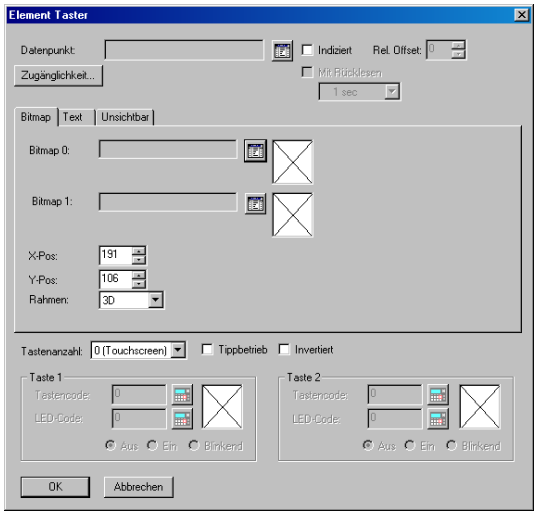
With the type **text via log. ID** can be displayed on a text to its logical ID. The value of the selected data point it represents the logical ID of the text.

Data point:
Selection of the data point

Cycle time:
Cycle time at which the data point is queried.

Indexed / Rel offset:
For array data points can be specified the rel.Offset = the index of the data point. To do so, Checkboxfeld "Indexed".

5.2.5 *The key element*



The element "button" is used to enter the value for data points with the data type bit.

By double-clicking on the element is an options window opens in which the element is configured.

At key element it will be distinguished between "bitmap","text" and "invisible" A selection of the type will be carried out by selecting the appropriate tab.

Data point:
Selection of data to change the point.

Accessibility:
This specification defines the access rights and visibility of the element.
See chapter accessibility 'for more information

Indexed / Relative Offset:
For array data points can be specified the rel.Offset = the index of the data point. Activate the checkbox "Indexed".

By reading back:
If this option is enabled, the data point will be read cyclic in the set time.

Jog mode:
If this option is activated by pressing and releasing the associated key on the console then the value of the data point will be inverted and written.

Number of Keys:
If the jog mode can be set off if the operator of the element through one or two buttons on the console is to be made.

1 Key: By pressing the corresponding button on the console, the data point value is set to '1 and written. After repeated pressing the same button, the value is reset to '0 'and written.

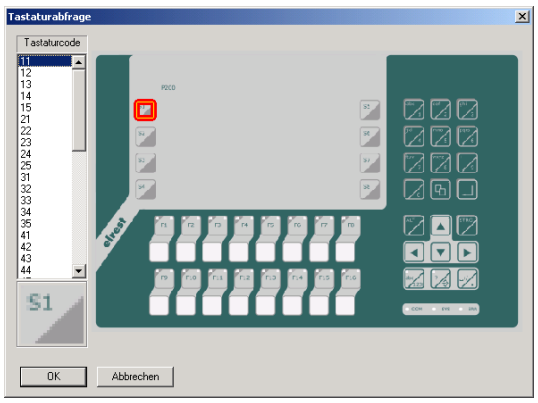
2 buttons (not touch): By pressing the first button, the data point value is set to '1 'and written. When you press the second button, the value is set to '0 'and written.

0 keys (touch screen): When pressing the controls on the screen, the data point value is set to'1 'and written. After repeated pressing the same button, the value is reset to '0 'and written.

Inverted:
Reverses the function keys to, i.e. from the state 0 (off), the switching state 1 (a) and from the switching

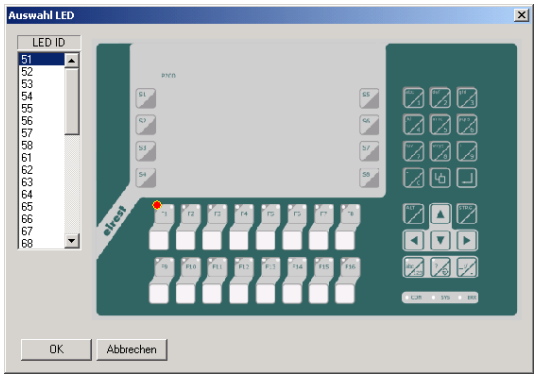
condition 1 (one), the switching state 1 (off)

Tastencode1 / key code 2:



The key code can either be chosen from any of the existing hexadecimal values in the combo box, or by a button a window can be opened that displays the layout of the control panel. Here it can be selected by simply clicking the mouse on an LED.

Code1 LED / LED Code 2:

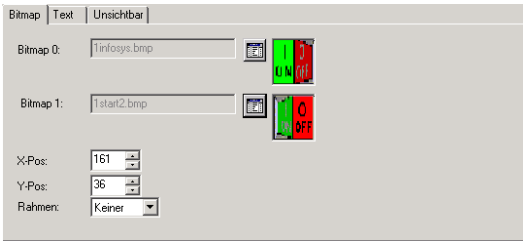


The LED code can either be chosen from any of the existing hexadecimal values in the combo box, or by a button a window can be opened that displays the layout of the control panel. Here it can be selected by simply clicking the mouse on an LED.

Off / On / Flashing:

Selects the display of the button state by LEDs. The LED may be for the "on" status to **on, off, or flashing** be set.

5.2.5.1 Typ " bitmap“



When bitmap type are used to represent the switch state two bitmaps.

Bitmap 0:

Here, a bitmap for the "off" state can be selected.

Bitmap 1:

Here, a bitmap for the "on" state can be selected.

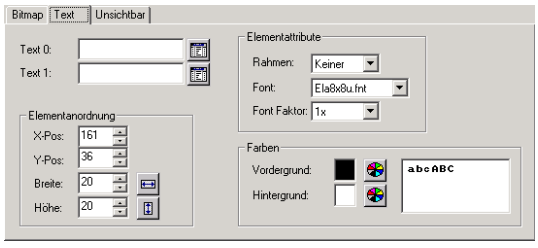
X-Pos., Y-Pos.:

Coordinates of the upper-left corner of the button on the mask.

Framework

The selection of the frame to the bitmap. (No Frame, 2D Frame, 3D frame)

5.2.5.2 Typ " text“



In type **text** are used to represent the switch state of two texts

Text 0:

Here is the text to be displayed for the "off" state is entered or selected

Text1:
The text to be displayed can be selected and entered for the condition "on "

Element arrangement

- X-Pos., Y-Pos.:
- Coordinates of the upper left corner of the button on the mask
- Width / Height:
- Adjusting the width and height of the button by entering the key width and height button. By pressing the buttons of the input fields can be resized automatically to the length or height of the text.

Item attributes

- Frame:
  Selection of the border around the element. (no frames, 2D frames, 3D frame)
- Font:
  Setting the font of the text to be displayed.
  For TrueType fonts can also specified the font size and font style(can be specified.
- Fontfaktor:
  Faktor um den der gewählte Font vergrößert dargestellt werden soll. Nicht möglich bei TrueType-Schriftarten.
- Font Factor:
  Factor by which the selected font is to be enlarged. Not possible with true type fonts

Colors:

Foreground, Background:

- The selection of colors for the button.

The settings are displayed in the preview pane.

5.2.5.3 Type "invisible"

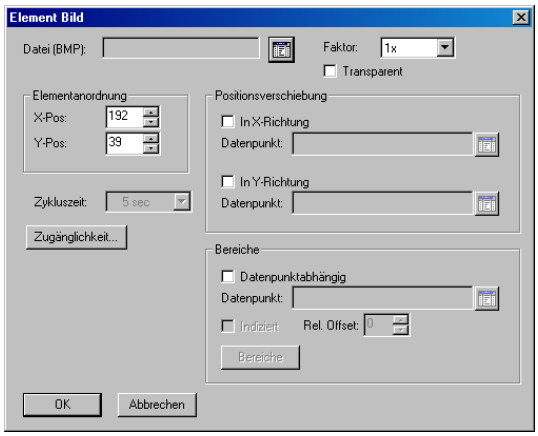
With the type “invisible” there will be no representation of the button state on the mask

Arrangement of the element

X-Pos, Y Pos.:
Coordinates of the upper left corner of the button. Serves only to represent the element in the designer.

5.2.6 The element image

From version V2.9x various image formats used contact.



The image element is used for displaying bitmaps.

The element image is located at a position X, Y. The height and width results from the size of the bitmap, it can be a bitmap with a variety of factors (0.5 ... 4) are shown.

By double-clicking on the element is the window "Image element" opened, in which the element is configured

file (BMP):
Select a bitmap file from directory <Project \ <device namen> \ bitmaps

Factor:
Setting the zoom factor for the bitmap.

Transparent
If this option is enabled, the bitmap is transparent. Here, the color of the upper-left pixel of the bitmap is assumed to be background color and not all pixels of that color drawn.

Element array:
Placement of the upper left corner of the bitmap to the X / Y position on the current screen.

Cycle time:
Cycle time at which the data point is queried.

Accessibility:
This specification defines the access rights and visibility of the element.
See chapter accessibility 'for more information.

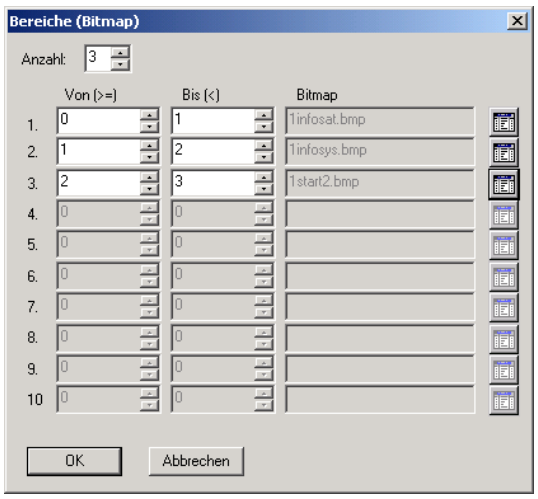
Shift in position:

Upon activation of the positional displacement is shifted depending on the selected data point, the position of the bitmap to the respective integer data point value in the X and Y

directions. The sampling rate of the data point is set by the combobox cycle time

5.2.6.1 Fields

Activating the option **data dependent point:**
In dependence of the selected data points can be displayed several bitmaps.

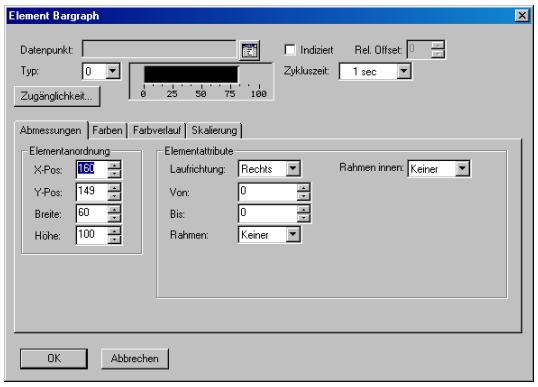


For the array of data points can rel.Offset = index of the data point can be specified. Activate the checkbox "Indexed".

The following points can be entered

- Window „**area**“/ number: specified the number of different areas.
- Columns **“from” and “to”:** Enter the field by the selected bitmap will be displayed.

5.2.7 *The element bargraph*



To the appearance of the window to make clearer, parts of the input fields are distributed on the four tabs: "dimensions", "colors", "gradient" and "scaling".

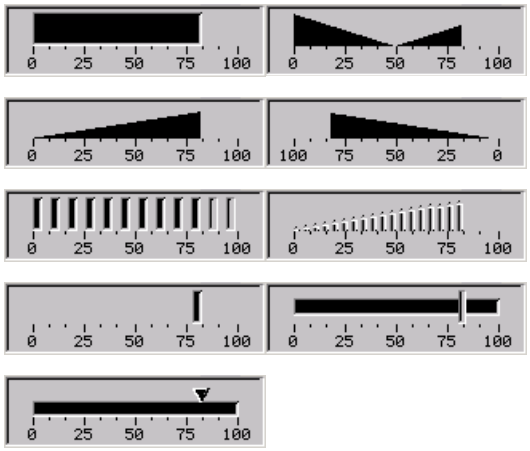
The bar graph element is used to the output of data point values in the shape of a bar graph.

Double-clicking on the element, a options window where the element is configured will open.

Data Point:
The selection of the data point whose value is to be shown.

Cycle time:
Cycle time with the data point is queried

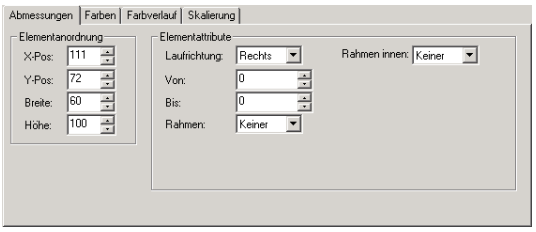
Type:
Selection of the bargraphtyp for presentation of the is to be used.
Right, some examples of the selectable bargraphtypen.



Notes:
Depending on the target system or settings in ElaSim not all types can be used.
bargraphen have large update times. The opening of masks with bargraphen can be taken longer than usual. As a remedy must be less bargraphen per mask be used, or the mask must be, if the application permits, constantly remain open (screen layout must not be re-calculated). A change of the masks is then done using "touchscreen menu without cancel" (see the chapter: the Control Panel > button).

Accessibility:
This specification defines the access rights and the visibility of the element.
See the chapter 'accessibility' for more information.

5.2.7.1 Dimensions



Element arrangement:

- X-pos, Y-POS :coordinates of the upper-left corner of the bargraphen on the mask
- Width/Height:width and height of the bargraphen in pixels.

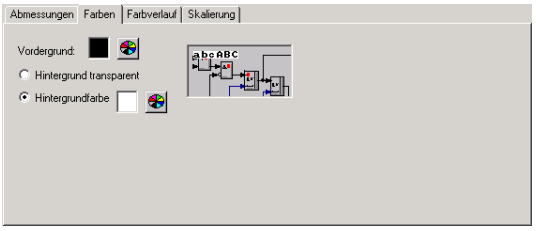
Element attribute

- Direction: here can be selected in which direction the bars of the bargraphen should be built
- From / To: Here is the value range of the bargraphen set. As a proposal, the values from the assist in field Point definition for measuring range min / max used.

Frame:

- The selection of the frame to the Bargraphen (no frame, 2D, 3D)
- frame, inside: Selection of the frame which is placed to the bargraph bar (no frame, 2D, 3D

5.2.7.2 colors



On the tab colors can be adjusted the foreground color and background color of the bargraphen.

Foreground:

The color can be selected with the label text to be displayed.

Transparent background:

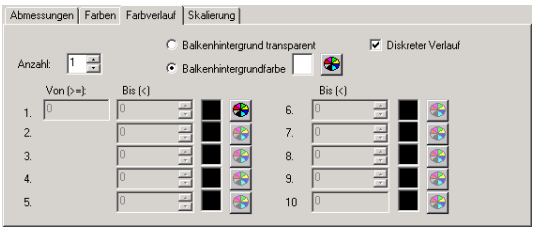
The bar graph is displayed on the transparent mask

Background color:

Click, the color can be selected with the background of the bar graph to display

The selected colors are displayed in the preview window

5.2.7.3 Gradient



On the tab **color gradient** can be set the gradient for the bar of the bargraph.

Number:
Here you can set the number of color spaces. It can up to 10 area gradations with a corresponding color be selected.

From / To:
Depending on the number of selected, the values ranges can be chosen and assigned the color by the button

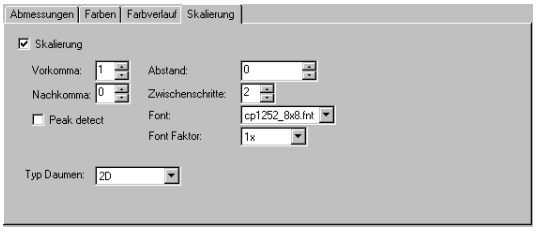
e.g.
Range 0 .. 2 green
Range 2 .. 5 yellow
Range 5 .. 7 red

Background transparent:
By selecting the beam background is transparent to the bargraph background
Only the foreground color is drawn on the current background.

Bar background color:
The press of the button opens a dialog box where the colors for the background bar can be selected.

Discrete course:
If this option is enabled, the output of the gradient occurs in stages.
Without this option, the entire bar in the color shown to the actual data point value is assigned.

5.2.7.4 Scaling



On the **scaling** tab settings to scale can be made of the bargraph.

Scale:
This option can be activated, indicating the scale advantages and decimal.

Places before, decimal:
Specifies the number of pre-decimal and fixed

Peak detect:
If this option is enabled when a mark reached maximum value is displayed.

Type of thumb:
Selection of thumb type (2D, 3D).
This option is only applicable if selected as a bar graph with bargraphtyp thumb e.g. Type 8

Distance:
Specifies the increment of the main scale of the bar graph.

Intermediate Steps:
Here you can enter the number of intermediate steps that will be displayed between two marks on the main scale.

Font:
Selection of the font for the text you want to display the main dial. For true fonts can also the font size and the font styel (bold, italics) may be indicated.

Font factor:
Factor to the increase of the selected font will be displayed. Not possible with TrueType fonts.

5.2.8 The element Combobox

The combo box element is used to enter values that are represented by a text. The user selects in a combo box the text.

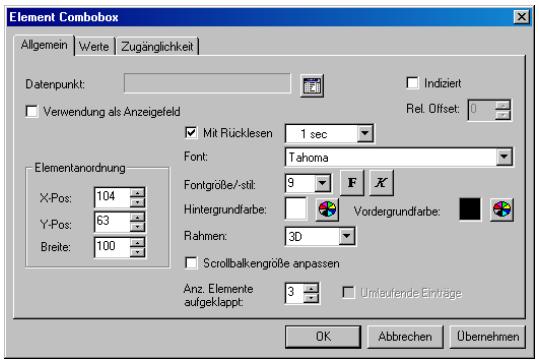
By double-clicking on the element is an options window opens in which the element is configured.

Do you want to display only one element in a text that represents a value; you can use the combo box. Place the password level to a value that the operator can not be achieved. He can not change the value.

Disadvantage: If the element has the focus, it automatically opens the password entry.

Alternative: Make the text as a bitmap and bring it as an element for image display. Define data point depending on the checkbox and the text fields for each value

5.2.8.1 Genaral



On the general tab, the default settings for the combo box can be made.

Data point:
Selection of data to be written point.

Indexed / Relative Offset:
For array data points can rel.Offset = the index of the data point can be specified by activating the checkbox field "Indexed".

With read-back:
If this option is enabled, the data point is read cyclically in the set time and the combobox will be updated accordingly. Read only return values that.
Only these values can be read back which are in "values" actually projected.

Use as a display field:
If this option is selected then the display is like a display. An operation is not possible. With this option it is possible to display a value instead of an appropriate text

element arrangement:
X-Pos, Y Pos. Coordinates of the upper left corner of the element
Width: adaptation of the width of the element.

Font:
Setting the font for the text to be displayed. For TrueType fonts can also (bold, italic), the font size and font style can be specified.

Foreground, Background:
Selection of colors for the item.

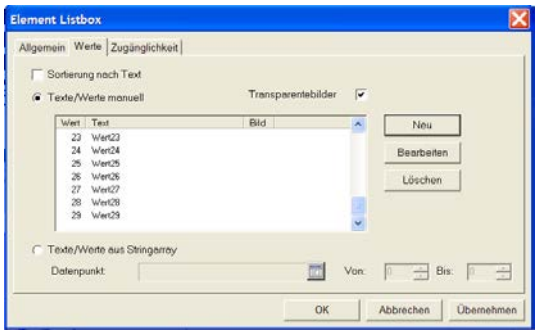
Frame:
Selection of the border around the element (no frame, 2D, 3D)

Adjust scroll bar size:
Enabling this option, the scroll Bar on the used font size is adjusted.

Number of elements unfolded:
Indicates how many rows to be displayed when the user selects the combo box.

Rotating entries:
Active only when the number 0 is unfolded elements.
If this function does not exist, the operator would use the cursor button down as always the last element. By selecting this option is the next push returns to the first element

5.2.8.2 Values



In the **Values** tab will be the individual texts defined to the combo box.
Each entry in the list box contains a text which corresponds to a data point value

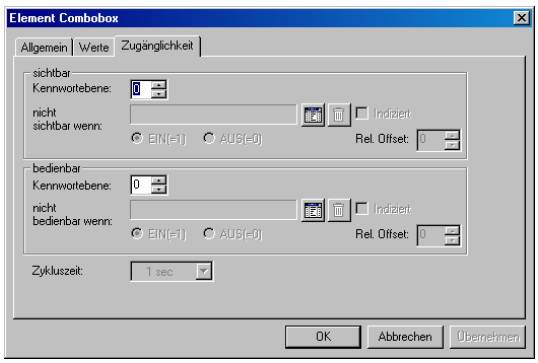
Order by text:
If this option is enabled, the entries are sorted according to the text. Otherwise, a is determined by the value.

Texts / values manually:
If this option is enabled, you must define for each entry a text and a value. The value of the selected data point for this element represents the value of the entry.
You can define up to 20 items for listbox. Select "text string array" so 199 texts to be defined

Texts / values from string array:
If this option is enabled, the entries are automatically filled from a string array. The value of the selected data point for this element in the array corresponds to the index of the entry.

From, To:
Indicates the area of the string array to be used. If both values are (From / To) = 0, the entire array is used.

5.2.8.3 Accessibility



This specification defines the access rights and visibility of the element.

