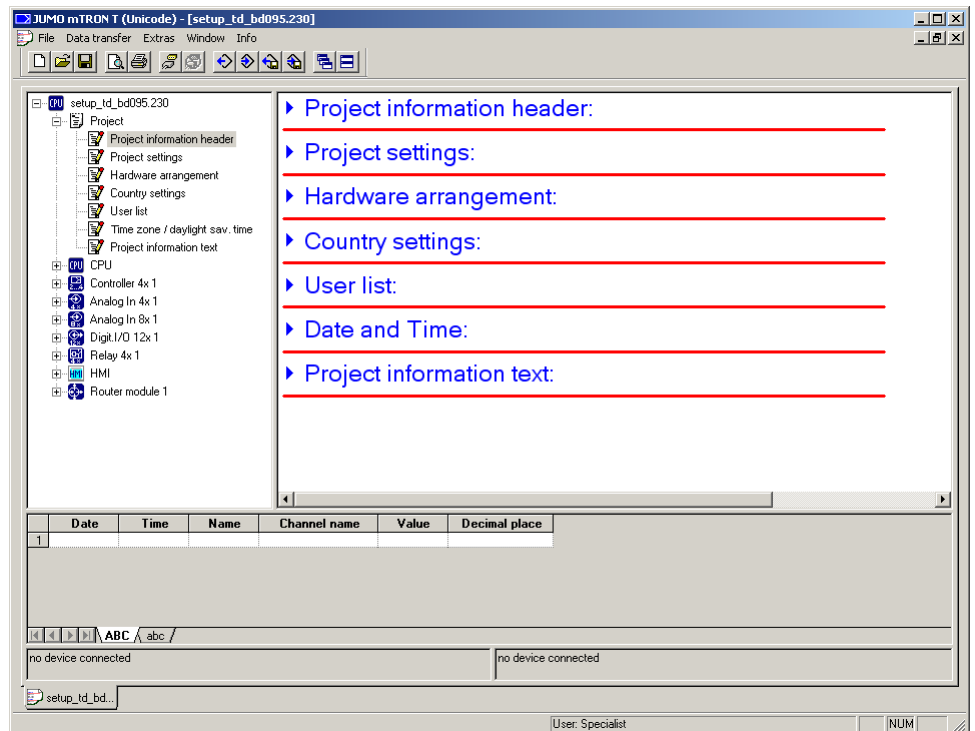


JUMO mTRON T

Measuring, Control, and Automation System



Setup Program Manual



70500000T96Z001K000

V4.00/EN/00575647

1	Introduction	7
1.1	Available technical documentation	7
1.1.1	General information	7
1.1.2	Base units	7
1.1.3	Input/output modules	8
1.1.4	Special modules	8
1.1.5	Operating, visualization, recording	9
1.1.6	Power supply units	9
1.2	Safety information	10
1.2.1	Warning symbols	10
1.2.2	Note signs	10
1.2.3	Intended use	11
1.2.4	Qualification of personnel	11
1.3	Notation	12
1.4	System version	12
2	Installation	13
2.1	Hardware and software requirements	13
2.2	Installing and starting the program	14
2.3	Log-in and rights	16
2.3.1	Logging into the setup program	16
2.3.2	Rights in the setup program	17
2.4	Quick Start Agent	18
3	Program description	21
3.1	Program functions	21
3.1.1	Overview	21
3.1.2	Brief description	21
3.2	User interface	25
3.2.1	Elements of the user interface	25
3.2.2	Editing the project	28
4	Menu bar	31
4.1	File	31
4.2	Edit	33
4.3	Data transfer	34
4.4	Extras	35
4.5	View	37
4.6	Window	38
4.7	Info	39
5	Project configuration	41

Contents

5.1	Project data information	41
5.2	Project settings	42
5.2.1	General information	42
5.2.2	PLC	43
5.2.3	Events	46
5.2.4	Alarm	47
5.2.5	System bus	48
5.3	Hardware arrangement	49
5.3.1	General	51
5.3.2	Versions	53
5.3.3	Alarm	55
5.3.4	System bus	56
5.3.5	Target/actual comparison	57
5.4	Country settings	59
5.5	User list	61
5.5.1	User list (system version 01)	61
5.5.2	User list (as of system version 02)	62
5.5.3	Default user settings	63
5.5.4	Password rules (automatic logoff)	64
5.5.5	Character map	65
5.5.6	General rights (system version 01)	66
5.5.7	User rights (system version 01)	67
5.5.8	Rights (as of system version 02)	68
5.5.9	Overview of rights	69
5.5.10	Hierarchic user administration on the device (as of system version 03)	72
5.5.11	User logon by the PLC (as of system version 05)	72
5.6	Time zone and daylight saving time	73
5.7	Module data information	74
6	Initial startup	75
6.1	Creating a project	75
6.2	Configuring the hardware arrangement	77
6.3	Configuring modules	80
6.4	Connecting external input signals via the system bus	82
6.5	Transferring a configuration	85
7	Languages	89
7.1	Creating a new language	91
7.2	Editing a language	93
7.3	Device character set	95
8	Connection to the system	97
8.1	Device connection list	97

8.2	Configuring a connection with the assistant	99
8.2.1	Selecting a device connected via USB interface	104
8.3	Configuring a connection without the assistant	106
8.4	Searching for devices in the network	108
9	Version changes	111
9.1	Overview	111
9.2	System with system version 02	112
9.3	System with system version 01	115
9.4	System version 03	120
9.5	System version 04	120
9.6	System version 05	120
9.7	Dependance on the HW version of the CPU	121
9.8	Adapt an own PLC application to the system version	121
9.9	New variables in the CPU I/O mapping	124
9.9.1	New variables of system version 02	124
9.9.2	New variables of system version 03	125
9.9.3	New variables of system version 05	126

Contents

1.1 Available technical documentation

The documents specified below are available for the measuring, control, and automation system (previous document number in parentheses).

1.1.1 General information

Product	Type of documentation	No.	Printed	PDF file
Measuring, control, and automation system	Data sheet	70500000T10...	-	X
	System manual ¹	70500000T90... (B 705000.0)	X	-
	Setup program manual	70500000T96... (B 705000.6)	-	X
	System description ²	70500000T98... (B 705000.8)	-	X

¹ Accessory subject to charge

² Includes an overview of the purpose and content of all documents

1.1.2 Base units

Product	Type of documentation	No.	Printed	PDF file
Central processing unit	Data sheet	70500100T10...	-	X
	Operating manual	70500100T90... (B 705001.0)	-	X
	Modbus interface description	70500100T92... (B 705001.2.0)	-	X
	PROFIBUS-DP interface description	70500103T92... (B 705001.2.3)	-	X
	digiLine interface description	70500106T92...	-	X
	Installation instructions	70500100T94... (B 705001.4)	X	X
	CODESYS OPC server operating manual	70500151T90... (B 705001.5.1)	-	X
	Process engineering application operating manual	70500152T90...	-	X
	Operating manual Thyristor power controller (type 70906x; integration in the measuring, control, and automation system)	70500153T90...	-	X

1 Introduction

1.1.3 Input/output modules

Product	Type of documentation	No.	Printed	PDF file
Multichannel controller module	Data sheet	70501000T10...	-	X
	Operating manual	70501000T90... (B 705010.0)	-	X
	Installation instructions	70501000T94... (B 705010.4)	X	X
Relay module 4-channel	Data sheet	70501500T10...	-	X
	Operating manual	70501500T90... (B 705015.0)	-	X
	Installation instructions	70501500T94... (B 705015.4)	X	X
Analog input module 4-channel	Data sheet	70502000T10...	-	X
	Operating manual	70502000T90... (B 705020.0)	-	X
	Installation instructions	70502000T94... (B 705020.4)	X	X
Analog input module 8-channel	Data sheet	70502100T10...	-	X
	Operating manual	70502100T90... (B 705021.0)	-	X
	Installation instructions	70502100T94... (B 705021.4)	X	X
Analog output module 4-channel	Data sheet	70502500T10...	-	X
	Operating manual	70502500T90...	-	X
	Installation instructions	70502500T94...	X	X
Digital input/output module 12-channel	Data sheet	70503000T10...	-	X
	Operating manual	70503000T90... (B 705030.0)	-	X
	Installation instructions	70503000T94... (B 705030.4)	X	X

1.1.4 Special modules

Product	Type of documentation	No.	Printed	PDF file
Router module	Data sheet	70504000T10...	-	X
	Installation instructions	70504000T94... (B 705040.4)	X	X

1.1.5 Operating, visualization, recording

Product	Type of documentation	No.	Printed	PDF file
Multifunction panel 840	Data sheet	70506000T10...	-	X
	Operating manual	70506000T90... (B 705060.0)	-	X
	Modbus interface description	70506000T92... (B 705060.2.0)	-	X
	Installation instructions	70506000T94... (B 705060.4)	X	X
Operating panels	Data sheet	70506500T10...	-	X
	Operating manual	70506500T90...	-	X

1.1.6 Power supply units

Product	Type of documentation	No.	Printed	PDF file
24 V power supply units	Data sheet	70509000T10...	-	X
	Operating instructions QS5.241		X	-
	Operating instructions QS10.241		X	-

1 Introduction

1.2 Safety information

1.2.1 Warning symbols



DANGER!

This symbol indicates that **personal injury caused by electrical shock** may occur if the respective precautionary measures are not carried out.



WARNING!

This symbol in connection with the signal word indicates that personal injury may occur if the respective precautionary measures are not carried out.



CAUTION!

This symbol in connection with the signal word indicates that **damage to assets or data loss** will occur if the respective precautionary measures are not taken.



CAUTION!

This symbol indicates that **components could be destroyed** by electrostatic discharge (ESD = Electro Static Discharge) if the respective cautionary measures are not taken. Only use the ESD packages intended for this purpose to return device inserts, assembly groups, or assembly components.



READ DOCUMENTATION!

This symbol – placed on the device – indicates that the associated **device documentation has to be observed**. This is necessary to recognize the kind of the potential hazards as well as the measures to avoid them.

1.2.2 Note signs



NOTE!

This symbol refers to **important information** about the product, its handling, or additional use.



REFERENCE!

This symbol refers to **further information** in other sections, chapters, or manuals.



FURTHER INFORMATION!

This symbol is used in the tables and refers to **further information** in connection with the table.



DISPOSAL!

This device and the batteries (if installed) must not be disposed in the garbage can after use! Please ensure that they are disposed properly and in an **environmentally friendly manner**.

1.2.3 Intended use

This setup program is a PC software program for configuring and operating the described measuring, control, and automation system.

The PC hardware and software requirements for installing and operating the setup program are described in the "Installation" section of this manual.

The measuring, control, and automation system is intended for use in an industrial environment, as specified in the technical data for the individual modules in the system. Other uses or uses beyond those defined are not viewed as intended uses.

The modules are built according to the relevant standards and directives as well as the applicable safety regulations. Nevertheless, incorrect use may lead to bodily injury or property damage.

To avoid danger, the modules may only be used:

- For the intended use
- When in good order and condition
- When taking into account the technical documentation provided

Even if a module is used correctly and according to the intended use, it may still cause application-related dangers (e.g. due to missing safety devices or incorrect settings).

This manual contains the relevant safety information and warnings for prevention of incorrect settings. These must be adhered to.

1.2.4 Qualification of personnel

This document includes the information necessary for the intended use of the setup program and the described measuring, control, and automation system.

It is intended for technically qualified personnel who have received special training and have the appropriate knowledge in the field of automation technology (measuring, process, and control technology).

The appropriate level of knowledge and the technically fault-free implementation of the safety information and warnings contained in the technical documentation provided are prerequisites for risk-free startup and for ensuring safety during operation. Only qualified personnel have the required specialist knowledge to correctly interpret and implement the safety information and warnings contained in this document in specific situations.

1 Introduction

1.3 Notation

Menu item in the menu bar

The menu item is shown in the document in a different font. The menu name, menu item, and submenu item (if applicable) are separated by the ">" character.

Example: **FILE > NEW**

Menu item in the navigation tree and display window

The menu is shown in the document in quotation marks.

Example: "Project".

Icon button

A button with an icon is shown in the document as an image.

Example:  (Save).

Text button

A button with text is shown in the document in a different font.

Example: **NEXT**

The menu bar, navigation tree, and display window are areas within the user interface.

⇒ Chapter 3.2 "User interface", page 25

1.4 System version

The system version of the measuring, control, and automation system is determined by the compatibility index of the base unit.