See chapter accessibility 'for more information

5.2.9 The element data logger

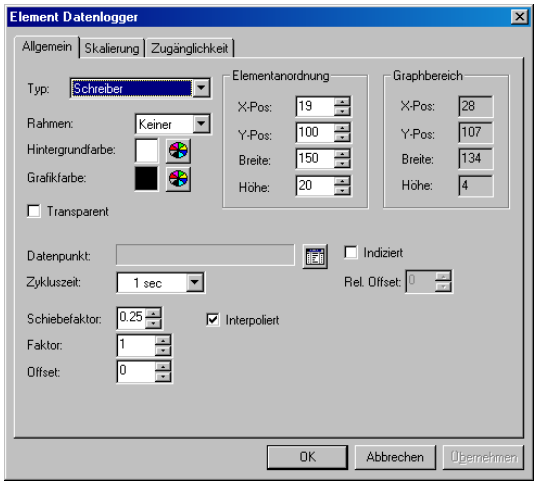
The element data logger is a graphical representation of actual values in the form of a graphic recorder or an XY graph.

Double-clicking the item will open an options window where the element is configured.

To make the representation of the window clear, parts are divided into 2 tabs.

5.2.9.1 General

On the General tab, Settings can be made of the data logger.



Type:
Select whether a normal graphic recorder is used, an XY chart recorder or trend (graph) to be displayed.

Context:
The selection border around the element (no frame, 2D, 3D)

Graphic color / Background color:
Select the colors for the item.

Transparent:
Select whether the background color to draw transparent. In this way, multiple graphs can also be offset.

Element arrangement:
X-Pos, Y Pos. Coordinates of the upper left corner of the element.
Width / height: width and height of the element in pixels.

5.2.9.2 Data logger as a chart recorder

Graph area Display the range, in fact the graph is plotted. This is dependent on the scale and its font. The display is useful, as graphs over one another (transparent) should be drawn and may positions have different coordinate axis, may be better positioned. The area will also be visually in the cntrol-view highlighted.

type writer:
Here, the control receives his Y-value of a data point. The X axis is time controlled.

Data point:
Select the data point whose value is to be shown.

Indexed / Relative Offset:
For array data points can rel.Offset = the index of the data point can be specified. To do so, checkbox field "Indexed".

Cycle time:
Cycle time with which the data point is queried.

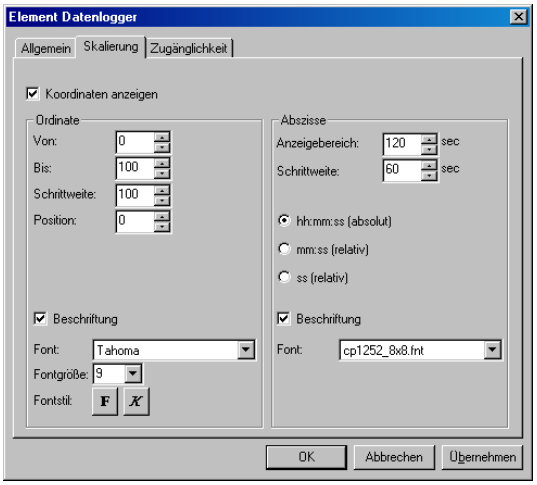
Shift factor:
Factor by which the graph should be shifted to the left when the graph reaches the right margin.

Interpolate:
Selection, whether the graph in stair form or interpolated (straight line between two points) should be drawn.

Factor:
Factor, the value is applied for display.

Offset:
Offset to the value is applied for display.

Scaling for type writers



On the Scale tab, settings for scaling the data logger can be made. This affects both the range of the graph and the labeling of the axes.
Coordinates: Enables drawing the axes and labels

Ordinate:

- From, To: field of the y-axis values (even if it is not drawn)

Increments:
An indication, in the intervals at which a scale of values to be drawn (in the unity of the data point

Position:

- X-Positioning of the axis. This is especially useful in transparent graph, since several scaling can be plotted

Annotation:

- An indication as to whether a scaling for the ordinate axis with values should be drawn.

Font:

- The selection of the font for the values to be displayed. For true fonts can also the font size and the style (bold, italics) may be indicated.

Abscissa: •

- Display Area: Time range of the abscissa
- Increment: indication, at what intervals (sec) a scale with time values to be drawn

Caption:

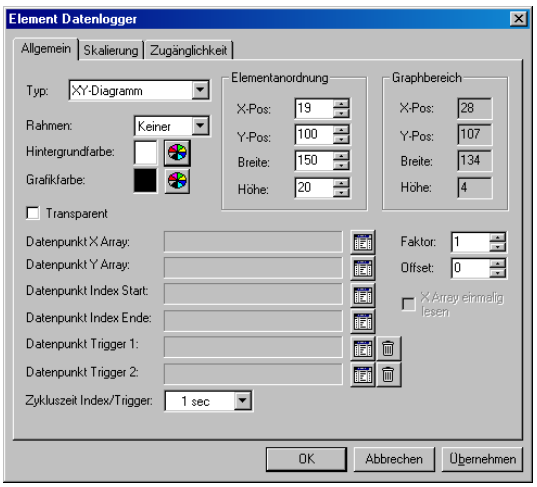
- Whether scaling is to be drawn for the x-axis with time values

Font:

- Setting the font for the values to be displayed
- For TrueType fonts can also (bold, italic), the font size and font style can be specified

Select time format:
Identify how the time axis is interpreted.
hh: mm: ss = absolute indication of the actual time
mm: ss = relative time from starting
ss = relative time from starting

5.2.9.3 Data logger as an X-Y chart



Type XY-diagram

This gives the control to be displayed both: the X values and Y values as arrays. These are produced by CoDeSys locally or generated by a device.

Data points X-Array/Y-Array:
Transfer of values to be displayed in arrays.

Data points Index-Start/Index-End:
The arrays can be specified as a circular buffer. What values will be displayed from the array is located on the index.
Is the end <start, there is the number of displayed values of max (array size X, Y array size) - index start + index + 1 end

Trigger1/Trigger2 data points:
Is neither Trigger1 nor Trigger2 specified, the data point start / end is checked for changes. If the value changes, the graph with the new values will be displayed.
Is given only Trigger1, the graph is redrawn when the value is 1. The data point is from ElaDesign again set to 0.
If Trigger1 and Trigger2 are specified, is the new representation, if these values are different. ElaDesign then sets the value of the value of Trigger1 Trigger2.
An indication of Trigger2 alone is ignored.

Cycle time index / Trigger:
Cycle time associated with these data points can be queried

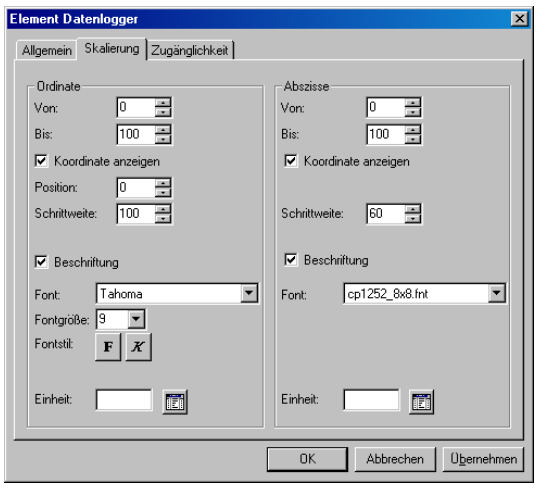
Factor:
Factor that the Y-array is acted upon to render

Offset:
Offset, the Y-array is acted upon to render.

Scaling for type XY graph:

On the Scale tab, can be made settings for scaling the data logger.

This affects both the range of the graph and the labeling of the axes.



- range of values of the ordinate (even if it is not drawn
- coordinates: Enables drawing the axes and labels
- Position:
  X-axis positioning. This is especially useful for transparent graph, since then several scales can be drawn.
- Increment: Indicates how frequently should be drawn to scale with values (in units of the data point)
- Labeling: Whether to draw a scale for the y-axis with values.
- Font: Setting the font for the displayed values. For TrueType fonts can also (bold, italic), the font size and font style can be specified.
- Unit: Unit display

Abscissa:

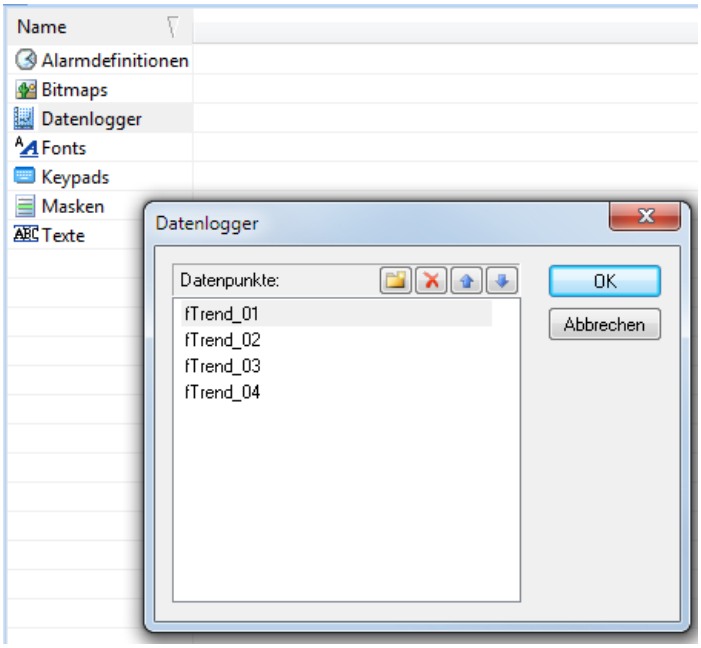
- From, To:
- range of values of the x-axis (even if it is not drawn)
- coordinates: Enables drawing the axes and labels
- Increment: Indicates how frequently a scale with values should be drawn to (in units of the data point)
- Labeling: Whether to draw a scale for the y-axis with values.
- Font: Setting the font for the displayed values
- For TrueType fonts can also (bold, italic), the font size and font style can be specified.
- Unit: Unit display on the right axis range

5.2.9.4 Data Logger Type Graph

From eStudio V2.91 a two-channel data logger has been integrated.

In the Project Management can use the desired trend chart from the list of data points be defined:

The cycle time of 30 seconds is a fixed setting.

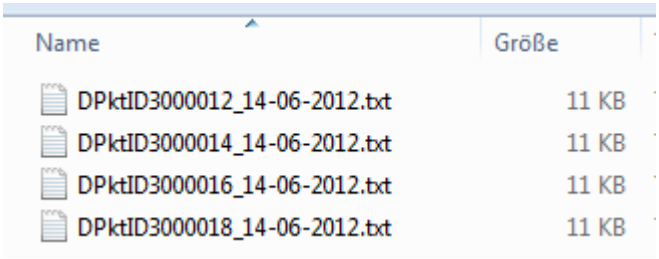


The storage path for the data plot „.\<Month>-<Year>“

E.g.

„.\06-2012“

is relative to the runtime. The runtime can be started by CF, USB flash drive or internal flash.
Data that are older than 2 months will be automatically deleted.

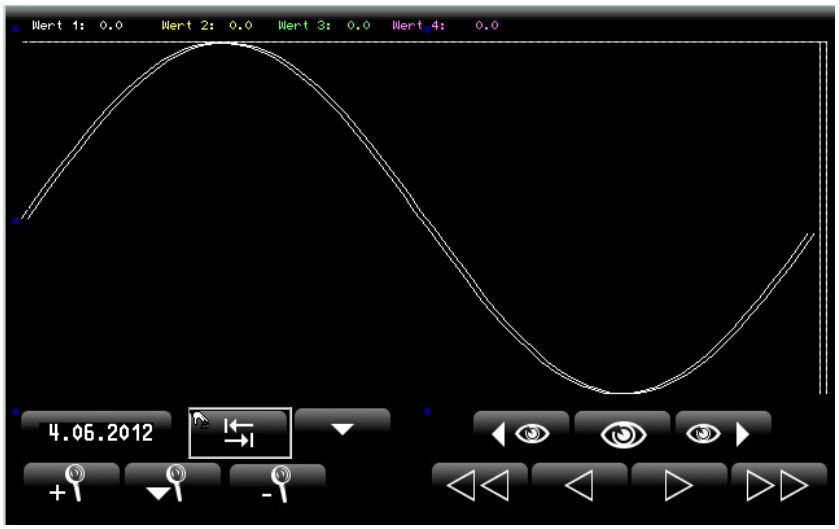


For Data point and day a file will be created.

„DPktID<Nr><Tag>-<Monat>-<Jahr>.txt“

For the design of the evaluation mask a lot of degrees of freedom are given.

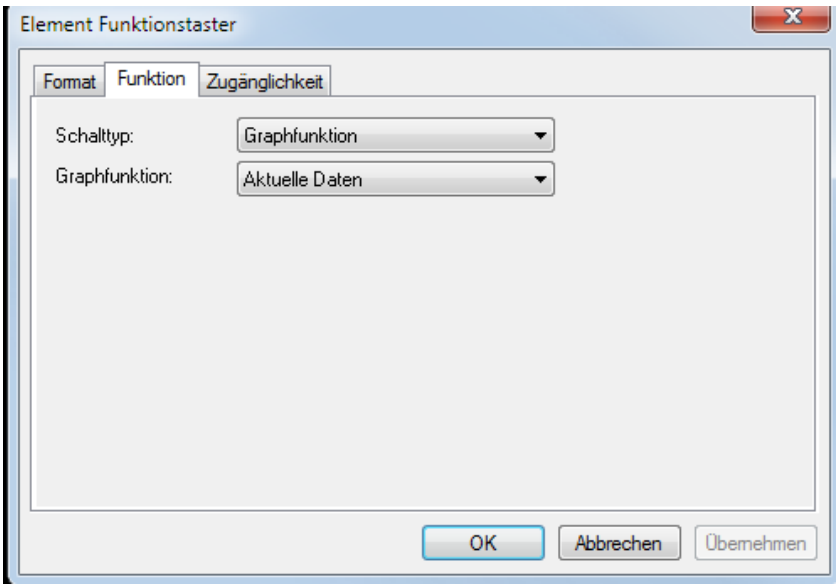
- ndividual measurements can be integrated as a display element



The selection of the individual commands is done by function key

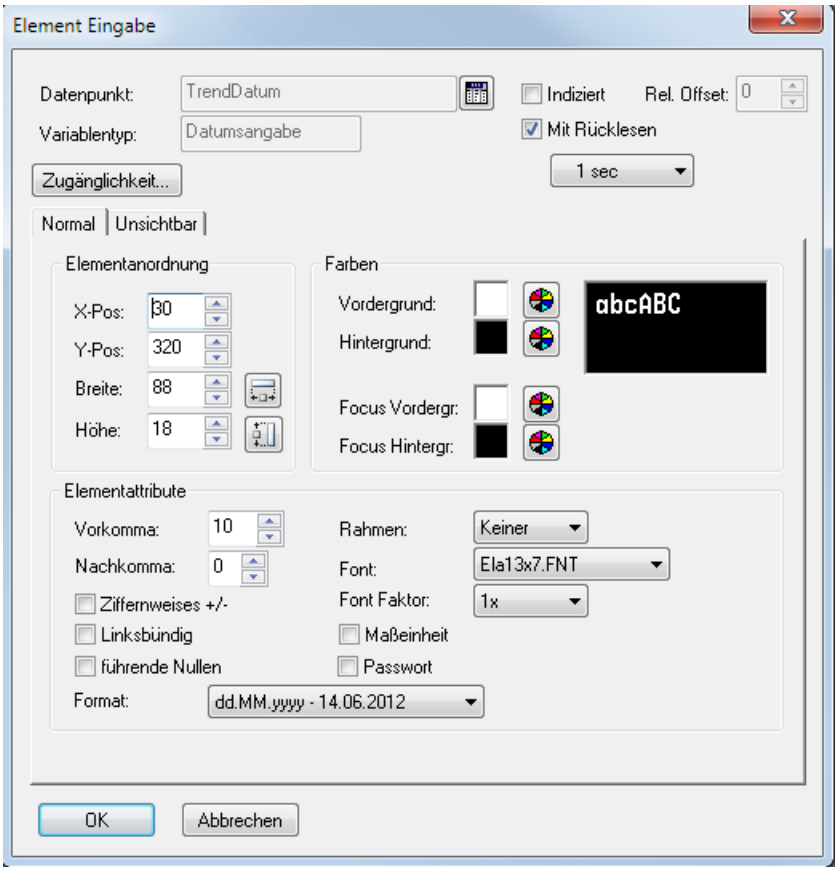
In the switching types for

the possible switching functions are predefined.



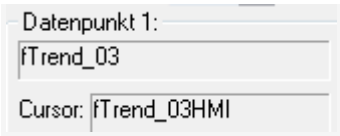
- The selection of the date is via a

Field with data point
(here for example "trend data")

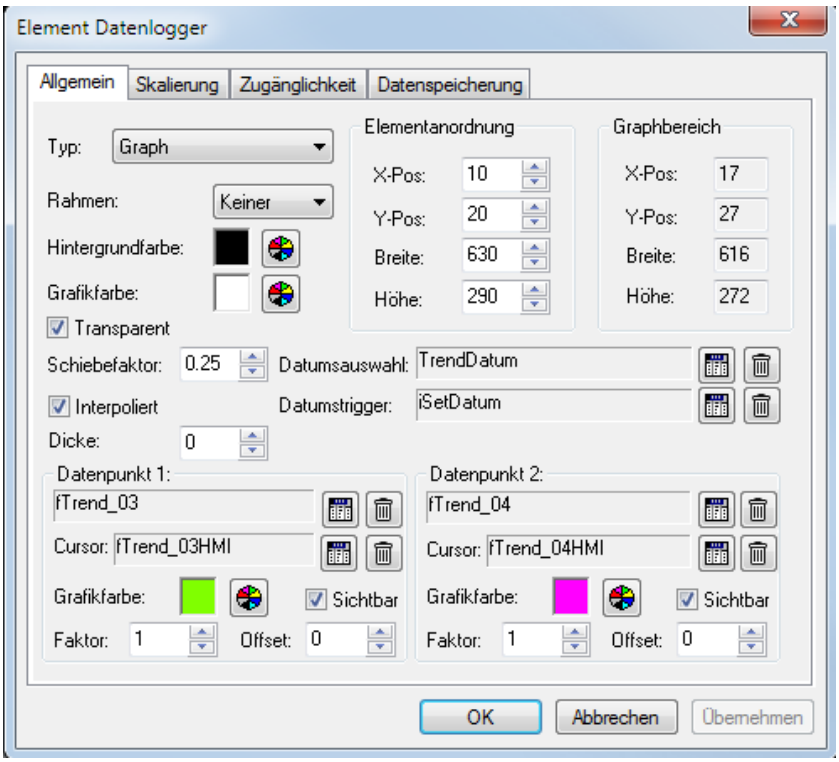


- In the element data logger a data point have to be set for the date of entry and the date of control
- The data point for the control date "data trigger" causes with the value "1", the transfer of the entered date. The return value it delivers either "0" for no error or "1" for error.
-

and each channel has a data point "cursor", which contains the respective cursor position



This data point can be used to display the current cursor position. Here is no data point specified, the display of the cursor position is right on the cursor itself



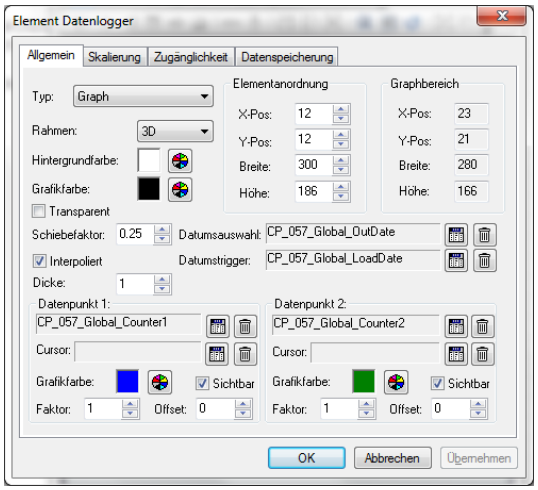
This gives the control over its Y-value data points. It allows up to 2 Y values. The X axis is time controlled.

Shift factor:
Factor regarding the length of abscissa to the left or right of the graph to be moved when the view is scrolled area.

Enhanced:
Select whether graph in the form of stairs or interpolated (straight line between two points) to be drawn

Thickness:
Line thickness in pixels, with each line of the graph is shown.

Date selection:
Data point on which the date is set, for which the writers graphic to appear. The current date means that the writer writes and



displays the current curves. The last date shows only the already-recorded curves.

Trigger Date:
Data point, which led to a value that the writers graphic is loaded for the specified date. This data point is from ElaDesign on success again set to 0. If an error on the data point then the value -1.

Data point 1/2:
The writer can be 1 or 2 data points are represented as channels. In the respective data points, the Y values of the corresponding channel to be included.

Data Points 1/2 cursor:
Data points on which the respective Y value at the current cursor position is displayed. These are described by ElaDesign and can be used to view. In case there are no data points are specified, the current cursor position is displayed at the cursor bar

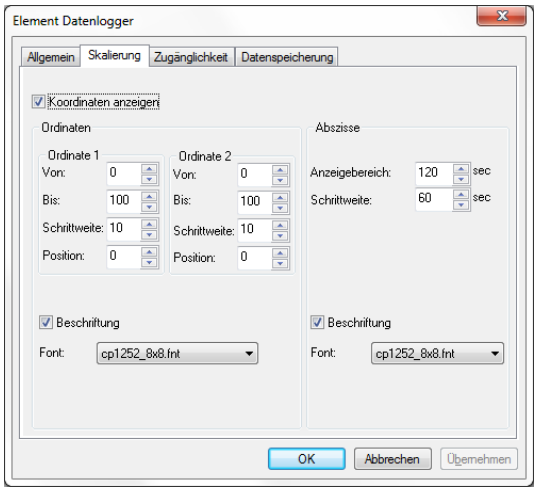
Data point 1/2 Graphics Color:
Choice of color for the first curve and 2 Channel.