Example composition of a version number for the central processing unit: 248.**xx**.yy

248 = basic version, **xx = compatibility index (system version)**, yy = current version

In this document, functions which depend on the system version are marked accordingly (e.g. "as of system version 02").

⇒ Chapter 5.3.2 "Versions", page 53

This section describes how to install and start the setup program, and how to assign user rights.

2.1 Hardware and software requirements

Installation and operation of the setup program requires a PC that fulfils the following conditions:

- Operating system: Microsoft¹ Windows
- DVD drive
- USB host interface
- LAN interface (Ethernet)

Specifications on the supported operating system and the required hard disk drive and working memory are provided in the information on the setup program on the manufacturer's website (search for 705001, click on the link to the product in the search results, and follow the details for the setup program under Software).



NOTE!

The setup program is delivered on a MiniDVD; alternatively, it can be downloaded from the manufacturer's website.

The setup program can communicate with the system via a USB or LAN interface.

If DHCP is supported in the network (LAN) and in the devices, i.e. in the base unit (central processing unit), and is also activated in the multifunction panel (if applicable), the IP addresses are assigned automatically by the network. In some networks, the administrator must enter the MAC addresses of the devices in the DHCP server in advance for security reasons. The MAC address is included in the information on the nameplate of the base unit or multifunction panel.

The setup program also includes the option to search for devices in a network:

⇒ Chapter 8.4 "Searching for devices in the network", page 108

The USB interface is required if there is no network available or – in the case of initial startup – no IP addresses have been assigned. This allows the PC to be connected to the base unit and the multifunction panel at the same time (requires second USB interface on PC or USB hub).

During initial startup, you can activate DHCP in the base unit and multifunction panel, or assign an IP address manually to permit use of the network during subsequent processes.

Further information on the device settings for communication in the network can be found in the relevant manual:

⇒ Central processing unit operating manual, B 705001.0

⇒ Multifunction panel operating manual, B 705060.0

¹ Microsoft and Windows are registered trademarks of Microsoft Corporation.

2 Installation

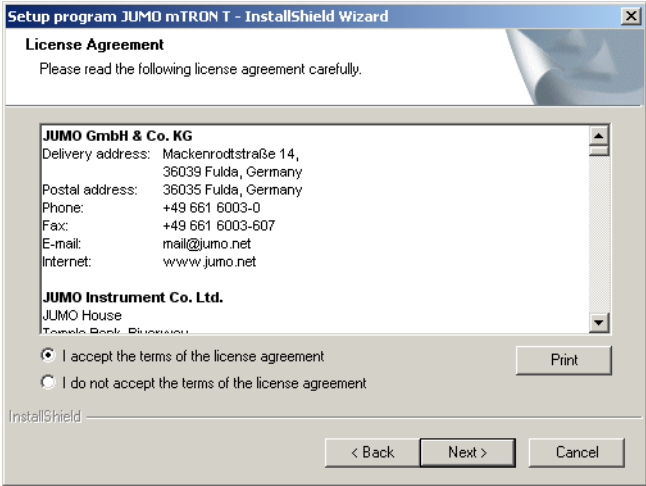
2.2 Installing and starting the program

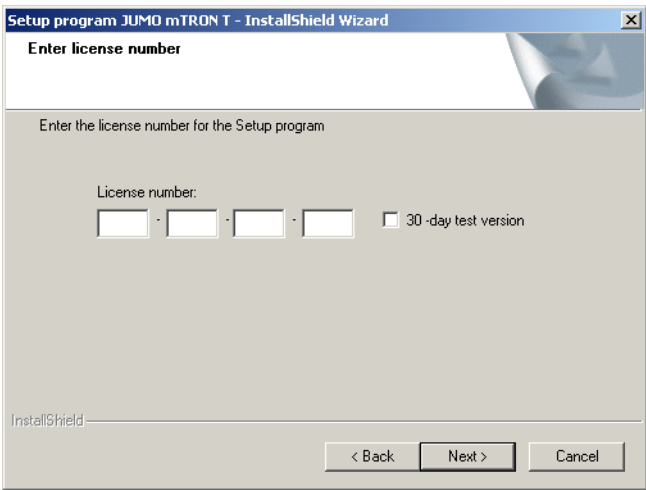
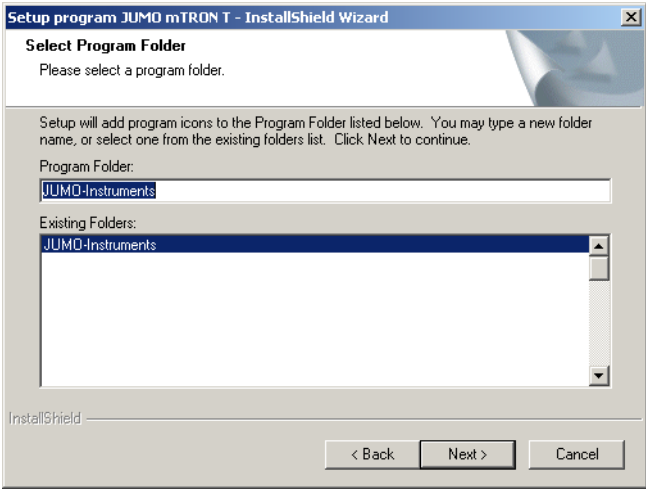
Installing the program



CAUTION!

The setup program installation can affect programs that are running. This can result in data loss. Exit all programs before installing the setup program.

Step	Activity
1	Insert MiniDVD into the drive and close the drive.
2	The installation program will start automatically once the MiniDVD has been inserted. If it does not, run the "Launch.exe" file in the main directory on the MiniDVD.
3	The installation program guides you through the installation process with on-screen messages.
4	<p>Read and accept the terms of the license agreement.</p> <p>The license agreement must be accepted for the setup program to be installed.</p> 

Step	Activity
5	<p>Enter the license number for the setup program (see MiniDVD case; license numbers for additional functions may also need to be entered after installation).</p>  <p>If the "30-day test version" option is set during installation, the setup program will function in full for 30 days (full user rights). Once the 30 days have expired, the program will automatically switch to a "demo version", in which some functions such as data transfer, data storage, and printing are locked. The software can be licensed at a later point.</p> <p>⇒ Chapter 2.3.2 "Rights in the setup program", page 17</p>
6	<p>Specify a program folder in the Windows start menu into which the icons for starting the software should be copied. The directory for program files is set automatically.</p> 
7	<p>Click the INSTALL button to run the installation.</p>

Starting the program

Once installation is complete, you can start the setup program via the Windows start menu.

2 Installation

2.3 Log-in and rights

2.3.1 Logging into the setup program

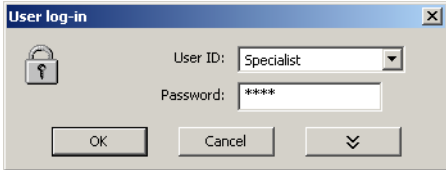
When the setup program is installed for the first time, the user name and password are not requested. This request can be activated for program start in the **EXTRAS** menu, using the **RENEW LOG-IN / ALTER PASSWORD** function.

⇒ Chapter 4.4 "Extras", page 35

Activating the log-in function enables a distinction to be made between "Specialist" and "Maintenance" users. These two users have different rights relating to the setup program functions.

⇒ Chapter 2.3.2 "Rights in the setup program", page 17

If the request is activated, users must log in:

Step	Activity
1	Log into the program. 

2.3.2 Rights in the setup program

Depending on the installation and log-in, individual users have different rights in the setup program.


The differences have been compiled in the following table.

Right	Demo installation	Maintenance	Specialist
Write interface text	-	x	x
New	x	x	x
Open	x	x	x
Save, save as, delete	-	x	x
Configure undocumented parameters	-	-	x
Export data to external mass storage device (USB memory stick)	-	x	x
Import data from external mass storage device (USB memory stick)	-	x	x
Print	-	x	x
Enable program options	x	-	x
Enable extra code	-	-	x
Edit interface settings	-	x	x
Edit device settings	x	x	x
Delete device	-	-	x
Create new device	x	-	x
x = right is available, - = right not available			

2 Installation

2.4 Quick Start Agent

Installation

During installation of the setup program, a program called the "Quick Start Agent" is also installed. This program starts automatically and is indicated by the  icon in the Windows taskbar.

Example:

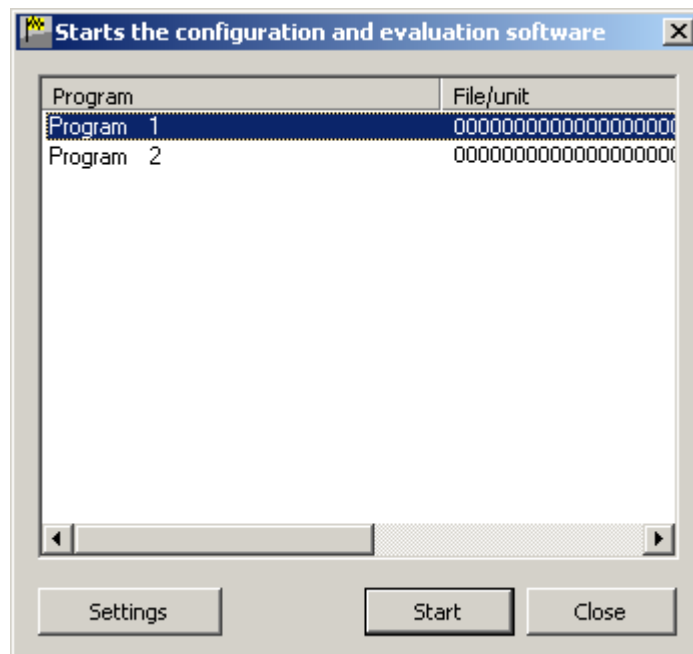


Quick-starting programs

The Quick Start Agent monitors the removable media of a PC and reacts if, for example, a device or USB memory stick is connected to the PC. It lists all the PC programs that are linked to the identified device.

You can decide which PC program to start by selecting the program in the list and using the **START** button to start the program. If there is only one program available, this program starts immediately.

Use the **CLOSE** button to hide the Quick Start Agent.




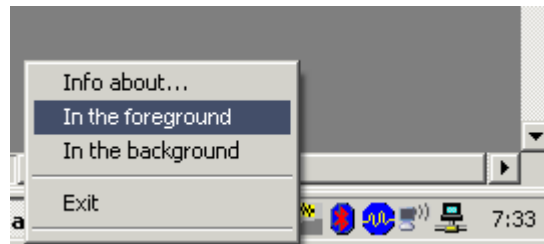
Settings

The **SETTINGS** button can be used to change the following options:

- Language of the Quick Start Agent
- Choice of programs that can be started with the Quick Start Agent
- Autostart of the Quick Start Agent when the PC starts

Quick Start Agent in foreground or background

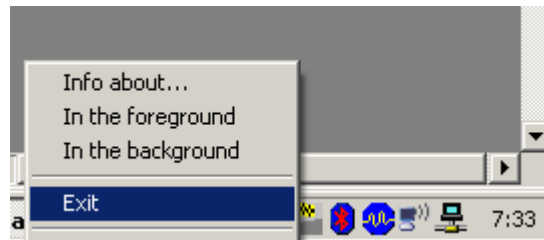
Left-click or right-click the  icon in the Windows taskbar to open a picklist. You can select the relevant option in the list to send the Quick Start Agent to the foreground or background.



If autostart is not active (i.e. the icon is not in the taskbar), you can start the Quick Start Agent manually via the Windows start menu. The Quick Start Agent is in the same program group as the setup program.

Exiting the Quick Start Agent

Select the **EXIT** option to close the Quick Start Agent. It can be restarted via the Windows start menu.



2 Installation

This section describes the basic functions of the setup program and provides an overview of the user interface.

3.1 Program functions

3.1.1 Overview

The setup program is used to plan and configure the entire measuring, control, and automation system.

The setup program is distinguished by:

- User-friendly configuration, parameterization, and startup of base unit (central processing unit), input/output modules (incl. multichannel controller module), and the router module
- Optional full PLC function with automatic transfer of the hardware configuration to the PLC software
- Multilingual support in the setup program and multifunction panel (operating language)
- Enabling of optional functions for modules (extra code)
- Module software update (incl. version administration)
- Editor for creating schedule programs with analog set values and digital control contacts
- Editor for creating process screens for the multifunction panel
- Communication between setup program and system via LAN or USB interface for transferring setup data and process data
- Online data (display of process data from selected signals)

3.1.2 Brief description

Hardware configurator

The hardware configurator in the setup program ("Hardware arrangement" menu item) is used to create a project by defining the various modules of a system, and the sequence of these modules on the system bus (project structure). You also have various options available, as described in the following section.