Data point 1/2 Visible:
Select whether the curve is shown for the corresponding channel

Data point 1/2 factor:
Factor by which the respective value is multiplied for display.

Data point 1/2 offset:
Offset, the respective value is applied for display.

Scaling for Graph Type:
On the Scale tab, settings for scaling the data logger can be made. This affects both the range of the graph and the labeling of the axes.



- gezeichnet werden soll.

Ordinate 1/2:

- From, To:
- Range of values of the ordinate for first and 2 Channel (even if they are not shown).

Coordinates:
Enables drawing the axes and labels. The axis for the 1st channel is on the left side and the drawn for the 2nd channel on the right side

Position: X-positioning of the axes.

- This is particularly useful for transparent graph, since then several scales can be drawn.

Increments

- Information in which intervals the scale with values should be drawn. (in units of the data point).

caption:

- Whether to draw a scale for the ordinate of values

Font:

- Select the font for the displayed values. For TrueType fonts can also (bold, italic) font size and font style can be specified.

Abscissa:
Display area: time range of the abscissa.

Increments

- • Information should be drawn at what intervals (sec) with a scaling value.

Caption:

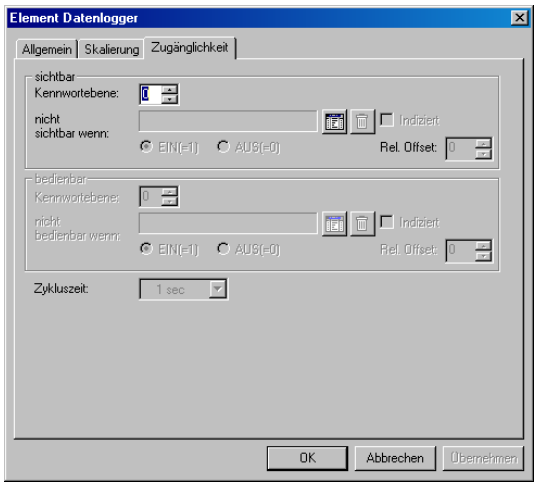
- Whether scaling is to be drawn to the abscissa value.

Font:

- Select the font for the values to be displayed.
- For True Type fonts can also (bold, italic) font size and font style can be specified

5.2.9.5 Accessibility

This specification defines the access rights and visibility of the element.



[See chapter “accessibility” for more information]

5.2.10 The member function button (for touchscreen)

The member function button is used to select individual masks and functions that were not bound to keys. It can be buttons, picture buttons and mask are set, which when clicked will execute the function.
Double-clicking the item will open an options window where the element is configured.
To make the representation of the window clear, the parts are divided into 2 tabs.

5.2.10.1 Format

The following **types** of a function key to choose from:

- Image
- Text
- Range

Generally, the following settings:

Element array:

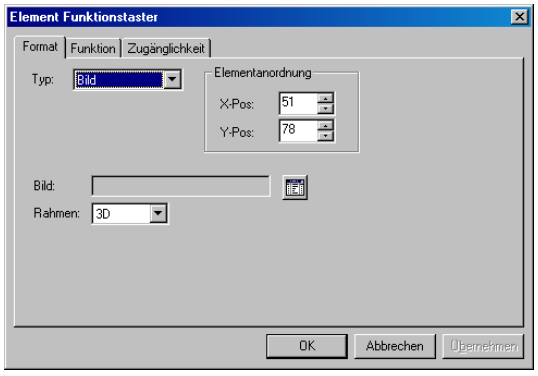
- X-Pos, Y Pos.:
- Coordinate the upper left corner of the control.

Image Type:

- Picture: Here you can choose to display a bitmap of the button.

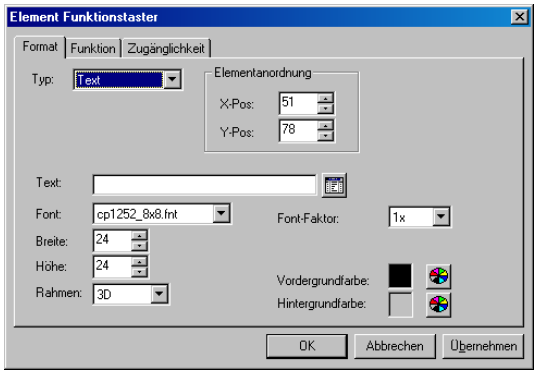
Frame:

- Selection of the border around the element (no frame, 2D, 3D)



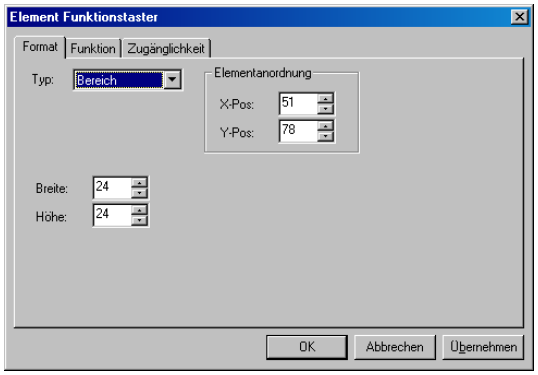
Typ Text:

- Text: the text to be displayed can be entered or selected.
- Font: selection of fonts, with the value to be displayed in the input field. For TrueType fonts can also (bold, italic), the font size and font style can be specified.
- Font Factor: factor to be enlarged to the selected font will be displayed. Not possible with TrueType fonts.
- • Width / Height: adjust the width and height of the control.
- Foreground, Background color selection of the control
- Frame: Selection of the border around the element (no



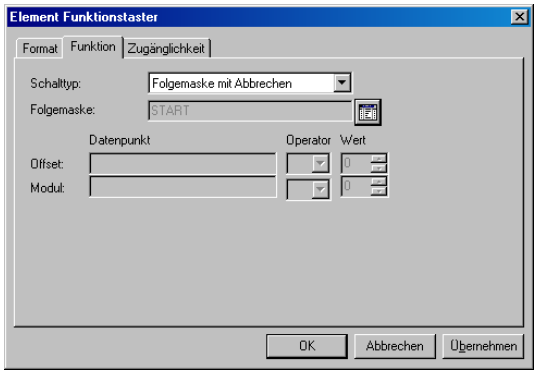
frame, 2D, 3D)

Type area:



- Width / Height: adjust the width and height of the area in which the user clicks. A control is not visible at runtime

5.2.10.2 Function



On this tab, the function of the touch keys is defined.

The selection is similar to the control button is defined by a key

Switch Type:

Here, the function type can be set. According to the selection are then the other fields of the control of meaning. The following switch types

Not used:
The control has no function in this screen.

Follow- mask with Cancel:

- Use the radio button for **follow-mask**, a mask would be chosen to be open when you press the button. The current screen is closed.

Follow-mask without Cancel:

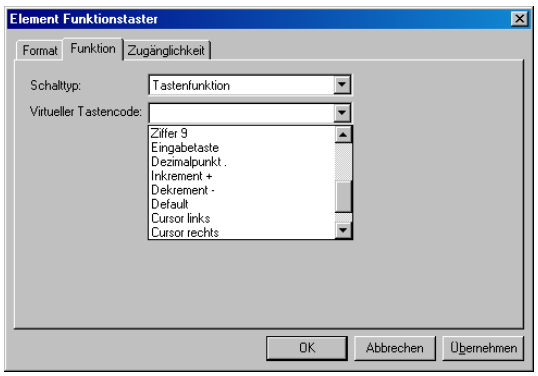
- About the radio button for **follow-mask**, a mask can get selected to be open when you press the button. The current form is not closed.

Close the mask:

- The current screen is closed.

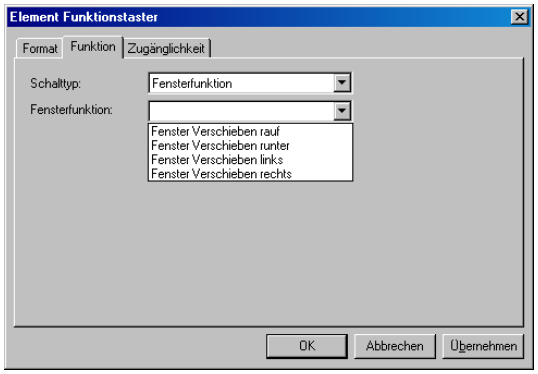
Function keys

The button is assigned to a virtual key code. The selection of these codes is done through the combo **virtual key code**.



Window function

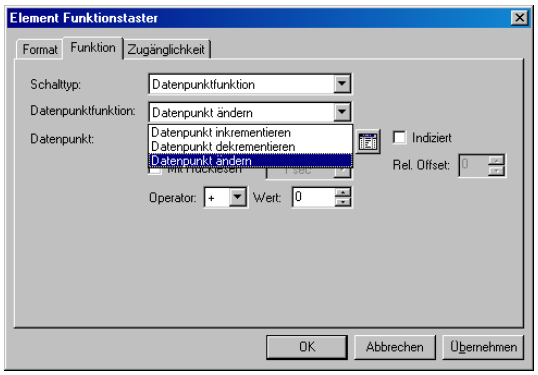
Move the window up, down, left, right: a window on the display moves in that direction. It is horizontally by the width of the system fonts and moved vertically by the height of the system fonts.



Datapointfunction

Data point increment or decrement /: Increases or decreases the specified data point.

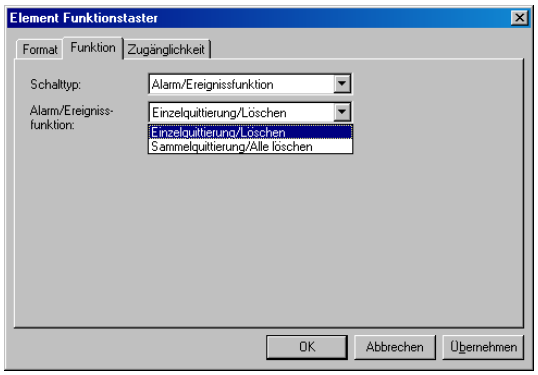
Data point changes: Changes the specified data point corresponding to the selected operator (+, -, =).



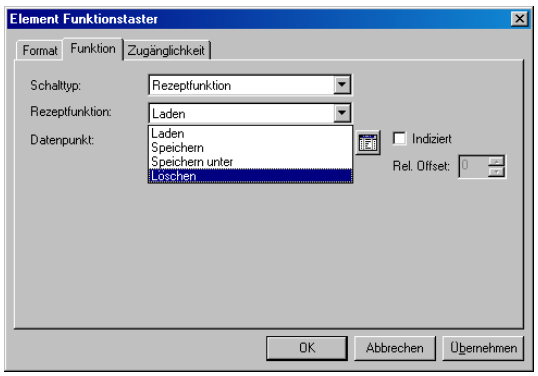
Alarm / event function

Single acknowledgment / Delete:
Press the button, the selected element of alarm-/event list the current mask, which is in the tab order before the function buttons, acknowledged or cleared. Pending alarms are not immediately removed from the list, but only when they are gone.

Group acknowledgment / Delete all:
If the button is pressed all be elements of Alarm-/event list the current mask, which is in the tab order before the function buttons, acknowledged or cleared. Pending alarms are not immediately removed from the list, but only when they are gone.



Recipe function



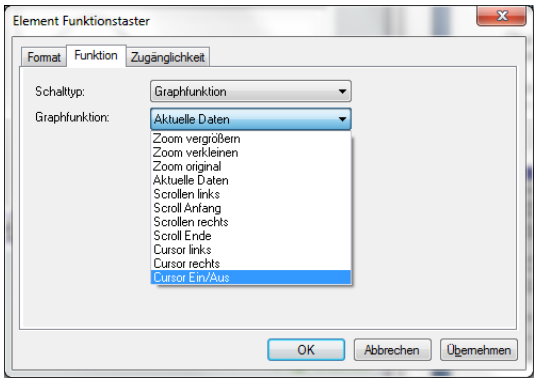
Download: Read the recipe file that is specified by the selected data point, and describes the data points contained the stored values in the recipe. This is already present the values will not be saved.

Save:
Saves the current values of the contained in the selected recipe definition without a recipe object on data points in a recipe files, by the selected data point is commanded

Save at: Saves the current values of the definition contained in the selected recipe data points in a recipe file that is specified by the selected data point. If this already exists, the values will not be saved.

Delete: Deletes the selected data point specified by the recipe file.

Graph function:



Cursor An / Aus: Schaltet den Cursor aus oder ein.

Zoom: enlarges the view by the time range of the abscissa is reduced.

Zoom Out: Zooms out by the time range of the abscissa is enlarged.

Zoom Original: If the original projected image size Restore.

Current Data: Displays data for the current date.

Scroll left: Moves the current view of the shift factor to the left.

Start scrolling: move the current view to the start of data recording.

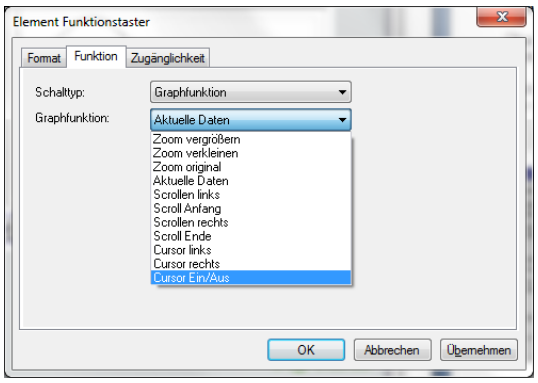
Scroll right: Moves the current view of the sliding factor on the right.

Scroll End: Moves the current view on the end of data recording.

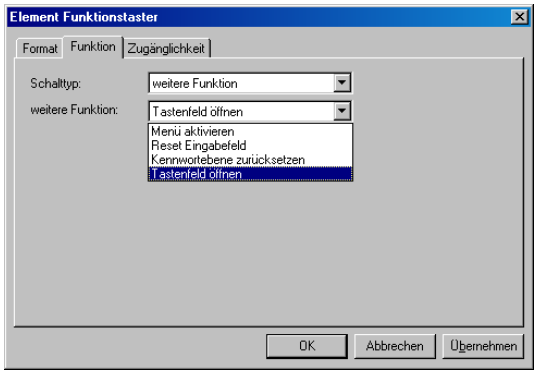
Cursor left: Moves the cursor to a data value to the left. When leaving the window, the cursor is turned off.

Cursor right: Moves the cursor to a data value to the right. When leaving the window, the cursor is turned off.

Cursor on / off: Switch the Curser on or off



Further functions:



Menu, select: Is the mask a menu associated with it can be activated by this button. Within the menu can be moved using the cursor keys. Stops will be escaped.

Reset input field: Password Reset level: Allows a user can log out of his rights. For controls with password level is now absolutely necessary to re-input.

Keypad open: Opens an edit window when an input field has focus.

End of program (CE only):
End of ElaDesign

Virtual key code:

f you have chosen as a switching type "function keys", you can assign a function to the control. The following functions are available:

Number 0 - Figure 9: inserts the number 0-9 in an input field.

ENTER: confirms input in a field and writes the data point value.

Decimal Point: Inserts a decimal point in an input field

Increment+: increasing the value of the input field that has the input focus to first
Decrement -: decreases the value of the input field that has the input focus to first

Default: inserts into the input field that has the input focus, the initial value of the associated data point name.

Cursor left, right, up, down: the input focus to the next / previous field.

Escape: leaves an input field without modification of the data point menu

Special feature:

If you define a form as a template (more on this below background image), you have the ability to control the template accordingly.

Generate a mask with a template function and assign data points that reflect each of the module number and / or offset. If such a mask opened, all data points that are templates capable (array data points or many variables firmware) exchanged with the corresponding index.

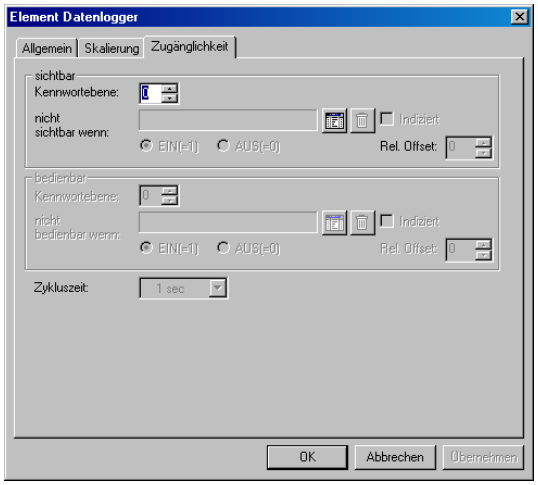
About the element Touchkey you can now control this template data points and so simple functions such as Next / Back with a mask and generate the same data at different target points.

Select order as switching type "sequence mask Cancel" or "sequence mask without Cancel" and an operator with the correct value.

5.2.10.3 Accessibility

This specification defines the access rights and visibility of the element.

See chapter accessibility 'for more information



5.2.11 The element list

The item list is used to display alarms and events. Here, binary data points are monitored. If an alarm or an event is generated, an entry in the list. The definition of the monitored data points are in project management within the alarm definition.

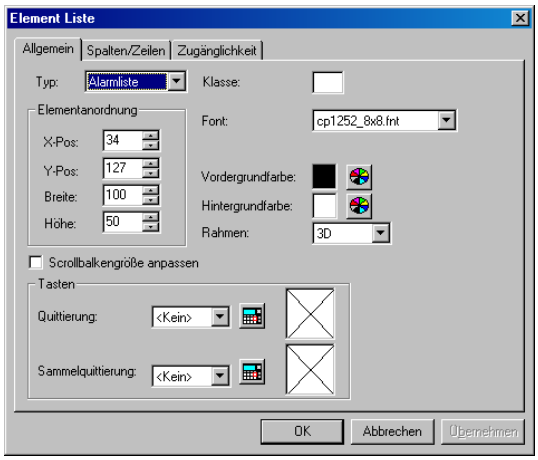
The statement of element controls the visual appearance and operation. Within the list can be moved using the cursor keys

Alarms can be acknowledged via keyboard or touch keys and will be removed from the list.

Events will remain. If the event buffer is full, the oldest entries are overwritten.

It can create separate lists for alarms and events.

5.2.11.1 General



The following settings can be made:

Type:
The list is filled out by either alarm data points or only events. Alarms can be acknowledged also

Class:
Filter for a class that can be specified in the alarm definition

Eement arrangement:
X-Pos., Y-Pos. Coordinates of the upper left corner of the element on the screen.

Width / Height:
Adjusting the width and height of the element.

Font
Setting the font of the text to be displayed.
For TrueType fonts can also (bold, italic), the font size and font style can be specified.

Foreground color, background color
Selection of colors for the item

frame:
Selection of the border around the element. (no frames, 2D frames, 3D frame)

Scrollbars resize:
Enabling this option, the scroll Bar on the used font size is adjusted.

Acknowledgement key
Choose one button

When this button is pressed, the selected element of the alarm list will be acknowledged.

Pending alarms are not immediately removed from the list, but only after they leave.

In addition, the acknowledgment is generated with an entry in the alarm list entry in a list of any event that indicates when acknowledged.

Key group acknowledgment:

Choose one button.

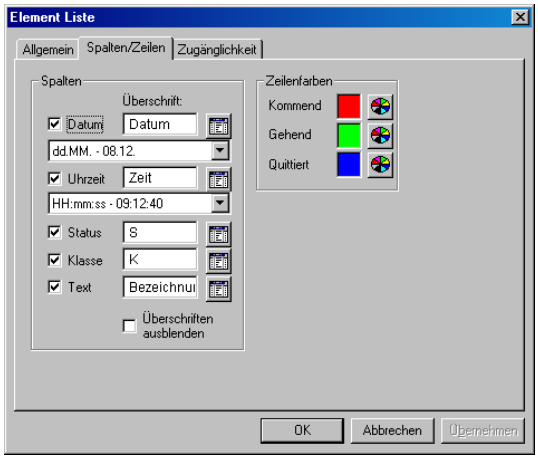
When this button is pressed, all elements of the list of acknowledged alarm, sufficient for the user's rights. Pending alarms are not immediately removed from the list, but only after they leave.

In addition, the acknowledgment is generated with an entry in the alarm list entry in a list of any event that indicates when acknowledged.

Note:

Do you have a touch screen; you can set the group acknowledgment to the acknowledgment and touch keys.

5.2.11.2 Colums/ rows



Columns:

Please specify which columns are displayed in the list. Drag the item on the screen correspondingly large

Each column, you can also enter a headline. Type this, or select it from the text table.

Date column

In this column the date is displayed in the appropriate format.

Time column:

This column displays the time in the appropriate format This field indicates the time in the appropriate format.

Status column:

This column tells you why the entry was created in the list.

= C = Coming

= G = Is Going

= A = Acknowledged acknowledged alarms (only in the event list)

Class column:

This column indicates the class of the entry.

Column text:

This column displays the text of the alarm / event.

Headings Hide

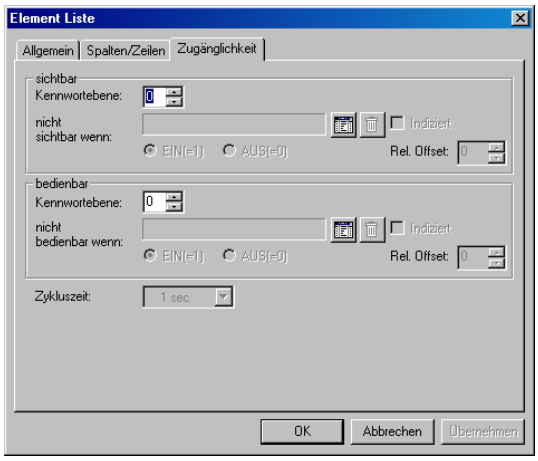
If this option is selected so no headers on the columns will appear.