Configuration options

When creating a project structure – and during subsequent module configuration – you can choose from the following options:

- User-defined creation of hardware arrangement and module configuration
- Import of all project data (hardware arrangement and module configuration) from an existing setup file
- System restart and automatic detection of the real hardware arrangement (actual status) with subsequent module configuration
- Automatic detection of actual hardware arrangement with subsequent module configuration
- Automatic detection of the most recently saved hardware arrangement (target state) in the device (base unit) with subsequent module configuration

The created, imported, or read out hardware arrangement is saved in the project (setup program) as a target state. This can be compared with the actual hardware arrangement (actual state). Deviations and convergences are displayed in different colors.

If the hardware arrangement (target state) is transferred from the setup program into the device (base unit), it is compared in the device with the currently available modules (actual state). If

3 Program description

the actual state differs from the target state, a warning is issued during the transfer; the system does not start in such a case (exception: deviation caused by optional modules; see below).

⇒ Chapter 5.3 "Hardware arrangement", page 49

Offline configuration

System configuration (hardware arrangement, module configuration) can be performed in full offline. This configuration is transferred to the base unit and multifunction panel at a later point. This enables the system to be installed and connected first, and then started up later with the pre-prepared configuration. This also makes it simple to configure identical systems, for example.

Online configuration

System configuration can also be performed in full online. You can read out the current hardware arrangement (actual state) from the system and configure the individual modules. The differences between the target state and the actual state are highlighted in the hardware configurator of the setup program.

Once the configuration is complete, the configuration data is transferred to the base unit and the multifunction panel.

Mandatory/optional module

When creating a project (hardware arrangement), you can make a distinction between mandatory and optional modules. Initially, all modules in a project are mandatory modules. To specify optional modules, a router module must be categorized as an optional module at the start of a string (on a DIN rail) by assigning this module an alias device address. All input/output modules (incl. the multichannel controller module) in the string concerned then also become optional modules. The multifunction panel can also be defined as an optional module.

**NOTE!**

Within a string, either all modules are mandatory or all modules are optional; mixed classification is not possible.

**NOTE!**

If a router module is classified as optional module (alias device address) this affects all outgoing strands of this router module (side system bus as well as sockets Bus Out1 and Bus Out2). No mandatory modules can be connected to this router module.

The distinction between mandatory and optional modules primarily affects the behavior during a system start:

- The system does not start if there is a problem with a mandatory module (e.g. mandatory module is not available or in incorrect position).
- However, if there is a problem with an optional module, the system does start.

There are also differences during operation:

- If a mandatory module fails, the entire system switches to the "Stop" state.
- If an optional module fails, the system continues to operate.

In a string with optional modules, all modules that have been specified in the hardware arrangement must be present. If one of these modules is removed, the system disables the entire string.

If a multifunction panel or router module is classified as an optional module, you can also set that it can only be connected to the module that has been specified in the hardware arrangement (target state); if this is not the case, the system does not start.

⇒ Chapter 5.3.4 "System bus", page 56



NOTE!

If a system is configured in full first and then started up in stages, the modules that are added subsequently must be optional modules. This means, for example, that it is possible to initially start up only the base unit and the input/output modules that are connected to the base unit. The system can be extended subsequently with a router module and additional input/output modules by classifying the router module as an optional module.



NOTE!

A string with mandatory modules cannot be connected to an optional module (router module or multifunction panel designated as optional module); it can only be connected to a mandatory module (base unit, router module or multifunction panel designated as mandatory module).

Independent module

A multichannel controller module can be configured for independent operation. An independent controller module is able to continue fulfilling the controller functions with its own resources if communication with the base unit fails.

⇒ Operating manual B 705010.0 (multichannel controller module)

Switching languages

You can switch between several languages that are available as standard. You can also create additional languages.

⇒ Chapter 7 "Languages", page 89

Enabling extra code

The following optional system functions, known as extra code, are not available until they have been enabled with the setup program:

- Program generator (extra code of central processing unit)
- PLC function (extra code of central processing unit)
- Math/logic function for multichannel controller module (extra code of central processing unit)
- Recording function (extra code of multifunction panel)

A description of how to enable the extra code can be found in the relevant operating manual:

⇒ Operating manual B 705001.0 (central processing unit)

⇒ Operating manual B 705060.0 (multifunction panel 840)

A description of how to use the math/logic function can be found in the operating manual of the multichannel controller module:

⇒ Operating manual B 705010.0

PLC function

The PLC function is optional and must be enabled in the central processing unit. Access to the PLC programming system is then available in the setup program.

⇒ Chapter 5.2.2 "PLC", page 43

Module software update

The hardware configurator of the setup program can also be used to update the module software. The software is transferred – with the configuration – to the modules, where it is then up-

3 Program description

dated. During this process, you can choose whether the current compatible version (standard software) or a specific different version is transferred.

⇒ Chapter 5.3.2 "Versions", page 53

Version administration

The version library of the setup program contains the current software version, each of the supported hardware versions for all the modules, the PLC applications, and the online visualization (Webserver).

Older versions are only displayed if these have been used on the PC in the past. This may be the case if the PC contains setup projects that were created with a previously installed setup program, or if an old setup project is opened.

The version library also contains important information about compatibility between the base unit and the connected modules (input/output modules, multifunction panel, router module).