Row colors:

Here, separate colors for

5.2.11.3 Accessibility

This specification defines the access rights and visibility of the element.

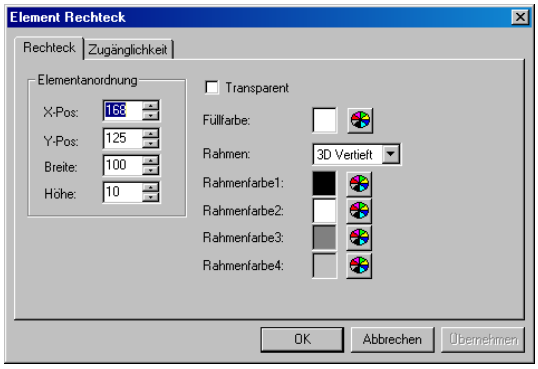


[See chapter accessibility 'for more information.]

5.2.12 The element rectangle

The rectangular element is used purely for visual representation for example Highlighting, boundaries, groupings

5.2.12.1 Rectangle



The following settings can be made:

Element arrangement:.

- X-Pos, Y Pos. Coordinates of the upper left corner of the element on the screen.
- Width / Height: adjust the width and height of the element.

transparent:

- Selection of whether the item should be rendered with transparency. This is for example useful for groups.

fill Color:

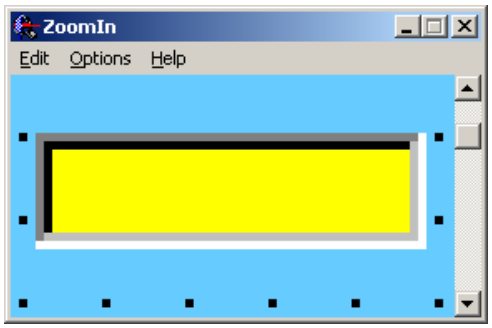
- interior color of the rectangle

frame:

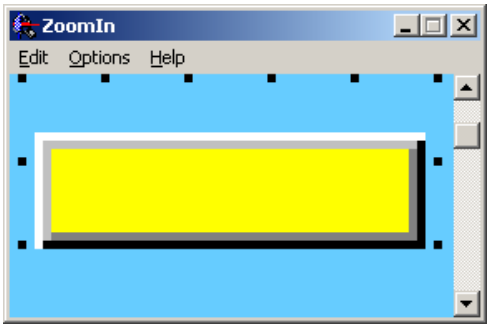
- Selection of the border around the element. (no frames, 2D frames, frame 3D Engrave, 3D frame Increases)

Color of the frame 1-4:

- Presentation of the frame. In a 2D frame, only one can be selected.
- For 3D framework is designed as follows: 3D



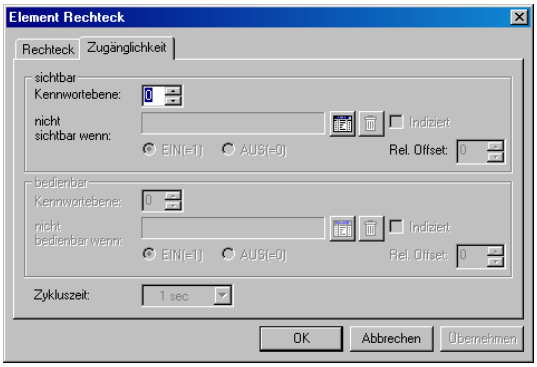
Deepens 3D increases



5.2.12.2 Accessibility

This specification defines the access rights and visibility of the element.

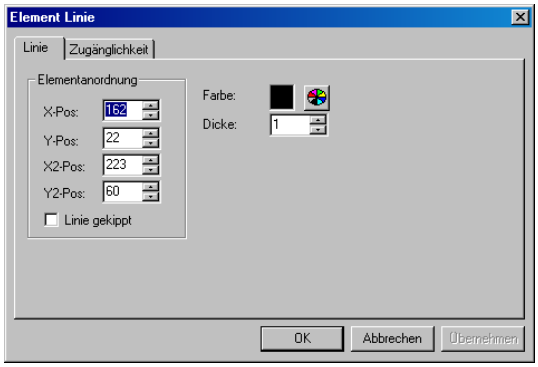
See chapter accessibility 'for more information.



5.2.13 The element line

The line element is only used for visual representation for example Highlighting, boundaries, and groupings.
It can be straight and oblique lines are generated.

5.2.13.1 Line



The following settings can be made

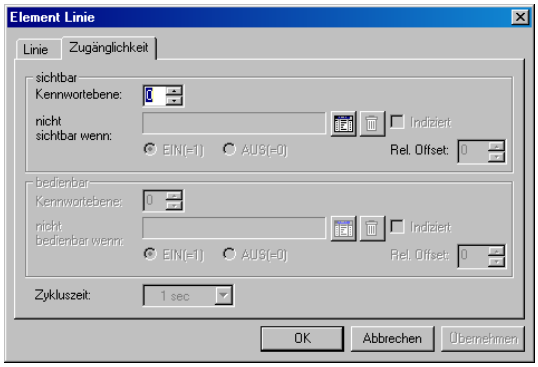
Element arrangement
X-Pos, Y Pos. Coordinates of the upper left corner of the element on the screen.
X2-Pos, Pos-Y2. Coordinates of the lower-right corner of the element on the screen.

Tilted line:
For oblique lines. The normal view from the top left to bottom right. Tilted lines running from lower left to upper right.

Color:
Color of the line.

Thickness:
Line thickness in pixels.

5.2.13.2 Accessibility



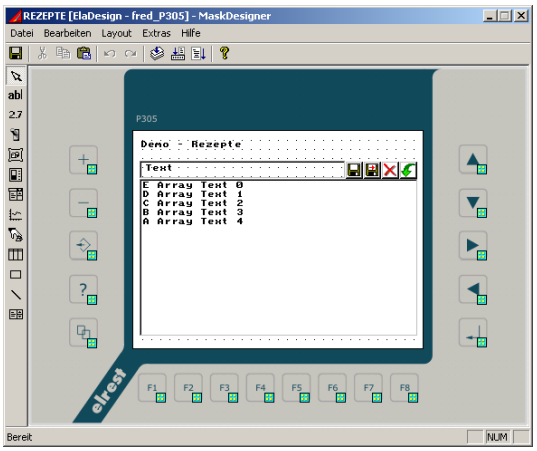
This specification defines the access rights and visibility of the element.

See chapter accessibility 'for more information.

5.2.14 The element listbox

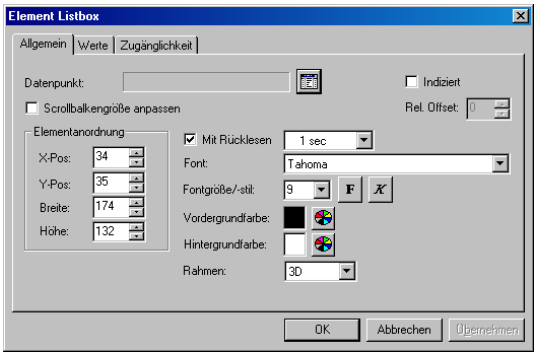
The element is a rectangle that contains a list of texts (such as recipes), from which the user can select. The selected text represents the value of the data point, which was assigned to the item

By double-clicking the element you can set the properties.



5.2.14.1 General

The following settings can be made



Data point:

Selecting the value to be written.

The following data point types are supported: byte, byte pos, word, word, pos, double word, double word pos, float, text and variable text....

Indexed / Rel offset:

Array of data points can be used for rel. Offset = index of the data point can be specified. To do so, checkbox field "Indexed".

Only values can be read back which are configured.

By reading back:

If set, the data point is read cyclically in the set time and updates the list box accordingly

Element arrangement:

- X-Pos, Y Pos. Coordinates of the upper left corner of the element

Width / Height:

- adjust the width and height of the element

Vordergrund, Hindergrund:

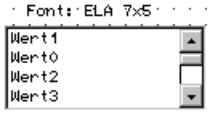
- Auswahl der Farben für das Element

Font:
Choose the font for the text to be displayed. For TrueType fonts can also (bold, italic), the font size and font style can be specified.

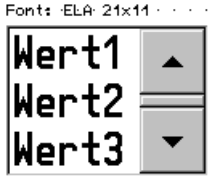
frame:
- Selection of the border around the element (no frame, 2D, 3D)

Scrollbars resize:
- Selecting this option will adjust the scroll bar size used in the font.

Example: listbox



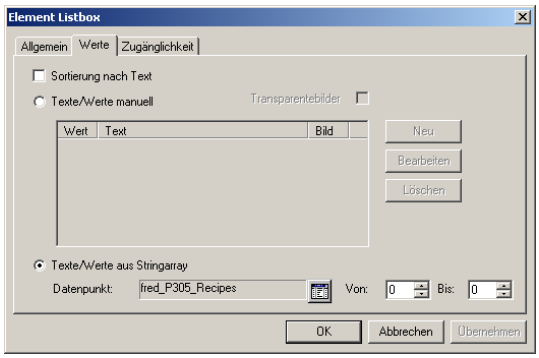
with activation “ custom scroll bar size "



Available width of the scrollbar setting under eStudio 2.84

elements	possible	eStudio	Runtime
Combobox	X	-	X
Listbox	X	X	X
List	X	-	X
Data logger	-	-	-
Picture	-	-	-
Field	-	-	-
Output field	-	-	-
Bargraph	-	-	-
Button	-	-	-

5.2.14.2 Values



The following settings can be made:

Each entry in the list box containing a text and / or an image that corresponds / the data point with a value

Order by text:

If this option is enabled, the entries are sorted according to the text. Otherwise, a classifying is determined by the value.

Texts / values from string arrays

If this option is enabled, you must define for each entry a text and a value. If the selected data point for this element of type text or variable text, the text of the selected entry is written to or read from this data point. Apart from this the value of the entry is used.

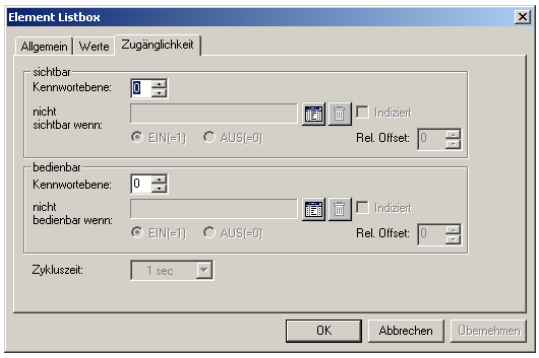
You can define up to 30 entries

Select "text string array" so 199 texts to be defined.

From, To:

Indicates the area of the string array to be used. If both values (From / To) = 0, the entire array is used.

5.2.14.3 Accessibility



This specification defines the access rights and visibility of the element.

See chapter accessibility 'for more information.

5.3 Default masks

If you create the first mask to the device, automatically the designer will be generated the following masks: ! DEFAULT_DESKTOP! DEFAULT_COMPONENTS. These have a special function in the system

5.3.1 !DEFAULT_DESKTOP

The Mask! DEFAULT_DESKTOP is displayed when no other form is open.
Made for devices with keys in this mask, the default assignment of individual keys

5.3.2 !DEFAULT_COMPONENTS

The Mask! DEFAULT_COMPONENTS contains one element for each type, including a background image. The settings of these elements serve as a template when a new item is inserted into a mask. Thus, the cost of adding new elements can be substantially reduced. Also is transmitted to the target system, only the difference of an element corresponding to the mask! DEFAULT_COMPONENTS, which leads to a significant reduction in the amount of data.

If the mask! DEFAULT_COMPONENTS a new element to be assigned as a template to select that item in the current screen and then select the **Edit** menu, select the menu item **assigning them as standard**.

5.3.3 Creating default elements

A "hidden" highlight of eStudio is that the users are given the chance, for each graphic element called a prototype for his needs to adapt and thus to save space.

This means that a mask is created, and for example an input field is inserted, so this field has all the "features" of a field prototype. This may correspond to either the elrest standard or custom field.

This fact makes the following representation clearly:

Fixed default values in the system are implemented for graphical elements. Provided no further information is available, this used eStudio.

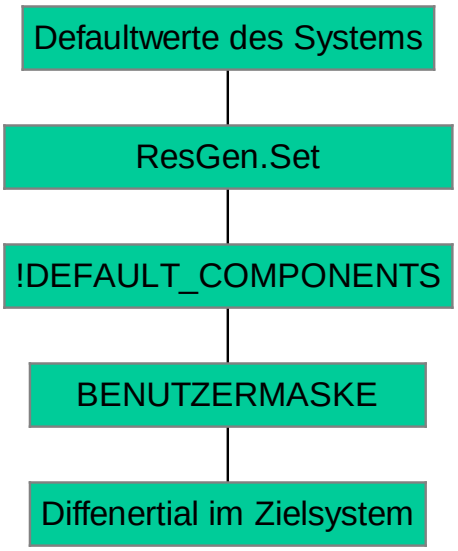
At the start of the resource generator or the mask designer a file name "Resgen.set" from the \ Elasoft \ eStudio \ is read. This file represents the default setting for the eStudio installation on the computer. If this file is not found, the resource generator generates a compiler run this file from the system default values

Once a mask has been created in design software for a device that automatically generates the mask with the name "! DEFAULT_COMPONENTS". In this screen exists a prototype for each graphical element, which is taken as default for more masks.

I.e. change the background color of the mask on black background, then all future masks with the black background creates a default value.

The Resource Generator, however, reads all the masks from, but it just creates the information as to the different to !DEFAULT_COMPONENTS is. This approach means (if many of their items look the same), that eStudio uses the target system resources.

Erzeugung der Defaultelemente



5.4 The pixel-element array in the coordinate system

The coordinate system starts in the upper left corner with the coordinates x = 0 and y = 0

In the series with the operating system "Windows µE" as fonts are available in Windows XP/7 compatible Fixed-font format with the file extension * .FNT to are available.

In this font - file collected all of the characters are stored. The height and the width of a fonts can be 1 - 64 pixels include

In the series with the operating system "Windows CE" are fixed-font available as well as True Type fonts.

Only the True Type fonts can be used, which are on the development machine and on the target system have been installed.

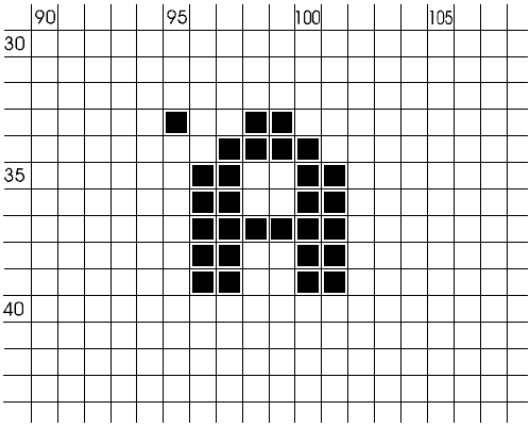
5.4.1 Fixed Fonts

A big highlight of Estudio, is, that you can combine foreign-language texts with own fonts. These fonts are so-called "fixed fonts". i.e. each letter has a font with the same height and width.

In order to create such a font, please use the supplied program "fontedit.exe".

As position will be used the upper-left corner of the sign.

In the example on the right a sign is represents of the font 8x8 at position 95, shown 33rd

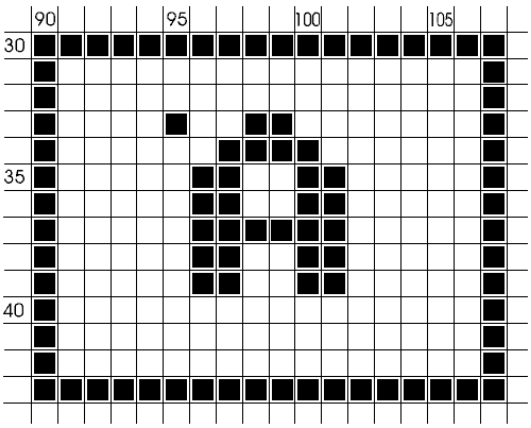


Note : the system font can only in multiples of the resolution for example 8x6 will be positioned

In addition, a system font is only black/white and not scalable

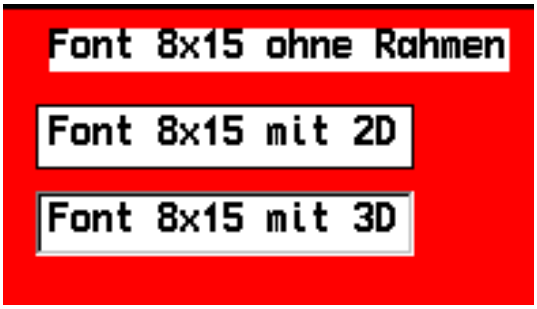
If a sign is displayed in a frame, the frame is painted with a distance from the characters. The frame width is one pixel in 2D frames for 3D framework and two pixels. The distance between character and context is calculated as follows

- Distance above and below the sign = font height / 4 The decimal places are cut off.
- distance to the left and right of the character font = width / 2 Resulting truncated. The decimal places are cut off.
- The upper left corner of the sign is used as the position.

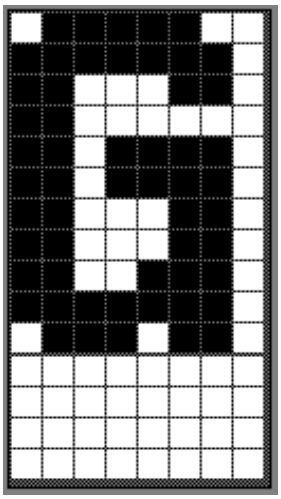


In the example, a character in the font is shown with 8x8 2D-frame at the position 95, 33.

This is the adjacent appearance.



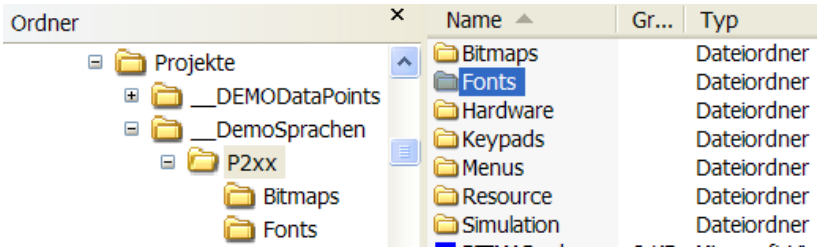
The selected frame around the text will be outside the font face drawn. This means, with the same coordinates x is the text "Font 8x15 ..... " one pixel at a time always with each other



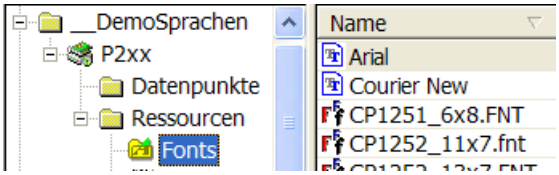
Tipp These fonts can be used also as an alternative to bitmaps. While bitmaps always have the same color, the fonts can be (though still 2 colors) are shown in different colors, for example to display the status of a function. This alternative is "cheaper" than to create a separate bitmap for each state. The font exists only one time before, while the bitmaps has to be loaded for each color to the target system. Furthermore a text can be flashed.

5.4.2 True Type Fonts

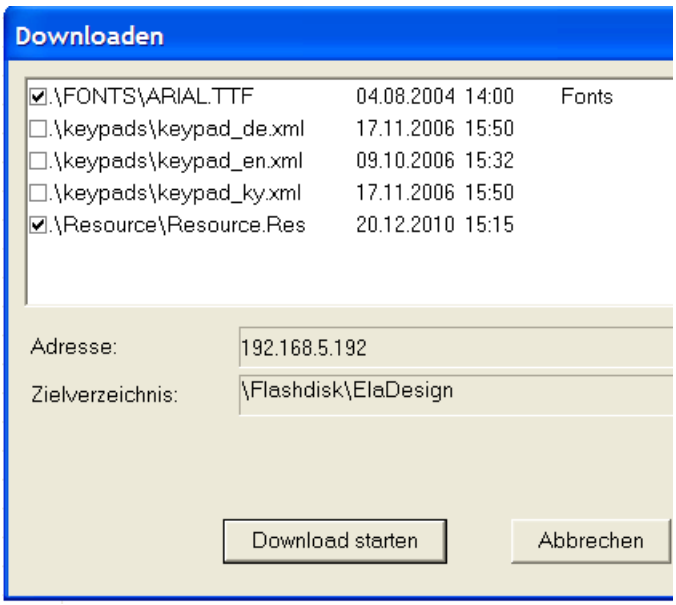
It can be from any Windows True Type Fonts (TTF) adopted and used under WindwsCE PLC's. Simply copy the fonts into your project directory under "Fonts"



The font is now available in your project.



You will be prompted if you download the resource also to transfer it to the device. This ensures that you can work with the additional non-standard font working on the control.



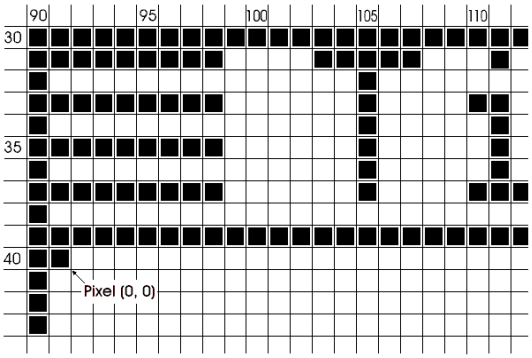
5.5 Window in the coordinate system

To indicate the position of a window, always the upper left pixel of the workspace (this is the part of the window can be drawn) will be used. This is independent whether the window has a frame or a title bar.

If a window has a frame, so this will be drawn outside of the workspace. . The frame width is 1 pixel in a 2D frame and 2 of pixels in a 3D frame. The window is increased consequently by twice the frame width in height and in width.

If a window has a title it will be drawn to the work area. The amount of the title bar is the height of the fonts used + frame width. The window is thus higher by the amount of the title bar.

The illustrated example shows a window with 2-D frame and title bar at the position 91, 40



It uses a separate window in Windows Presentation µE.

It is not used, the window display of Windows CE, but a Windows-compatible windowing µE

5.6 Used image formats

On Windows BMP formats can only µE with 2, 16 and 256 colors are used.

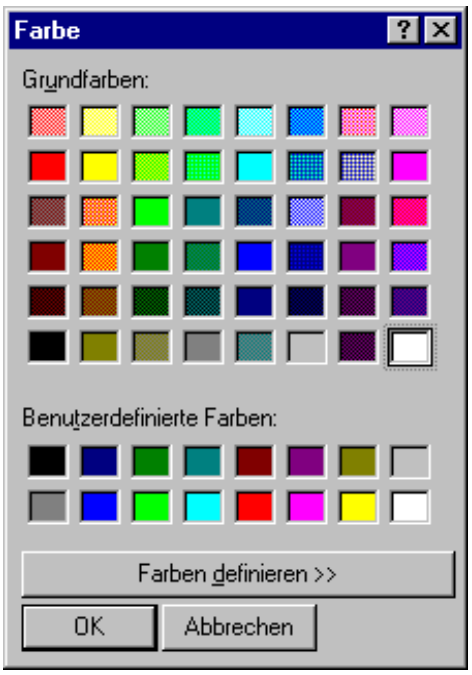
Generation of bitmaps

The development of the environment of eStudio is able to manage image files and load them into the target system. It is important to ensure that the color depth of the image corresponds to the color of the display. If you have a picture black and white drawing, save it, but with 256 colors, so it is represented internally as a 256 color bitmap. Since the display but can only display two colors, this results in an error message even though you have used only two of the 256 colors. Please save the image in this case as a black / white bitmap from.
Windows µE uses the standard windows colors for the S / W panel

Color palette for elrest S / W panels

Index	#define in can.h	color	RGB value	24-BitHex
0	COLOR_BLACK	black	RGB(0,0,0)	000000h
1	COLOR_BROWN	brown	RGB(128,0,0)	000080h
2	COLOR_GREEN	dark green	RGB(0,128,0)	008000h
3	COLOR_DKGREEN	nato green	RGB(128,128,0)	008080h
4	COLOR_DKBLUE	dark blue	RGB(0,0,128)	800000h
5	COLOR_DKMAGENTA	magenta	RGB(128,0,128)	800080h
6	COLOR_BLUE_GREEN	blue green	RGB(0,128,128)	808000h
7	COLOR_DKGRAY	dark green	RGB(128,128,128)	808080h
8	COLOR_GRAY	light gray	RGB(192,192,192)	C0C0C0h
9	COLOR_RED	red	RGB(255,0,0)	0000FFh
10	COLOR_LTGREEN	light green	RGB(0,255,0)	00FF00h
11	COLOR_YELLOW	yellow	RGB(255,255,0)	00FFFFh
12	COLOR_BLUE	blue	RGB(0,0,255)	FF0000h
13	COLOR_MAGENTA	bright magenta	RGB(0,255,255)	FF00FFh
14	COLOR_CYAN	light blue	RGB(0,255,255)	FFFF00h
15	COLOR_WHITE	white	RGB(255,255,255)	FFFFFFh

If you are asked when you create a mask for a color that appears on the left is color dialog. The managed eStudio of color table can be found in the lower part of the dialogue. Please use this list showed up in custom colors to design your mask. For the other colors, it is possible that this may in the target system lead to problems.
Also, you may not define colors yourself, since otherwise the color consistency between the target system and the project colors on the surface color goes.

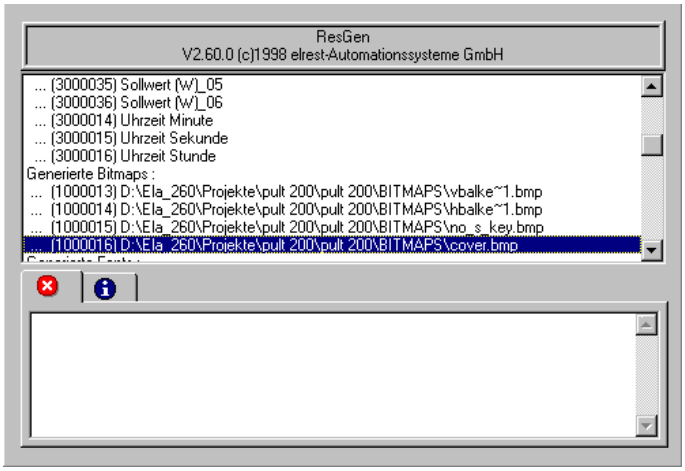


On Windows µE addition to all BMP formats can also be the most common formats, Joint Photographic Experts Group "(JPEG) compression with loss of quality for photos and pictures, and Graphics Interchange Format" (GIF), compression can be integrated without loss of quality for graphics, .

5.7 ResGen Compiler

In determining what resources the generator of a project, it is necessary to understand what resources are.
Everything in the project tree can be set and configured to represent resources, i.e., if you create a mask that refers to an image, the image must be created as a so-called resource. The image is then translated into a file that is placed into the target system so that the operating system Windows CE or e µ can access it.

The resource generator has at eStudio the role of a target system compiler.
He translated 'the configured device into a language understood by the operating system.
All of it generated data represent **static** information on which to draw the operating system if necessary.



In general, the information from a device configured to be taken sequentially and associated database into a file named "Ressource.res" written. This file represents your eStudio generated by the project (without ElaSim ElaGraph and programs).
This file can be found under your project directory:

<Project_name> \ <device_name> \ Resource \ Ressource.res

5.7.1 Generate the driver information

The generator resources meant by "driver" a configured network from a projected device. This means that all possible communication channels with a module / panel etc. has outwardly, will be represented by the network

This could be e.g. the CAN_MPC2 or RS RS232 command interface or also be a driver, the hardware on a strange was adjusted (generally offers the possibility of a own eStudio driver development. If you have questions, please contact elrest).

Here to each projected network driver includes a suitable DLL (Dynamic Link Library for Windows), which is located in the directory \elasoft\driver\ find.

5.7.2 Creating device information

The Device represents like the driver a DLL (dynamic link library for Windows). Not for a configured network, but for a configured device type. This DLL can be found under elasoft \ device \.

These device drivers know about the capabilities of the device, such as the data points, connected

networks, etc. knows. Information is extracted from the device drivers and embedded in the generated resource.

Also requires the following public interface Device.dll
(for more information, see "The EOnline driver concept"):

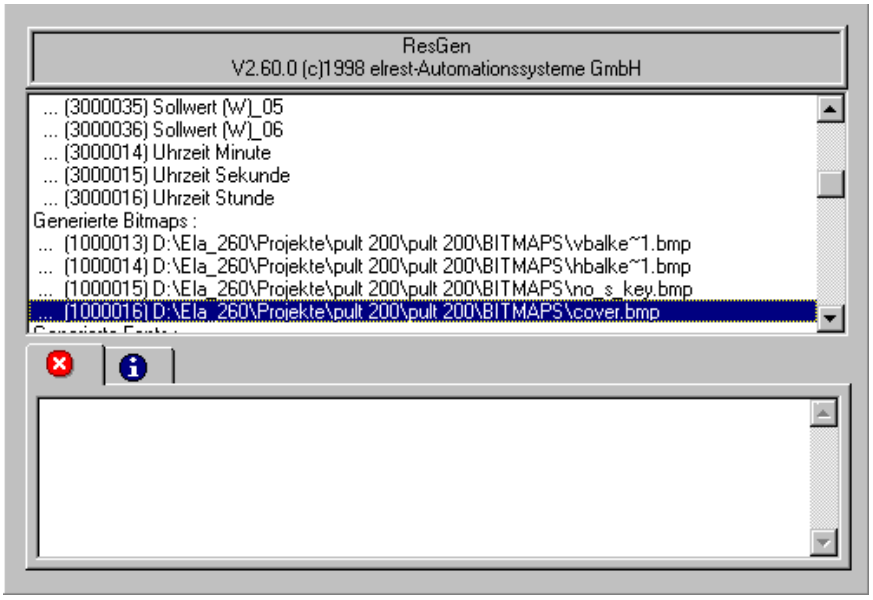
5.7.3 *Generating the data points*

A data point means information from a device. If we for example read the time, so you have to configure the device with a data point that represents the data for the time (provided the device knows this functionality).

The following error messages may occur when generating the data point resource

5.7.4 *Compiler process with ResGen and error messages*

In the top pane shows the current resource Resgen.exe just created. Before each record unique ID code of the resource is displayed. This is only of interest if you want to program an additional userware in C. To access an entry, you will need this key.



Under this tab, all the errors and inconsistencies are displayed. If you select an entry and press the "F1" key, a statement will be published for your current problem.

Under this tab, additional information such as file name, file size, etc. is displayed.

If an error occurred while generating the resources to, thus closing the resource generator automatically. Do you want to close it, press the "Esc" key.

Do you want to look at the issue of Resgen.exe, you need only press a button during the production and the window does not close automatically.

RG0001: "HKEY_CURRENT_USER \ \ SOFTWARE \ \ ElaSoft \ \ Path is invalid!"

Reason:
There is an error in the registry (Regedit.exe) before. The specified entry is invalid.

Remedy:
Install new eStudio (for Windows NT Administrator password)!

RG0002: "Invalid data point 'XYZ'!"

Reason:
The device driver is out of date or incorrect, or there is a strange project for which the databases have been copied, but on the computer on which the ResGen is no driver's DLL could not be found.

Remedy:

- For customer-specific devices / network drivers, the driver is incorrect, please contact the manufacturer
- For foreign projects is missing a dll in .. \ driver or .. \ device directory. Please copy the relevant programs (Caution: You may no longer run your projects!)
- In the Autoexec.bat is a path to an invalid driver. Please check the version numbers of DLLs with version.exe (version control).

RG0003: "The DLL 'XYZ' could not be loaded!"

Reason:
The driver DLL is faulty, or the required DLL's needed by the driver (!) Are not available

Remedy:

- In the Autoexec.bat is a path to an invalid driver. Please check the version numbers of DLLs with version.exe (version control).
- For customer-specific drivers, please contact the manufacturer

RG0004: "The unknown function in the DLL Device_DataPointInfo XYZ!"

Rreason:
The driver has not enabled the function Device_DataPointInfo or function is not implemented
It is an older driver

Remedy:
Please contact the driver manufacturer.
Please start at Version.exe and check the version number of the corresponding DLL ..

RG0005: "The unknown function in the DLL Device_GetConvertFunctionIDs XYZ!"

Reason:
The driver has not enabled the function Device_GetConvertFunctionIDs or function is not implemented.
This function is not to have an established only with the version V2.60.0 functionality that older drivers.
It is an older driver.

Remedy:
Please contact the driver manufacturer.
Please start at Version.exe and check the version number of the corresponding DLL.

RG0006: "The function Device_GetConvertFunctions in the DLL XYZ!" is unknown

reason:
The driver has the function Device_GetConvertFunctions not enabled, or the function is not implemented. This function is not to have an established only with the version V2.60.0 functionality that older drivers.
It is an older driver.

Remedy:
Please contact the driver manufacturer.
Please start at Version.exe and check the version number of the corresponding DLL.
RG0007: "XYZ data point can not be edited (PDInfo)!"

reason:
The Device_DataPointInfo function of the device driver failed. I.e. the projected data point is not known. This indicates a failure or an unacceptable change in the driver.

Remedy:
Please contact the driver manufacturer.
Please start at Version.exe and check the version number of the corresponding DLL.
RG0008: "XYZ data point can not be edited (convert)!"

Reason:
The GetConvertFunctionIDs function of the device driver failed. I.e. the index of the conversion feature of the projected data point is not known. This indicates a failure or an unacceptable change in the driver.
Remedy:
Please contact the driver manufacturer.
Please start at Version.exe and check the version number of the corresponding DLL.
RG0009: 'bitmap' XYZ 'has n colors The configured module you can display only m colors! "

reason:
The bitmap has been saved with more colors than the target system can represent.
The bitmap has more colors than allowing the panel in question

Remedy:
Please save the image with the corresponding module color.

RG0010: "The bitmap file contains no image XYZ!"

Reason:
If the bitmap file is considered a valid file, however, the data portion of the bitmap, the length 0

Remedy:
Delete the bad file from the directory <Project_name> \ <device_name> \ bitmaps and create them again.

RG0011: "The bitmap is larger than 64KB XYZ!"

Reason:
Due to the limited storage management cost target systems, the maximum size of a resource is set to 64 Kbytes (firmware versions <V1.52).

Remedy:
Save the bitmap with a lower color depth.
"Taking apart" They separated the bitmap into two or more images and configure them
from each other.

RG0012: "The XYZ bitmap can not be loaded!"

Reason:
The file was deleted or another program has it opened exclusively.

Remedy:
If the file in the directory <Project_name> \ <device_name> \ bitmaps no longer exists, it must be copied back then
If the bitmap is no longer needed, it is sufficient restarting the resource generator. This recognizes that the file is no longer needed and removes the bitmap ID from the database.
If another program has opened the bitmap, it is sufficient to close this and create the new resource.

RG0013: "The font file XYZ can not be loaded!"

Reason:
The file was deleted or another program has opened exclusively.

Remedy:
If the data in the directory <Project_name> \ <device_name> \ fonts no longer exists, it must be copied back then.
If the font is no longer needed, it is sufficient renewed Anstarten the resource generator. This recognizes that the file is no longer needed and removed the font identifier from the database.
If another program has opened the font file, it is sufficient to close this and create the new resource

RG0014: "Die Fontdatei XYZ ist größer als 64KB!"

Reason:

Due to the limited memory management of small and inexpensive systems target the maximum size of a resource is set to 64 Kbytes (firmware <V1.52).

Remedy:

"Taking apart" the font into two or more sub-headings (e.g. all capital letters, lowercase letters, special mark, etc.) and configure them separately.
Change the font size -> less memory usage.
"Taking apart" the font into an upper and lower half.
Do not use unnecessary characters.

RG0015: " The ID 'XYZ' entry in the default language is present several times

Reason:

There is an invalid text database. This can not happen under normal circumstances, but it should still occur, please try the following workaround:

Remedy:

Please delete the text displayed with the ID of your masks and configure him once again

RG0016: "Error in project.set for the XYZ language does not define a font!"

Reason:

The directory <Project_name> \ is not a valid File Project.Set. In this one the entry is missing [Languages / Fonts].

Remedy:

Select the project in project management, press the right mouse button and select the menu item "Change". Acknowledge the dialog with OK. Now the file is reinitialized Projekt.Set.

RG0017: "The language XYZ referenced on the non-existent font ZYX!"

Reason:

The directory <Project_name> \ is not a valid File Project.Set. This entry is missing the [Languages / Fonts].

Remedy:

Select the project in project management, press the right mouse button and select the menu item "Change". quit

RG0018: "The text with the Text ID 'XYZ' could not be found!"

Reason:

A text was created and configured, but was subsequently deleted. The referential integrity of the project has been violated.

Remedy:

Delete all references in this text from your mask / ElaGraph programs and projects, this new text.

RG0019: "The text 'XYZ' is assigned a reserved ID!"

Reason:

It was projected a text whose serial number is the text of a system. The text ID is therefore invalid.

Remedy:
Delete all references in this text from your mask / ElaGraph programs and projects, this new text
RG0020: "The ID 'XYZ' was already assigned to the text 'ZYX'!"

Reason:
A text-ID is assigned more than once. The referential integrity of the project is at risk!
Remedy:
Delete all references of ZYX from your mask / ElaGraph programs and projects, this new text.

RG0021: "'! DEFAULT_DESKTOP' The default mask is missing!"

Reason:
It was created a project that has no background mask (equivalent to the desktop in Windows).
Remedy:
Create a mask in the form designer. Then, automatically! DEFAULT_DESKTOP generated

RG0022: "! There an unknown element in the generation defined DEFAULT_COMPONENTS was canceled!"

Reason:
In the! DEFAULT_COMPONENTS a prototype has been defined, the resources of the generator is unknown. This is an indication of a version mismatch of the products!

Remedy:
Start Version.exe and check the version numbers for components
Delete the incorrect item from the! DEFAULT_COMPONENTS.

RG0023: "The mask number is in the demo version is limited to 10 screens ...."

Reason:
You do not have a dongle on your computer or the dongle plugged in for this version eStudio not enabled. In a trial without a dongle, the screen number is limited.

Remedy:
Purchase a full version at your local dealer.

RG0024: "The mask number is limited in this version is limited to n masks."

Reason:
You have purchased a light version of eStudio, or put only a limited kind dongle on your PC

Remedy:
Purchase a full version at your local dealer
RG0025: "A display field on the 'XYZ' is placed on the property 'data point' ..."

Reason:
In the XYZ screen, there is a display that has been configured to display type data item name. This feature will be implemented in the next version.

Remedy:
Please remove the mask price for the display, which is parameterized on data item name.
RG0026: "The EEPROM address 0x for an input element in the mask 'XYZ' was ever the data point ID: assign 'ZYX' The resource is inconsistent on the target!"

Reason:
In the XYZ screen, there is a field that has the property "to the EEPROM write." This address is already assigned to a data point "ZYX".
Remedy:
Edit the price and change the address mask 0x???? of the input field.
RG0027: "? The EEPROM address 0x for a key element in the mask 'XYZ' was ever given for the data item 'ZXY'!"

Reason:
In the XYZ screen, there is a key element that has the property "to the EEPROM write." This address is already assigned to a data point "ZYX".
Remedy:
Edit the mask price and change the address 0x?? of said switch element.
RG0028: "An attempt was made to use a label type as Static label!"

Reason: Inconsistency of the database (internal error).

Remedy: Send your project to check faulty email Elrest.
RG0029: "Could not create file Ressource.res"

reason:
The resource generator could not generate the file. This may be of the following reasons:

There is no more space on your hard disk.
Another program has opened the resource file exclusively.
There are too many open files.

Remedy
Make room on your drive.
Close all programs that have opened the Ressource.res.
Increase the entry "Files =" in the Config.Sys to a higher value and restart your computer again.
RG1000-1999: "Various reports ..."

Error codes 1000-1999, double click for editing possible!

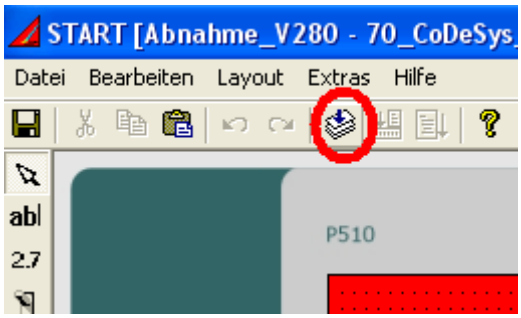
This is only possible if the mask was not re-saved, otherwise you start your new ResGen!

Reason:
The resource generator checks to the elements whether the entries are complete and correct. Missing e.g. the data point is specified, a message.

Remedy:
By simply double-clicking on the error message, the form designer opens with the mask and also open the dialog for setting respective control.
Condition is that no other form of dialogue is very open.
In addition, the mask may not have been changed since the larger, creating a save place. Otherwise, performs a selection from ResGen possibly to open the wrong controls.
Start in this case, simply re-ResGen and select the error again.

5.8 Download for the target system

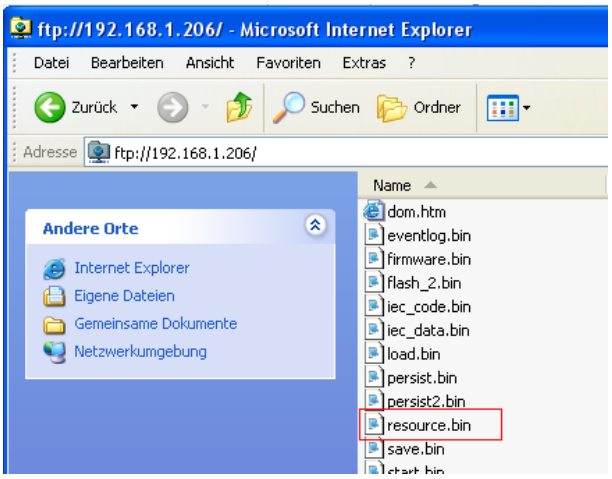
ElaDesign from the resources generated file. These can be loaded directly from ElaDesign into the target system.