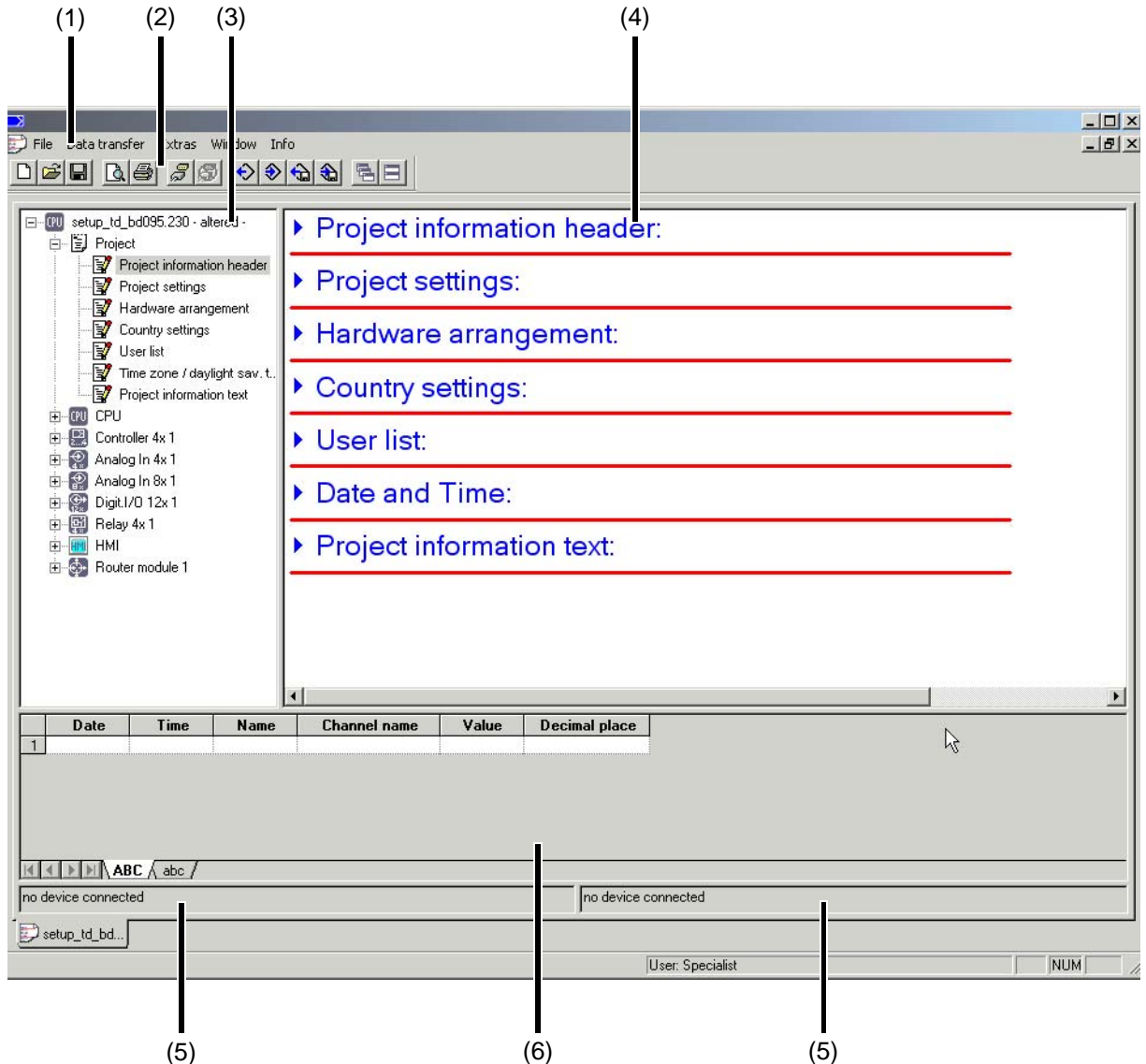
⇒ Chapter 4.4 "Extras", page 35

System version administration is performed in the hardware configurator (hardware arrangement) of the setup program. The basic version and the compatibility index of the selected base unit determine which versions of the connected modules (input/output modules, multifunction panel, router module) are supported.

⇒ Chapter 5.3.2 "Versions", page 53

3.2 User interface

3.2.1 Elements of the user interface



- (1) Menu bar
- (2) Toolbar
- (3) Work pane – navigation tree
- (4) Work pane – display window
- (5) Connection status
- (6) Online data (version-dependent)

Menu bar

The menu bar can be used to start the individual functions of the setup program.

⇒ Chapter 4 "Menu bar", page 31

3 Program description


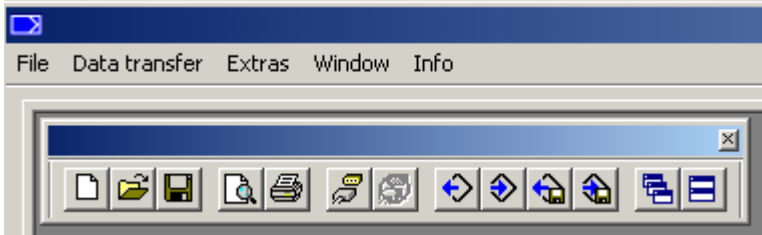
Toolbar

The toolbar contains selected functions from the menu bar. To start a function, left-click the function. To view the name of the function, hover over the icon with the mouse pointer.



Moving the toolbar


You can change the position of the toolbar:

Step	Activity
1	Position the mouse pointer between two groups of icons. 
2	Press and hold the left mouse button.
3	With the left mouse button held, drag the toolbar to the desired position.
4	Release the left mouse button. 

The toolbar can be placed in the following positions:

- At the left or right edge of the window (vertical layout)
- Under the menu bar (horizontal layout)
- At the lower edge above the user information (horizontal layout)
- Anywhere on the screen (own window – layout can be changed by changing the size of the window)

Closing the toolbar

If the toolbar has been moved, you can close it using the  button. To display the toolbar again, it must be activated in the **FILE > DEFAULT SETTINGS** menu, in **USER INTERFACE** (select checkbox). The toolbar is then displayed in the position to which it was previously moved.

Work pane

The work pane consists of the navigation tree (left) and the display window (right), and displays the current settings of a configuration file (setup file).

⇒ Chapter 3.2.2 "Editing the project", page 28

To change the division of the work pane, left-click the border between the navigation tree and the display window and drag it to the side.

3 Program description

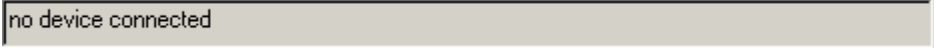
Connection status

The "Connection status" line indicates whether a device is connected. Certain interface data is also displayed, such as the IP address.

Two connections can exist at the same time, e.g. to the central processing unit and to the multifunction panel. The first connection is displayed in the left half of the line; the second connection is displayed in the right half.