Between the operating systems are the following differences:

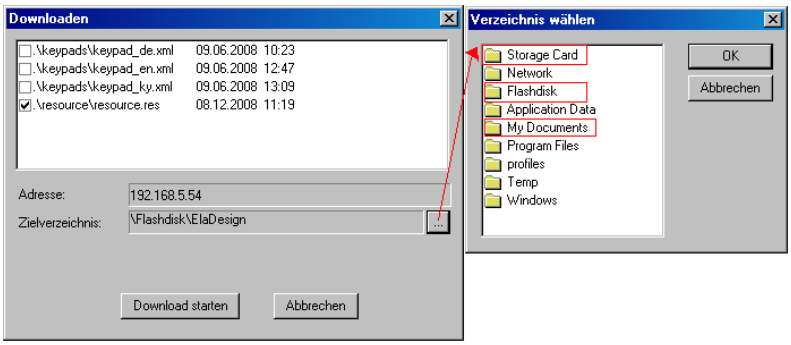
Windows CE

The Resource.res file is stored on the target system as Resource.bin

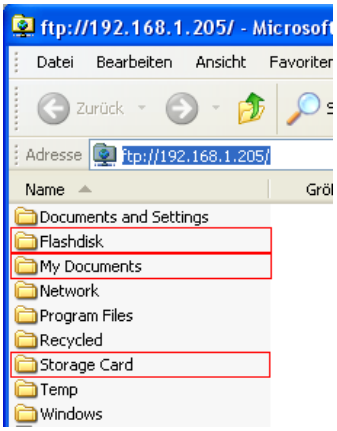


Windows CE.net

When downloading to a Windows CE device, the download directory to be determined



Windows CE.net



<u>The file can be stored under Resource.res:</u>

- "My Documents"
  This is entirely in RAM and after a power outage briefly.The benefit is, during the development phase can be tested quickly without a flash process.
- Storage Card"
  in this case is the external CF (CampactFlash).
  It is strongly recommended to store the data in order to facilitate the exchange and application performance reasons in the CF.
  Disadvantage, it is imperative that a CF may be present.
  The status, whether a media is inserted or not,
- Flash “Disk"

Here the data is stored on the internal flash. Because of this flash is also the operating system is the flash process is slower than in CF. A further disadvantage is the slow access of internal CF, especially in conjunction with CoDeSys.
One advantage is that the CF can be omitted.
elrest recommends the use of an external CF.

- Memory Stick
  Here the data is stored on a storage medium connected to the USB port. (External hard disk, card reader, USB stick). Here, the connection is allowed by several media. The name assigned is based on the connection sequence:
  Memory Stick
  Memory Stick2
  Memory Stick3
  Memory Stick N ..

After starting on the panel ElaDesignCE.exe is in the order:

- • "\ My Documents \ resource.res"
- • "\ Storage Card \ ElaDesign \ resource.res
- • "\ Flash Disk \ ElaDesign \ resource.res"

for the file "resource.res" and executes them.

6 Tips and Tricks

This chapter should help you with the programming by "Good practice" is set forth in dealing with Elrest devices.

6.1 To ElaDesign

background:

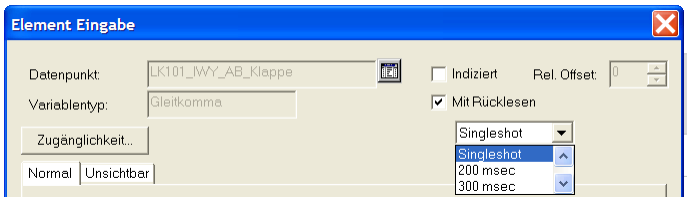
The mask changes between already loaded in memory masks is indeed accelerated if the goal mask is already loaded, but the overall system load

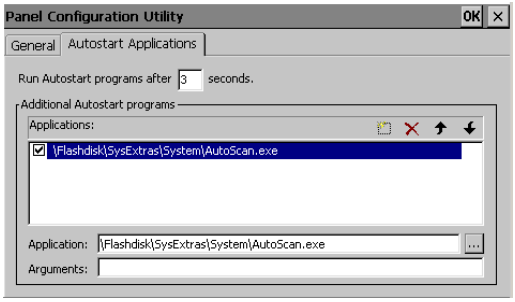
solution:

If possible, keep only the mask used in the memory. They use the "next dialog with Cancel." This means that load at changing mask, target mask, and the source mask is destroyed.

6.1.1 Data Points

When you use enter values which are only changed by the operator as the update time "single shoot". This means that the value is updated when you open the form from the single data point
And now waiting for operator input.





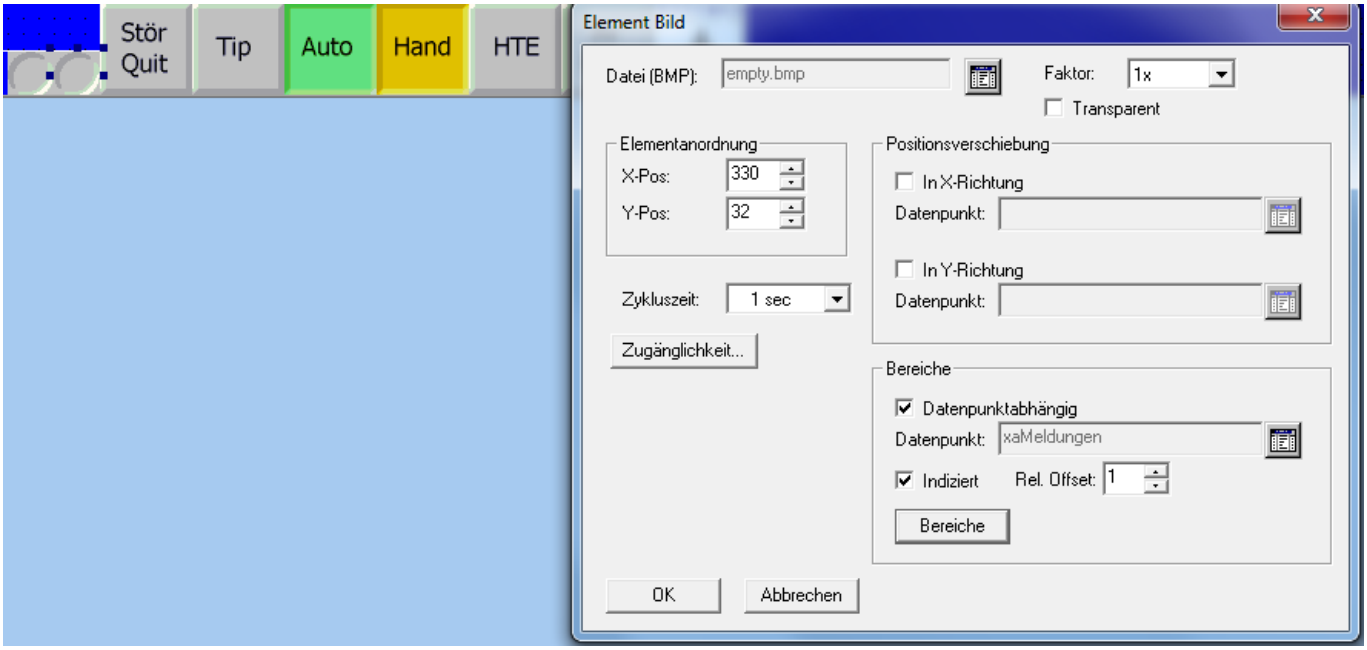
Display fields:

Consider whether a quick update makes sense. E.G. has a room temperature either in 1Sekundentakt, yet in 2-second clock will be displayed.
Use as default instead of 1 second more like 3 seconds. This does not mean that the change in value is always displayed after 3 seconds, but that this will be done in the worst case, after 3 seconds.

6.1.2 *Bt array instead of many individual bits*

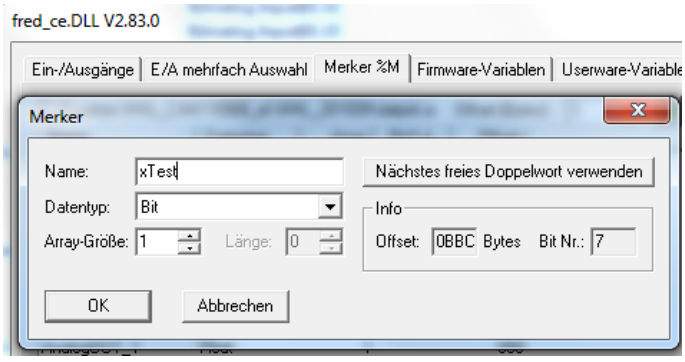
The communication can be accelerated significantly if less data to be transmitted.

The communication between the HMI and CoDeSys here is no exception,
Below under eStudio / WAC only the 4 variables are created as Bitarray32 what each corresponds to a DWORD with CoDeSys.
This has the further advantage that CoDeSys not has to be permanently closed and open during the project, should you need another variable that should be created under eStudio / WAC.
example:
A message "Stop after end of cycle " should be to appear.
The existing variable is used on the x messages bit 1

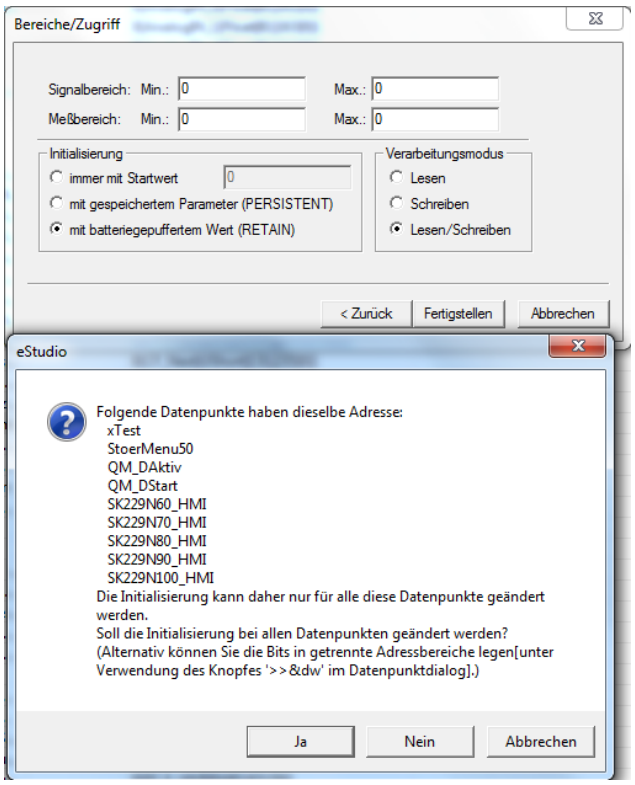


CoDeSys in this bit of the tag is now registered and used in a review as a comment (Blue)

Create individual bits:
However, should individual bits to be created, it must be noted that only 32-bit memory, a distinction between
Constant / Persistent / Retain can be done.
When you create the variable is unfortunately not visible, are in the past which memory bits of the double word.
Therefore it is advantageous to make a note to this separately.
Example:
You want a new one xtest variable (bool) Create as retain. Suggests you Eladesign bit7 of the DWORD to use to address 0x0BBC.



After you have created all things, learn to conclude that the bit is 0 .6 0x0BBC DWORD at address Are **NOT** the type retain, however, do not know whether the type Constant or Persistent. This she learned from other attempts. Will remain at this point remains the key to press Cancel, and start the creation of the variable again.



Make a note so when creating variables of type Boolean.
for example:

0x0BBC = Constant
0x0BC4 = Persistent
0x0BC8 = Retain

6.1.3 *Advantages of flag variables*

Do not use natively on the PLC handler.

Normally the process accesses to variables from CoDeSys eStudio / WAC. The data points are imported at the start of CoDeSys eStudio into this

However, it is the other way around: data created under eStudio can also be imported into eStudio. These uses eStudio the CoDeSys icon file.

Advantage:
- Existing CoDeSys projects can be embedded easily into a eStudio/WAC- project.

Disadvantages:
- Reduce long compile times of resource needed for each code change.
- Data inconsistencies.

6.1.4 *Advantage Fixed Fonts*

Waiver of TTF
TrueType fonts are elegant, beautiful and scalable
Level these properties need to considerably greater system resources.

Keep this in mind when planning. A shown on the HMI TTF text needed to display approximately 20 ms.
Have you now, for example

6.1.5 *Voice Switching*

The language change is best from the Windows country code and the national flag, or the Inter Nations shortcut. For this, use a combo or list box.

This has the following advantages:

- nPrimaryLanguage (bB 1033 for English) does not change when more languages will be added.. It is not valid for the switchable parameter.
- • The use of symbols ensures that each country only one time must be shown. If for example German is not as flag (D), but as a "German" then it must be named entry in the most recent national language differently, eg German, allemagne, inglese, nemacja

Änderungen rückgängig machen

6.2 To CoDeSys

6.2.1 Task Configuration

Create your own HMI task.
This can be under CE with the same interrupt HMI update run the operating system.
So you get a syncronicity between CoDeSys HMI and the operating system.
The image processing, task reactions etc significantly increased compared with a single task configuration or a free-running configuration.
Select a task so property "External Event Driven," or Visuloop ElaDesignLoop.

6.2.2 *Programming language*

Between the various programming languages there are significant differences in code size and execution speed.
The programming language "Structured Text" is therefore the SFC, FBD, CFC, COP, or preferable, because it reaches a high speed in comparison with smaller code size.

CoDeSys call:

Not all code must be run with each cycle.
Consider whether there are program components that must be called only occasionally.
This could for example be:

System Clock: 1x Sec
Alarm Management: 2x Sec
Initialization: 1x at startup

6.2.3 Program crash

Program Crashes are almost always programming error.

Typical are:

- Faulty pointer access
- Faulty access in an array index

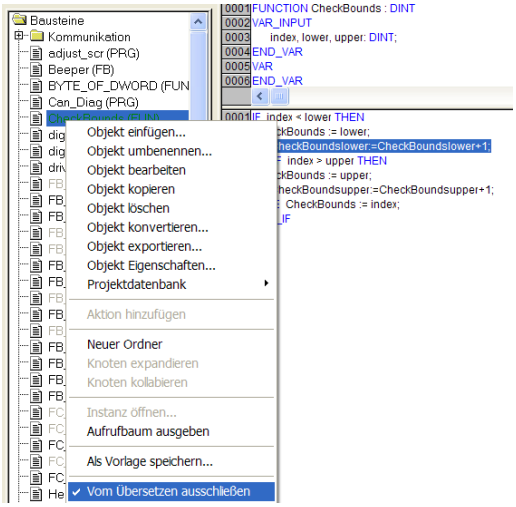
Checkbounds()

As a control array of over-and undershoots, the CoDeSys function CheckBounds be used.
See CoDeSys Help

The function is invoked by the system when it is present and there is an indexed access. In conjunction with a counter can be an effective diagnostic tool.

```
0001 FUNCTION CheckBounds : DINT
0002 VAR_INPUT
0003     index, lower, upper: DINT;
0004 END_VAR
0005 VAR
0006 END_VAR

0001 IF index < lower THEN
0002 CheckBounds := lower;
0003     CheckBoundslower:=CheckBoundslower+1;
0004 ELSIF index > upper THEN
0005 CheckBounds := upper;
0006     CheckBoundsupper:=CheckBoundsupper+1;
0007 ELSE CheckBounds := index;
0008 END_IF
```

The ABB: The counter in line 3 and 6 are declared global. Is a counter increments determine, in this way there is a index injury instead, which will be corrected by Checkbounds



In order to determine where this takes place, set a breakpoint at line 3 and Line 6.

If the Breakpont will be reached then step into next. After a few steps you will reach the code point of the injury.

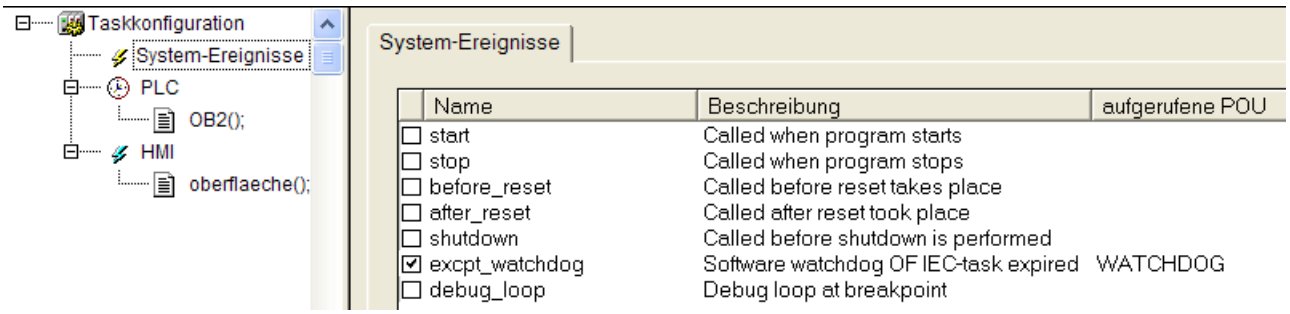
Wichtig:

Haben sie den Fehler behoben, so schließen Sie die Funktion Checkbounds() wieder von der Coderzeugung aus.
Checkbound ist äußerst Code- und Rechenintensiv**.**

Important:
Have you fixed the problem, connect the function CheckBounds () again by the code generation.
Check Bound is extremely code – and computation intensive.

6.2.4 *Watchdog*

If a task is due to a programming error, there is the possibility to CE devices CoDeSys trigger under a watchdog.
This could generally be as follows.
In your code you awarded in several places ID's.
The watchdog is triggered, the ID is written to a file, which can be read later.

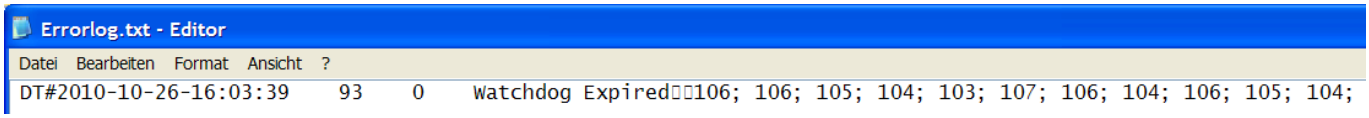


ST

```
(* Trigger Watchdog *)

Watchdog(PRG)

IF psFW=0 THEN
 psFW:= FWGetStructPointer(0);
END_IF;

FwTurnDisplayOn(TRUE);
PultMaskOpen(99);

(* Panel Watchdog *)

(* Write Error File  *)

IF hFile=0 THEN
              hFile := SysFileOpen(FileName:=sFilename, Mode:='a');
END_IF;


sTextToWrite:= DT_TO_STRING(SysRtcGetTime(1));
sTextToWrite:= CONCAT(sTextToWrite,'    ');
sTextToWrite:= CONCAT(sTextToWrite,INT_TO_STRING(psFW^.uRemanent.sMasterEEprom.nRebootCounter));
sTextToWrite:= CONCAT(sTextToWrite,'    ');
sTextToWrite:= CONCAT(sTextToWrite,INT_TO_STRING(ID));
sTextToWrite:= CONCAT(sTextToWrite,'    ');
sTextToWrite:= CONCAT(sTextToWrite,'Watchdog Expired');
sTextToWrite:= CONCAT(sTextToWrite,'$n$l');

IF hFile<>0 THEN
                     dwReturn := SysFileWrite(File:=hFile, Buffer:=ADR(sTextToWrite),
Size:=LEN(sTextToWrite));
END_IF;

(*SysStrCpy(sTextToWrite, INT_TO_STRING(nID[0]));*)
sTextToWrite:= INT_TO_STRING(naID[0]);
FOR i:= 0 TO 99 BY 1 DO
       sTextToWrite:= CONCAT(sTextToWrite,'; ');
       sTextToWrite:= CONCAT(sTextToWrite,INT_TO_STRING(naID[i]));
END_FOR;
       sTextToWrite:= CONCAT(sTextToWrite,'$n$l');
IF hFile<>0 THEN
                     dwReturn := SysFileWrite(File:=hFile, Buffer:=ADR(sTextToWrite),
Size:=LEN(sTextToWrite));
END_IF;
```

```
SysFileClose(File:=hFile);
```

The file was then look like the following:



6.2.5 Netzwork variables

Broadcast

Don´t use as a broadcast the preferred address 255.255.255.255 of 3 S

Do. You have only one communication partner, enter only the IP of the partner.

Do you have multiple partners, enter a smaller area, e.g.

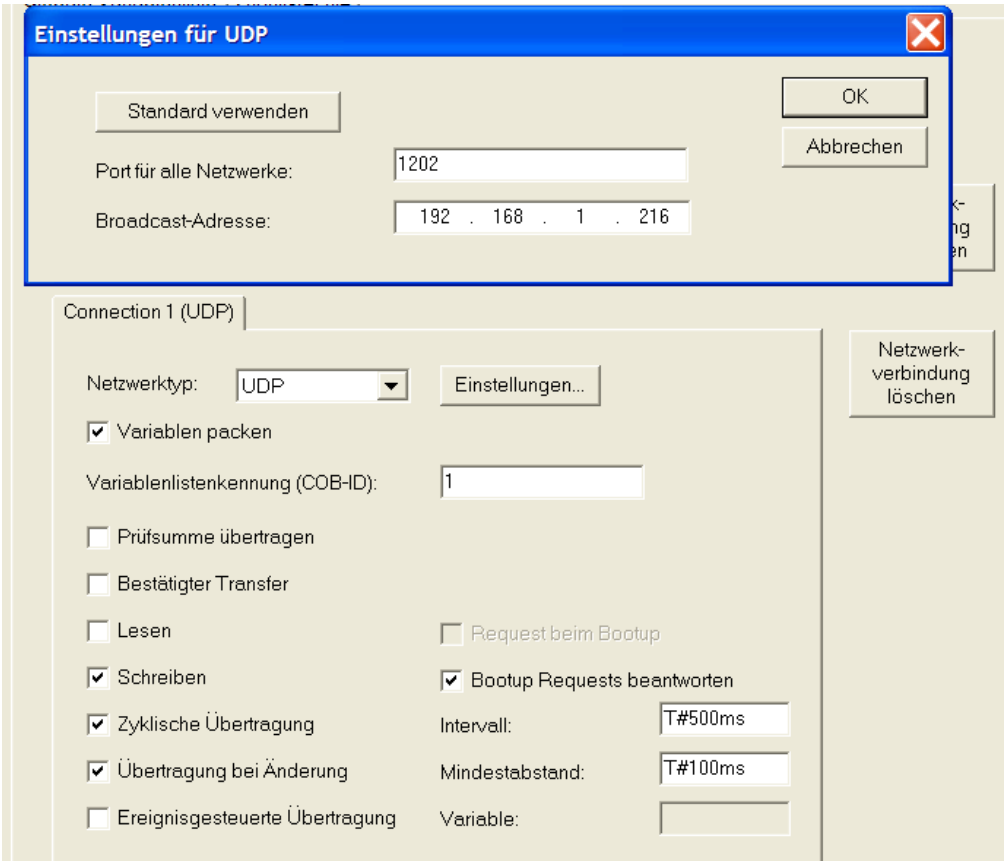
You have three controls:

192.168.1.200

192.168.1.210

192.168.1.211

With Subnetmask 255.255.255.0



Data point update:
Less is more. Choose a larger update interval and minimum distance

Communication monitoring

The cyclical transmission (see illustration above) at least 2x the second, a message is transmitted or received by the communication partner.
The result can be quickly a monitoring with timeout program.

ST

```
 (*#########################################################################
      Überwachung NetVar-Kommunikation
#########################################################################*)
PROGRAM RemoteKommunikation
VAR
      XConnecttoRemote    :BOOL;
      NReceiveCount       :DWORD;
      nReceiveCount_old   :DWORD;
      Tactualtime         :TIME;
      TLastConnection     :TIME;
END_VAR




tActualTime  :=TIME();
nReceiveCount:=pNetVarPDO_Rx_Diagnosis_UDP[0].nReceiveCount;
IF nReceiveCount <> nReceiveCount_old THEN
    TLastConnection :=tActualTime;
    nReceiveCount_old     :=nReceiveCount;
END_IF;
xConnecttoRemote:=tActualTime- tLastConnection < t#4S ; (* Anzeige ob Verbunden *)
```

6.2.6 *Tracking from CoDeSys manage telnet parameter*

So angepasst dass die Befehle für CoDeSys ersichtlich sind..

For the simple series commissioning of Elrest, controls, or for their update, it is recommended to make initialization by one step in CoDeSys .

The settings under Telnet will be dropped then completely.

For this, the documents platform CE_DE and Plattform_µE were adjusted under the heading telnet settings so that the commands for CoDeSys are evident.

ST

```
 (*#########################################################################
      Telnet-Parameter aus CoDeSys
#########################################################################*)
IF NOT xInit THEN
      psFW:= FWGetStructPointer(0);
     (*C  1 Byte*)       psFW^.uRemanent.sMasterEEprom.bESBActivated   := 1;
      (*O 26  Byte*)     psFW^.uRemanent.sMasterEEprom.nDisplayBrightness:= 255;
      xInit:= TRUE;
end_if;
```

6.2.7 *virtual modules*

For simulations are needed often "virtual modules because the actual hardware is not yet available. Here's EA should be simulated, but the problem here is that no inputs from CoDeSys can be described. Workarounds: Writing to access inputs via pointers.

Description: ESB module missing 6 till 8. These two modules are simulated by the transfer variables dwINPUT_T1 [0 .2]

ST

```
 (*##########################################################################
      Virtueller Modus
##########################################################################*)
VAR
      dwINPUTS_M AT %IB0 :ARRAY[0..8] OF DWORD;
      dwINPUTS_T1        :ARRAY[0..2] OF DWORD;
END_VAR



pzdwINPUTS_M:=ADR(dwINPUTS_M);
FOR i:=0 TO 2 BY 1 DO
      pzdwINPUTS_M      :=ADR(dwINPUTS_M[i+6]); (* Ermitteln des
Speicheradresse *)
      pzdwINPUTS_M^     :=dwINPUTS_T1[i];       (* Direktes Schreiben in den
Speicher *)
END_FOR;
```

6.2.8 *O access without ElaDesign data points:*

On the device inputs and outputs can be accessed without a data point configuration.
For this, the addressing for the most common devices:

ST

```
VAR
dwaOutputs  AT %QD0     :ARRAY[1..10] OF DWORD;
dwaInputs   AT %ID0     :ARRAY[1..10] OF DWORD;
END_VAR

dwaInputs[0];     (* 32 Digitaleingänge des nullten ESB-Slave =
Mastersteuerung z,B. P303, CM1xx..)
dwaInputs[0].0; (* Erster digitaler Eingang der Masterteuerung = 1.Bit)
dwaInputs[0].1; (* Zweiter digitaler Eingang der Masterteuerung = 2.Bit)

dwaInputs[1];     (* 32 Digitaleingänge des ersten   ESB-Slaves z.B. CS1xx,
AIO8, MS7 *)
dwaInputs[2];     (* 32 Digitaleingänge des zweiten ESB-Slaves z.B. CS1xx,
AIO8, MS7 *)
```

Note:
For devices with DIO's e.g. the Slave Combo CS101, CS110, the digital channels as basic and run / or inputs. I.e. an output set, via these ESB or CanOpen be read back.
This allows you to control whether the output is actually set.

ST

```
CASE iStep OF
...
2: dwOutput[8].6 :=TRUE;      (* Schutztürverriegelung öffnen *)
    IF dwInput[8].6 THEN      (* Verriegelung wurde erfolgreich angesteuert *)
        iStep:=3;
    END_IF;
3: IF xSafetydoorOpen THEN    (* Warte bis Schutztür geöffnet *)
```

6.2.9 *Analog configuration*

Analog channel on the master controller or the slave must be configured.
This is done via the functions IO01.lib with CoDeSys.

To make this easier for you to ElaConfigAIO8.lib were performed.
The instance must be called cyclically. The execution of this is more cyclical, ending in a return value of "Success" or after 2 seconds in a timeout.
The instances can be arranged in succession, so that acts of the output of an instance at the start of the next instance

ST

```
PROGRAM PLC_PRG
VAR
	XSuccess		:ARRAY [0..2] OF BOOL;
	XInitFailt		:ARRAY [0..2] OF BOOL;
	XChannelnoFait :ARRAY [0..2] OF BOOL;
	UsintChannelnoFailt:ARRAY [0..2] OF USINT;
	instElaConfigAIO8	:ARRAY [0..2] OF ElaConfigAIO8;
END_VAR

instElaConfigAIO8[0](				(* P303 *)
	xReset			:=TRUE ,
	usiModulno		:=0 ,
	xComboDevice		:=0,
	usiConfigCodeChannel0 :=5,
	usiConfigCodeChannel1 :=5,
	usiConfigCodeChannel2 :=5,
	usiConfigCodeChannel3 :=5,
	usiConfigCodeChannel4 :=54,
	usiConfigCodeChannel5 :=54,
	usiConfigCodeChannel6 :=54,
	usiConfigCodeChannel7 :=54,
	xSuccess=>		xSuccess[0] ,
	xInitFailt=>		xInitFailt[0] ,
	usintChannelnoFailt=> usintChannelnoFailt[0]);

(* ------------------------------------------------------------------------------ *)

instElaConfigAIO8[1](		(* Erstes CS110 *)
	xReset			:=xSuccess[0] ,
	usiModulno		:=1 ,
	xComboDevice		:=1,
	usiConfigCodeChannel0 := 5,
	usiConfigCodeChannel1 :=5 ,
	usiConfigCodeChannel2 :=5,
	usiConfigCodeChannel3 :=5,
	usiConfigCodeChannel4 :=54,
	usiConfigCodeChannel5 :=54,
	usiConfigCodeChannel6 :=54,
	usiConfigCodeChannel7 :=54,
	xSuccess=>		xSuccess[1] ,
	xInitFailt=>		xInitFailt[1] ,
	usintChannelnoFailt=> usintChannelnoFailt[1]);

(* ------------------------------------------------------------------------------ *)

instElaConfigAIO8[2](		(* Zweites CS110 *)
	xReset			:=xSuccess[1] ,
	usiModulno		:=2 ,
		xComboDevice		:=1,
	usiConfigCodeChannel0 :=5,
	usiConfigCodeChannel1 :=5 ,
	usiConfigCodeChannel2 :=5,
	usiConfigCodeChannel3 :=5,
	usiConfigCodeChannel4 :=54,
	usiConfigCodeChannel5 :=54,
	usiConfigCodeChannel6 :=54,
	usiConfigCodeChannel7 :=54,
	xSuccess=>		xSuccess[2] ,
	xInitFailt=>		xInitFailt[2] ,
	usintChannelnoFailt=> usintChannelnoFailt[2]);
```

6.2.10 .Backup Restore

To backup of the / flash disk / EleDesign / can be created only if

Not already a backup was created on the map. For this it is an advantage to rename an approximately existed back-up.

ST

```
(* ###############################################################################################
       Safe to CF- Card
###############################################################################################*)
IF xSaveToCF THEN
       (* aelters Backupverzeichnis umbenennen , mit Datum/Uhrzeit versehen *)
       _Date_and_Time:= SysRtcGetTime(1);
       FwGetDATE_TIME(       _Date_and_Time, ADR(_Date), ADR(_TIME));
       SysStrCpy(sRename,'Storage Card\Control\visio_P205V\Backup_');
       sRename:=CONCAT(sRename,DATE_TO_STRING(_Date));
       sRename:=CONCAT(sRename,'_');
       sRename:=CONCAT(sRename,TIME_TO_STRING(_Time));
       SysDirRename('\Storage Card\Control\visio_P205V\Backup',sRename);
       FwCFSave(1); (* Sicherung erstellen – Anlage sollte während diesem Schritt nicht
produzieren *)
       xSaveToCF:=FALSE;
END_IF;
```

After the backup, an update can only be carried out if the directory on the map of "Backup" to "Update" has been renamed. Any existing backup is here, also with the date and time, renamed. By the access to a file - in this example, the eventlog.am - can be checked, whether it the file, or in the directory.

By accessing a file - in this example the Eventlog.bin - can be checked whether there is the file or the directory.

ST

```
IF xRename_BtoUpdt THEN
	xRename_BtoUpdt:=FALSE;
	f_Handle:=SysFileOpen('\Storage Card\Control\visio_P205V\Backup\ElaDesign\eventlog.bin',
'r');
	xBackupDirOK :=(f_Handle>0);
	IF xBackupDirOK THEN
		SysFileClose(f_Handle);
		_Date_and_Time:= SysRtcGetTime(1);
		FwGetDATE_TIME(	_Date_and_Time,	ADR(_Date),	ADR(_TIME)
	);
		SysStrCpy(sRename	,'Storage Card\Control\visio_P205V\Update_');
		sRename:=CONCAT(sRename,	DATE_TO_STRING(_Date));
		sRename:=CONCAT(sRename,'_');
		sRename:=CONCAT(sRename,TIME_TO_STRING(_Time));
		SysDirRename('\Storage Card\Control\visio_P205V\Update',sRename);
		SysDirRename('\Storage Card\Control\visio_P205V\Backup','\Storage
Card\Control\visio_P205V\Update');
		SysFileDelete('\Storage Card\Control\visio_P205V\Update\ElaDesign\Update.ver');
		(* Wichtig : „Update.ver“ darf nicht wieder auf ein System zurückgesichert werden
*)
		ELSE
			;
			(* BackupDir in SD- Card not found *)
	END_IF;

END_IF;
```

6.2.11 Recipes

Recipes should be loaded down and saved preferably from CoDeSys, because you are a success or error feedback is received.

The maturity value is obtained via the iState. Recipes should be preferably from CoDeSys out be loaded and saved, because you are a success or error feedback is received. The maturity value is obtained via the iState.

ST

```
(* ##############################################################################################
	PROGRAMM LADEN
##############################################################################################*
)
CASE iRecipeStepLoad OF
	0:	IF xLoadParameter THEN
			xLoadParameter :=FALSE;
			iRecipeStepLoad:= iRecipeStepLoad+1;
		END_IF;


	1:	RecipeLoad(INT_TO_STRING(iProductNo)(*RecipeName*), ADR(iState));
		iRecipeStepLoad:= iRecipeStepLoad+1;

	2:	IF iState=0 THEN
				iRecipeStepLoad:= iRecipeStepLoad+1;
				(* Recipe load success *)
		END_IF;
		IF iState<0 THEN
				iRecipeStepLoad:=0;
				Glob.DatapointRecipeChanged:= FALSE; (*Error Loading Recipe*)
				iErrCodeRecipe:=iState+ 4200; (*Fehlermeldung*)
				PultMaskOpen(96);		(*Open ErrorMask*)
		END_IF;
	3:	iRecipeStepLoad:=0;
```

```
END_CASE;


(* ##########################################################################################
       PROGRAMM Speichern
##########################################################################################*
)

CASE iRecipeStepSave OF
0:     IF xSaveParameter THEN
              xSaveParameter :=FALSE;
              iRecipeStepSave:=1;
END_IF;


1:     iRecipeStepSave:=2;

2:     RecipeSave(
USINT_TO_STRING(usiCopyActualTo)(*RecipeName*),'Programmparameter'(*ReceipeDefinition *),
ADR(iState));
                     iRecipeStepSave:= 3;


3:     IF iState<0 THEN      (* Error *)
              iRecipeStepSave:= 0;
              xBeep:=TRUE;
              iErrCodeRecipe:=iState+ 4200(*ErrorMessage*);
              PultMaskOpen(96);
       END_IF;
       IF iState=0 THEN
              iRecipeStepSave:=4;
       END_IF;
4:     iRecipeStepSave:=0;
END_CASE;
```

Where the error messages as follows declared:

Log. ID	Deutsch
4000	RS_ERRWRITINGDP
4095	RS_ERRTIMEOUT
4096	RS_ERRFILEALREADYEXIST
4097	RS_ERRINVRECNAME
4098	RS_ERRINVDATAPOINT
4099	RS_ERRINVRECDEF
4100	RS_ERROR
4192	RS_ERRNOMEM
4196	RS_ERRFILEOPEN
4198	RS_ERRFILENOTFOUND
4200	RS_SUCCESS
4201	RS_INIT
4202	RS_READING
4203	RS_WRITING
4204	RS_LOADING
4205	RS_SAVING

Detail:

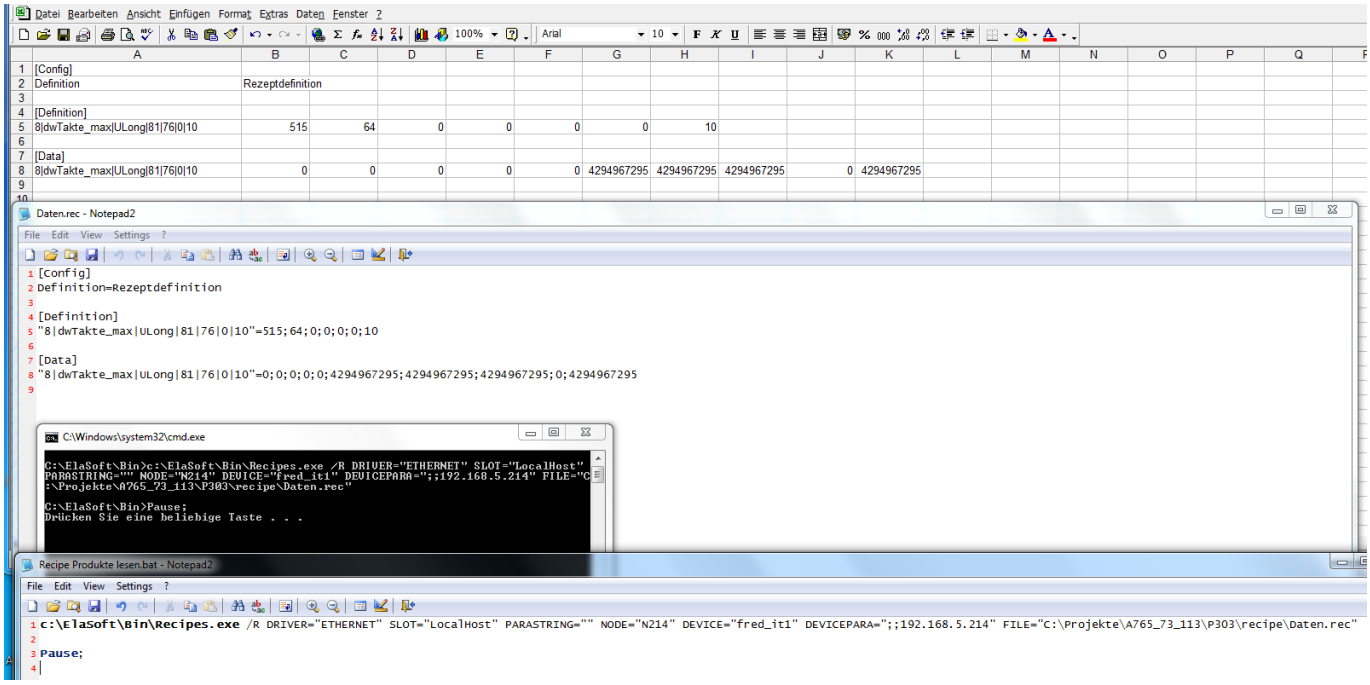
```
RS_SUCCESS              :=    0,
RS_INIT                 :=    1,
RS_READING              :=    2,
RS_WRITING              :=    3,
RS_LOADING              :=    4,
RS_SAVING               :=    5,
RS_ERRFILENOTFOUND      :=   -2,
RS_ERROPENFILE          :=   -4,
RS_ERRNOMEM             :=   -8,
RS_ERRDISKFULL          :=  -39,
RS_ERROR                := -100,
RS_ERRINVRECDEF         := -101,
RS_ERRINVDATAPOINT      := -102,
RS_ERRINVRECNAME        := -103,
RS_ERRFILEALREADYEXIST  := -104,
RS_ERRTIMEOUT           := -105,
RS_ERRWRITINGDP         := -200
```

6.2.12 *EStudio recipes without reading and writing*

Be relevant operating and production data collected in a recipe, it can be used for data collection.

With the example below (figure down) can control the data from any PC on the corporate network are recognized and imported into Excel.
The procedure is to be read from bottom to top.

Since this is not the files, but the variable contents are updated, this feature ensures that they run after the batch file got transferred and the current contents of the control variables.
1) Run the batch file that synchronizes the controller with the Data.rec Data.rec of the PC.
For this purpose the recipe.exe is called.
2) Open the Daten.rec via Exel and import the data.

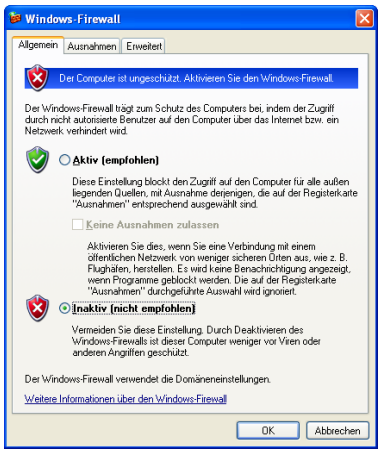


Windows Batch-Daten

```
Rem Daten_lesen.bat   (PLC → PC )

c:\ElaSoft\Bin\Recipes.exe /R DRIVER="ETHERNET" SLOT="LocalHost"
PARASTRING="" NODE="N214" DEVICE="fred_it1" DEVICEPARA=";;192.168.5.214"
FILE="C:\Projekte\A765_73_113\P303\recipe\Daten.rec"

Pause;

Rem Daten_schreiben.bat  ( PC → PLC)

c:\ElaSoft\Bin\Recipes.exe /W DRIVER="ETHERNET" SLOT="LocalHost"
PARASTRING="" NODE="N214" DEVICE="fred_it1" DEVICEPARA=";;192.168.5.214"
FILE="C:\Projekte\A765_73_113\P303\recipe\Daten.rec"

Pause;
```

6.3 Firewall

Disable your Windows Firewall at:
Start - Control Panel - Windows Firewall
when communication problems will be arise..
If then the communication problems are resolved, it is ensured that possible through proper configuration of the firewall, the communication is.



The following ports must be approved:
Eonline.exe for Port 5000 / UDP
Gateway.exe for Port 5001 / UDP
telnet port 23
http port 80
ftp port 20

Use MS Explorer 8.0 or higher for ftp and http requests.
Other browsers like Chrome, Safari, Mozilla and Firefox are not supported.

From the eStudio interface file transfers are performed with the target systems via FTP Copy commands

Blocking of Ports:
Blocking different port:
• 5000
• 5001
leads to a blocking of online communication.

6.4 Problems with online communication

Communication with CoDeSys is restricted:

Check the registry entry:

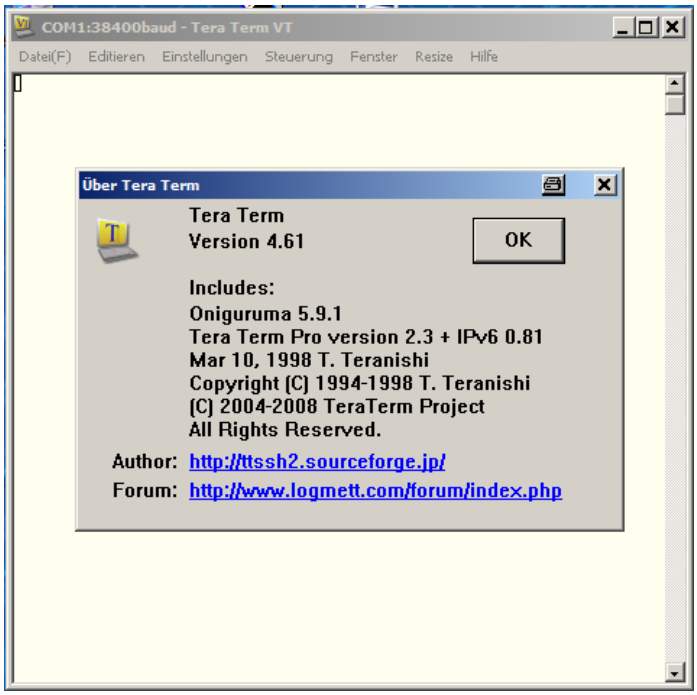
HKEY_LOCAL_MACHINE \ SYSTEM \ CurrentControlSet \ Services \ Tcpip \ Parameters \ Interfaces \ <INTERFACE_ID> \ MTU
This value must correspond to either 1500 or completely not exist. If a value is entered as 1500 (eg 1300), the telegrams are fragmented and not properly handled.