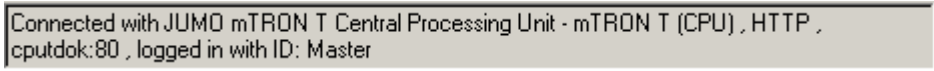
You can display or hide the line using **WINDOW > CONNECTION STATUS**.

Example: No connection



no device connected

Example: Device connected



Connected with JUMD mTRON T Central Processing Unit - mTRON T (CPU) , HTTP ,
cputdok:80 , logged in with ID: Master

To change the line height, left-click and drag the border between the line and the Online data window.

Online data

The "Online data" function displays current process data in the setup program.

You can display or hide the Online data window using **WINDOW > ONLINE DATA**.

To change the window height, left-click and drag the border between the window and the work pane, or between the window and the "Connection status" line.

Documentation (manuals)

Part of the documentation for the measuring, control, and automation system is available as individual PDF documents in the setup program using the Help function (F1). To open a document, left-click the relevant entry (or sub-item) in the navigation tree and then press the F1 key.

If you select the top line (name of setup file, here: "Setup ...") or the "Project" entry, the manual for the setup program (B 705000.6) opens. If you select a specific module, the operating manual for this module opens.

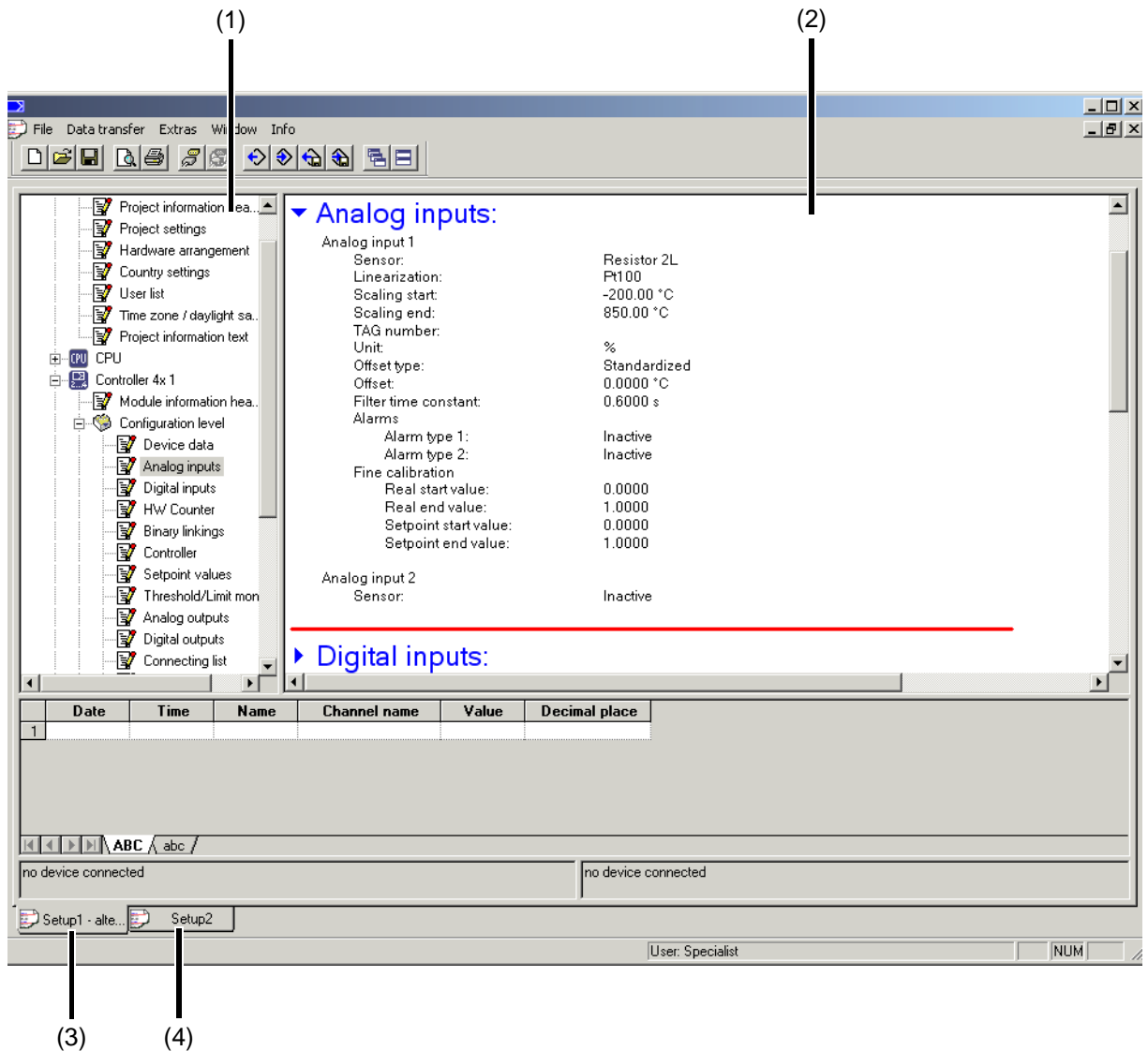
The document opens in the program (PDF viewer) that is set for the particular PC for files with the extension "PDF".

The language of the document is determined by the language of the setup program (**FILE > DEFAULT SETTINGS ... > PROGRAM LANGUAGE**). The documents are not available in all languages.

3 Program description

3.2.2 Editing the project

To create a new project (setup file) or open an existing one, select **FILE > NEW** (or **FILE > OPEN**). The work pane (navigation tree and display window) displays the hardware arrangement of the modules and the relevant settings.





- (1) Navigation tree
 - (2) Display window
 - (3) Active setup window
 - (4) Inactive setup window
- Display of entries (project and modules) and sub-items
- Display of sub-items and relevant settings

3 Program description



Navigation tree

Left-click (once) on the "Project" entry or a specific module to display the relevant sub-items in the display window.

Click the  (" - ") icon to minimize the display; click the  (" + ") icon to restore the display.

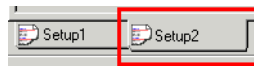
Double-click an entry (e.g. "Hardware arrangement") to start the edit dialog. Alternatively, you can also start the editing process using the menu bar (**EDIT > PROJECT > HARDWARE ARRANGEMENT**).