6.5 Recommended additional programs instead of Telnet

The recommended alternative to Telnet is built into Windows HyperTerminal.

Elrest recommends more comfortable but licensed version of HyperTerminal Private Edition 6.3 or higher, available from
http://hilgraeve.com/index.html

Royalty-free, we recommend the open source program Tera Term, available on
http://ttssh2.sourceforge.jp/



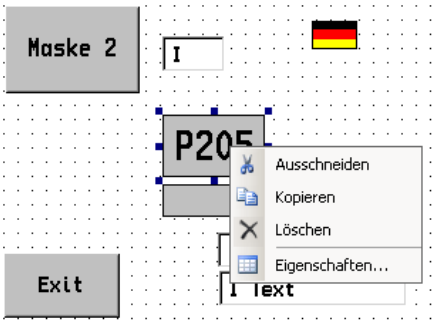
7 What´s News

7.1 What's New in version V2.83 to V2.91

7.1.1 Context menu

By clicking the right mouse button on an object in a form, a context menu opens.

Depending on what has been selected, e.g. an object or multiple objects the context menu will be adapted accordingly.



7.1.2 Support for high color depths

Support for high color depths for Windows CE devices

Through the support of 16-bit colors at the appropriate resolution and the support of the compressed bitmaps required. There are the two most widely used formats 'Joint Photographic Experts Group (JPEG), compression with any loss of quality for photos and images, and the 'Graphics Interchange Format (GIF), compression without any loss of quality for graphics, integrated.

The transfer to the target system is carried out in individual files.

Because the images or graphics have to be decompressed during so the runtime should be expected with a correspondingly higher visualization time.

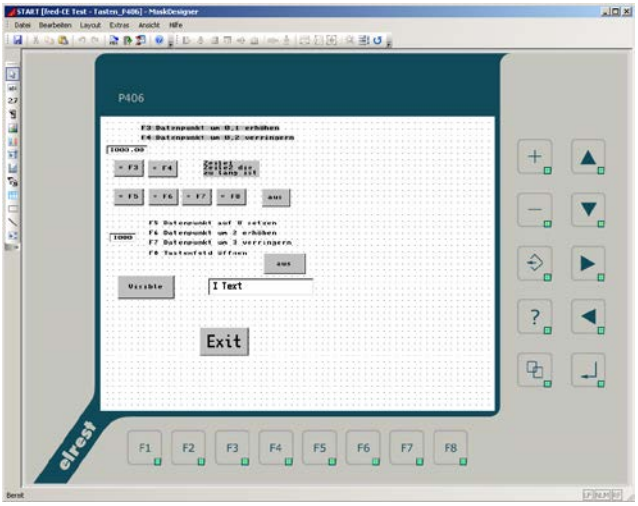
Animated GIF-files are not supported

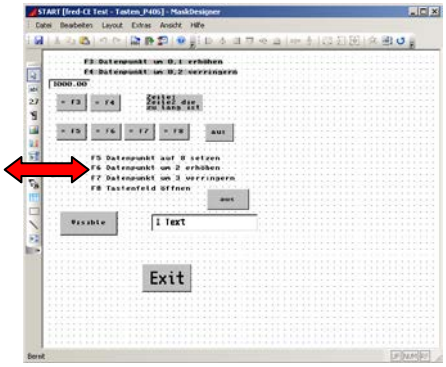
.

7.1.3 *Switching to full screen*

Switching between full screen and display screen (65)

Over a menu item or an icon in the toolbar in the text editor can be switched between a display panel with and without context.





7.1.4 *Changed behavior of objects*

Changed behavior when pasting objects

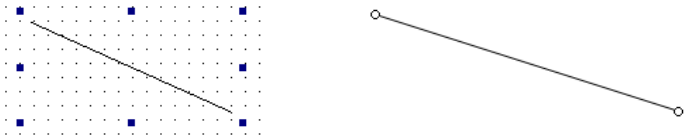
The behavior when inserting objects into a form should behave similarly as Microsoft PowerPoint.

When you insert an object without pulling the object is inserted in its standard size

When you insert an object with pulling the object inserted into the appropriate size if this is possible for this object.

Changed behavior to the property line

The object line is no longer to be limited by eight markers and changed by a respective special marker at the beginning and end of the line.



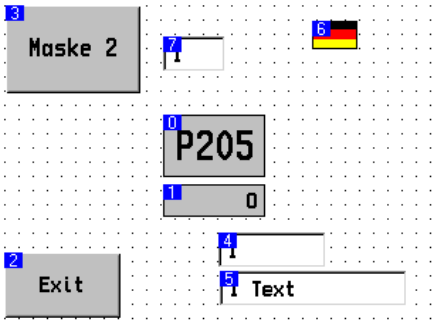
The altering of eight to two markers is associated with considerable effort. The form designer would have to be almost completely re-programmed. Therefore, this point is not considered further.

7.1.5 *Changed behavior of the Z-Order*

Z-Order

Currently, the Z-order in masks is equal to the tab order, so the order in which the objects of a mask can be activated using a keyboard. The tab order can be on the menu item Layout | Change Tab order 'or press Ctrl + D.

In this mode, each object is displayed on the current position in the Tab order. The smaller the number the farther forward you will find the object in the Tab order and the further down in the Z-order. By clicking on the objects, the order is fixed starting with 0.

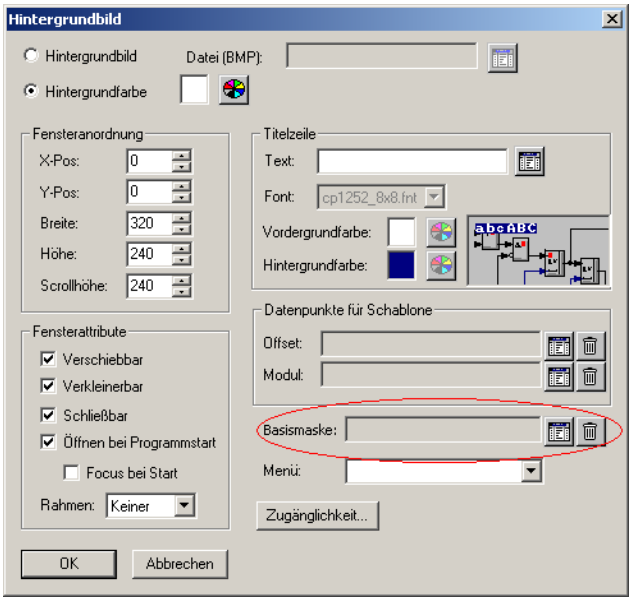


If only the order of individual elements can be changed by clicking and holding down the Ctrl key on the last object to retain its position, the starting position will be determined. Should e.g. the order of items 4 and 6 are reversed then one click first hold down the Ctrl key on the object 3 and then without the Ctrl key on the object 5

7.1.6 *Base masks*

. Die Objekte der Basismaske können nur in dieser verändert werden. Im Designer werden in der abgeleiteten Maske die Objekte der Basismaske nur angezeigt.

It introduces the basic functionality of masks, similar to the master masks in Microsoft PowerPoint. In such a basis mask can be positioned recurring objects. Each mask can serve as basis for mask another mask. The objects of the base form can only be changed in this one. In the derived mask from the Disigners will be displayed only the objects of the based mask.



The selection of a base occurs in the properties dialog of the background image. It will examine whether there is a circular relationship would result. E.G. Form1 -> form2 -> form1. This is not allowed

If a base mask will be selected for a mask base so the background of the mask is transparent by default and the background of the base screen is displayed. Is chosen for the derived mask a color or an image as the background so only the objects visible to the base form

As the mask size, the size of the base form is used.

The objects of a base form are in the tab order is always in front of the objects of the derived form and the Z-order always behind the objects of the derived mask

The resource generator generates from the derived mask and its base forms a complete mask which is then transferred to the target system

At runtime, the objects of the base form are treated the same as the objects of the derived mask.

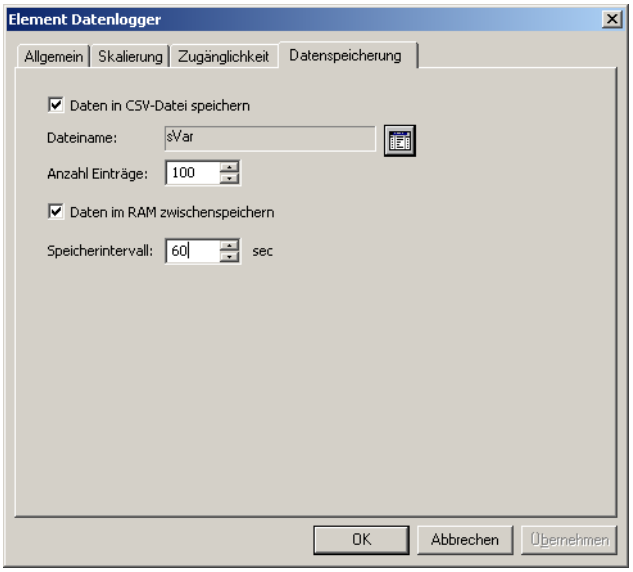
7.1.7 „Stretching" of images

„Stretching "of images

The object image can 'for BMP, JPG and GIF by dragging with the mouse will be changed to any size. Here, the aspect ratio can be changed.

7.1.8 Data in CSV file

Data into CSV file at the xt diagram



The data shows an xt-diagram can be also saved in a CSV file. Storage is done in Formet: <date>; <time>; <Value>. Because the xt-diagram is a graphical object, which is active only as long as the corresponding mask is opened, the data is recorded only in this period. As an ongoing writing can lead to a flash memory to its destruction, the data can be cached in RAM and then when you close the screen or in a specified time frame stored on the disk.

The following settings can be made therein:

- If the data is stored.
- File name including path as the data point.
- Number of entries to be saved. If this number is exceeded, the first entry will be overwritten. (Ring buffer)
- if the data is cached.
- memory to disk interval.

Save to other media:

- "\ Memory stick \" of the USB stick
- \ Storage Card \" for the CF-card
- \ Flash Disk \" for the internal flash disk

7.1.9 Grouping of objects

Several objects in a mask can be combined into one group. These two commands will be introduced:”grouping” and “grouping remove”. Objects of a group can not be marked individually. Settings to a group or to members of a group can not be changed

7.1.10 Transparent form background

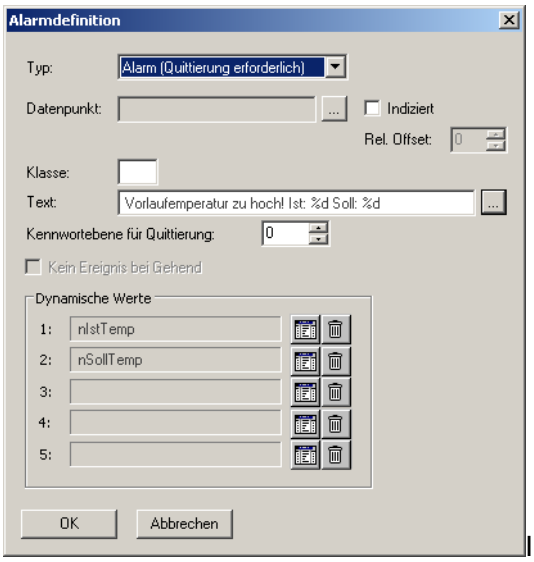
For the mask background (wallpaper), the additional option transparent is introduced. 'If this option is selected to be at run time to display only the objects of a mask and you can see the underlying masks. Active but remains the top mask. I.e. to achieve the objects of the underlying masks can neither keyboard (TAB) and mouse (touch).
Within the mask designer, this option has no effect. Exception: Was chosen for the mask a base mask so then the background of the base form shown.
transparent mask background

7.1.11 Clickable mask background

For the mask background (wallpaper) is an additional option, introduced clickable '. This option can be selected only when the option, tracing is active. If this option is chosen so that objects at run time an underlying mask with the mouse (touch) can be achieved. This will the underlying mask is getting active, but remains in the background.
Using the keyboard (TAB) it´s not able to change from the foreground mask in the background mask and vice versa

7.1.12 *Alarm entry with dynamic values*

Alarm messages can now contain up to five dynamic values



In the Alarm Definition can be selected up to five data points. The values are in the alarm text with the in the C programming language standard wildcards is inserted. For example, %d for a integer value or %s for a text. It is also a corresponding format as in C is possible. For example, an integer value by the placeholder % 03d three digits with leading zeros displayed. When you exit the Settings dialog will open an 'OK' is checked whether the number of wildcards with the matches of the data points and whether the corresponding data types are correct.

At runtime, when the alarm occurs the data point values determined and stored with the alarm entry.

7.1.13 *Backup*

From the Project Manager may remove an entire project to be secured and made out of such a security reconstructed. This includes all files that reside in the project path in a zip file will be saved.

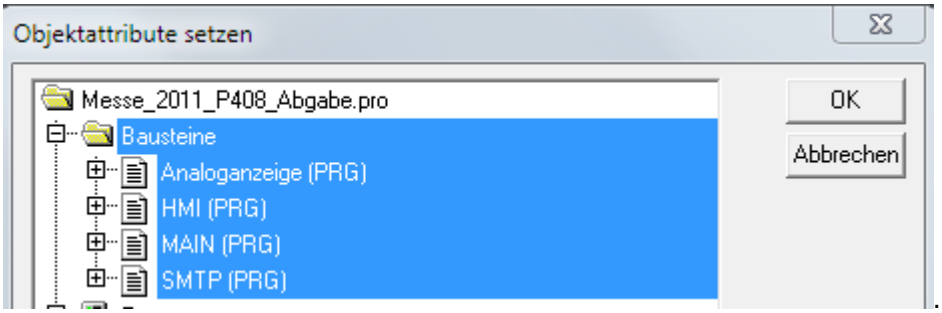
Additionally, all backed by the existing project in CoDeSys projects used files. This is for every project in CoDeSys, Batch'-mode, and stores the data in the <Project_name> _Backup.zip. These are included in the CoDeSys for archiving the information provided. It should be noted that at the time CoDeSys configuration and target files do not include it in the archive.
An automatic restore CoDeSys this archive are not necessary and can be done manually from the appropriate ZIP file out.

7.1.14 *Select a target at the start of CoDeSys*

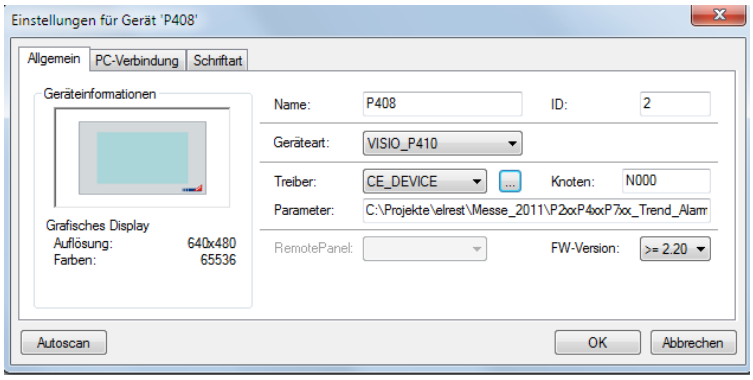
When calling from CoDeSys eStudio the target according to the base node in the set of device is selected. The mapping of device to CoDeSys target via an entry in the file, hardware.xml '

7.1.15 *Use of the symbol file from the CoDeSys project*

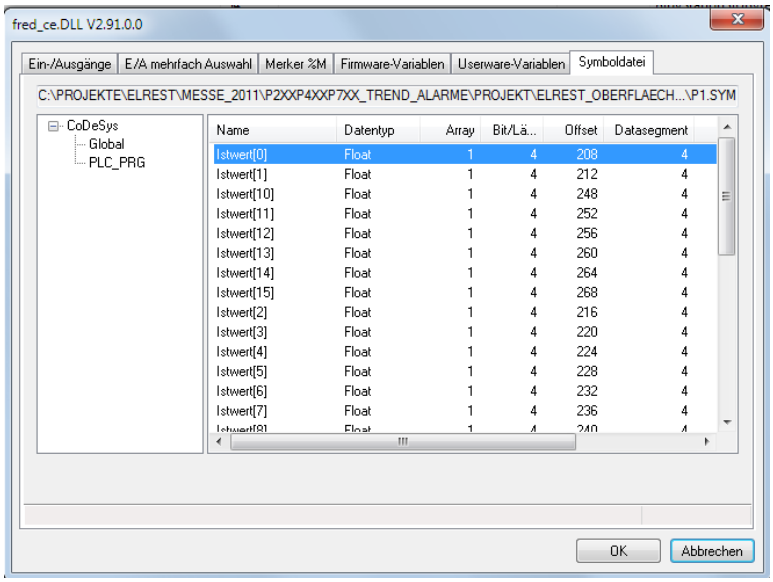
The CoDeSys project can be selected instances, the variables appear automatically in the symbol file.



The icon file must be entered when the device settings:

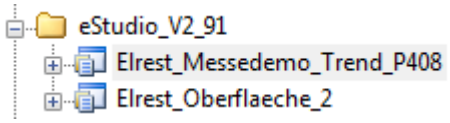


Then there are these data points to choose from

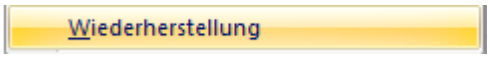


7.1.16 *Hierarchical folders Stukturen*

In the Project Management can be created folders:



In this folder, the various eStudio projects can be imported or pasted with restoring a backup.

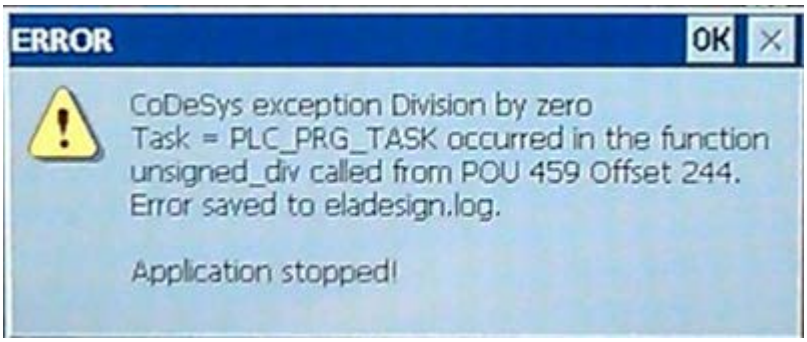


7.1.17 *Application error logging*

There are various traps such as:

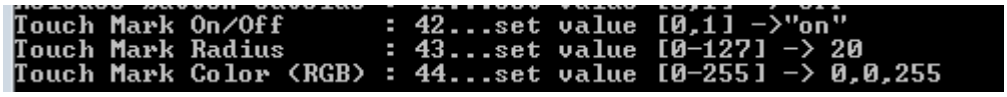
- Division by Zero
- Incorrect pointer access
- Alignement
- etc..

recognized, and in the file "eladesign.log" logged.



7.1.18 *Touch Marker*

Under telnet options :



A touch marker can be configured with radius and color. So you can get a quick feedback on a touch event.

7.1.19 Advanced data logger

: The previous data logger could

- Chart Record (X-t-Diagram)
- X-Y Diagram

presented. In the extended type graph can be stored predefined data points in the background. With this element, the values can be loaded on a daily basis, zoomed, scrolled and measured with the cursor. Thus, on one mask more graphs can be shown

More in the chapter : Datenlogger.

7.1.20 Support with Teamviewer

With a menu item you can directly activate the remote maintenance of our support team

With the tool „Teamviewer“ you can admit our support team to operate the eStudio's. Thus, questions can be answered simply and effectively in dialogue.

8 Support

Hotline

For additional assistance or information, you can use our hotline at the following times:

Mon-Fri: 8:00 to 12:00 and 13.00 - 16.30

: Outside these hours, please contact us by e-mail or fax achiev

Phone:++49 (0) 7021/92025-33
Fax: ++49 (0) 7021/92025-29
E-mail: hotline@elrest.de

Training und workshops

We offer training and workshops on project-related products at elrest

For more information, please contact our sales departmen

PhoneT: ++49 (0) 7021/92025-0
Fax: ++49 (0) 7021/92025-29
E-mail: *vertrieb@elrest.de*

9 Historie

Date	*Name*	*Chapter*	*Change*

© 2012 elrest Automation Systems Inc. All rights reserved. *information contained in this document is subject to change without notice, and represent a commitment on the part elrest Automation Systems Inc., the Software and / or databases described in this document are subject to a License Agreement and a Confidentiality Agreement. The software and / or databases may the agreement be used or copied only in accordance with the conditions. It is illegal to copy the software on any medium, provided this is not expressly permitted in the license or nondisclosure agreement. Without the express written permission of elrest Automation Systems Inc. may not reproduce this manual or parts thereof for any purpose in any form by any means, electronic or mechanical, including photocopying and recording, or transmitted.*
Illustrations, descriptions, dimensions and technical data correspond to the circumstances or intentions at the time of printing this brochure. Changes of any kind, particularly those resulting from technological progress, economic performance or a similar result, without notice. The external wiring of the devices are on their own.