Display window

Double-click an entry in the display window to start the edit dialog. Click the  icon ("Right arrow") in front of the entry to list the current settings in the display window; click the  icon ("Down arrow") to hide these settings.

Setup window

If multiple setup windows are open at the same time, simply click the name of the inactive window at the bottom (here: "Setup2") to activate the window.



3 Program description

Right mouse button functions

If you right-click in the navigation tree or display window, various functions appear for the specific context. The functions relate to the entry that the mouse pointer was pointing to when the right button was clicked.

Example:

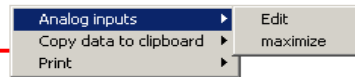
The right mouse button is clicked over the "Analog inputs" entry.

▶ **Module information header:**

▶ **Device data:**

▶ **Analog inputs:**

▶ **Digital inputs:**



Analog inputs > Edit

This function starts the edit dialog for analog input configuration.

You can also start the edit dialog by double-clicking with the left mouse button.

Analog inputs > maximize

This function displays the current configuration for the analog inputs.

Alternatively, you can also display the current configuration by clicking the ▶ icon ("Right arrow") with the left mouse button.

Copy data to clipboard > Analog inputs

This function copies the current configuration of the analog inputs to the Windows clipboard (RTF format). The clipboard content can be used in an editor or text processing program, for example.

Copy data to clipboard > All data

This function copies the entire current configuration – not just the analog inputs – to the Windows clipboard (RTF format). The clipboard content can be used in an editor or text processing program, for example.

Print

This function enables the current settings to be printed. You can choose which parameter groups to print and which not to print. Alternatively, you can use the **FILE** menu to print.

Import of a module configuration (as of system version 05)

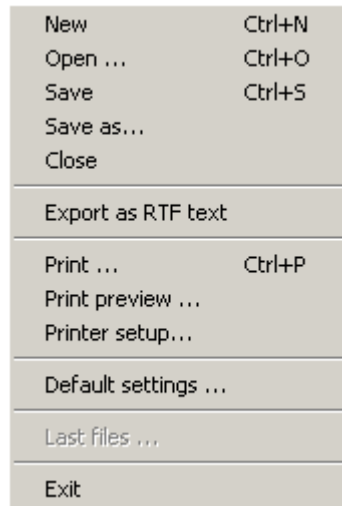
In the context menu of the input/output modules (incl. multichannel controller module) and the multifunction panel, a function for importing module data is available. First, the setup file from which the module configuration is to be transferred (source file) is opened temporarily. In the next step destination module and source module have to be selected. The configuration of the source module is then copied to the destination module.

This section describes the menu bar functions. The order of the subsections corresponds to the order of the menus in the menu bar (from left to right).

Functions that can also be accessed via the toolbar are indicated here with the relevant icons.

4.1 File

Overview of menu items:



New



Creates a new project (setup file) in the work pane.

You can choose from the following options:

- User-defined creation
- Project import from external mass storage device
- Automatic detection of actual hardware arrangement (actual state)
- Automatic detection of most recently saved hardware arrangement (target state)

If user-defined creation is used, you must specify the first module of the project, for example the central processing unit with required software. The project structure (i.e. type and order of additional modules) is defined in the hardware arrangement at a later point (**EDIT > PROJECT > HARDWARE ARRANGEMENT**).

When duplicating an existing project (of an existing plant), the item "... (target status)" should be used.

Open ...



Opens an existing project (setup file) and displays the contents in the work pane.

Save



Saves the settings displayed in the work pane in a setup file. The file name only needs to be entered once. If the file is saved again, the file name is not requested.

4 Menu bar

Save as ...

Saves the settings displayed in the work pane in a setup file. As opposed to the **SAVE** function, the file name is always requested.

Close

Removes the currently displayed settings from the work pane and closes the setup window. You have the opportunity to save changes that have not yet been saved.

Export as RTF text

Saves the current settings as an RTF file on the PC.

Print ...



Prints the setup settings of the project or module (according to the item marked in the navigation tree). The menus to be printed can be selected in advance.

Print preview ...



A preview of the printout is displayed on the screen. Multiple pages can be displayed and the size of the display can be changed.

Printer setup ...

Allows printer settings to be changed. When the program is started, the standard Windows printer is always used as the active printer.

Default settings ...

Allows the default settings of the setup program to be changed. Certain changes do not take effect until the setup program is restarted.

Last files ...

Displays the file names of the most recently saved setup files.

Click the file name to open the setup file or, if a setup file has already been opened, display it as an active window.

Exit

Exits the setup program. You have the opportunity to save changes that have not yet been saved.

4.2 Edit

Overview of menu items:

Project	▶	Project information header
CPU	▶	Project settings
Controller 4x 1	▶	Hardware assignment
Analog In 4x 1	▶	Country settings
Analog In 8x 1	▶	User list
Digit.I/O 12x 1	▶	Time zone / daylight sav. time
Relay 4x 1	▶	Project-Info-Text

The menu items and their submenus correspond to the navigation tree in the work pane.

Project

Opens the submenu for configuration of the project-specific settings.

⇒ Chapter 5 "Project configuration", page 41

CPU

Opens the submenu for configuration of the module-specific settings, here CPU.

...

Further modules; opens the submenu for configuration of the respective module-specific settings.

4 Menu bar

4.3 Data transfer

Overview of menu items:

Establish connection...	F2
Break connection...	Alt-F2
Data transfer to the device...	F5
Data transfer from the device...	Alt-F5
Data export to ext. mass storage	
Data import from ext. mass storage	

Establish connection ...



Opens the device connection list.

The contents of the device connection list depend on the project. The device connection list contains all modules with which a connection can be established using the setup program. This is generally the central processing unit and the multifunction panel. Modules can be added to the list or removed from the list.

The device connection list is also used to set the interface parameters for connection.

⇒ Chapter 8.1 "Device connection list", page 97

Break connection ...



Severs all connections of the active project, i.e. the selected setup file.

Data transfer to the device ...



Sends the setup data to the system.

A connection to the modules concerned is required (e.g. central processing unit and multifunction panel). If there is no connection, the device connection list opens automatically.

Data transfer from the device ...



Reads out the setup data from the system.

A connection to the modules concerned is required (e.g. central processing unit and multifunction panel). If there is no connection, the device connection list opens automatically.

Data export to ext. mass storage ...



Transfers the setup file to an external mass storage device (USB memory stick).

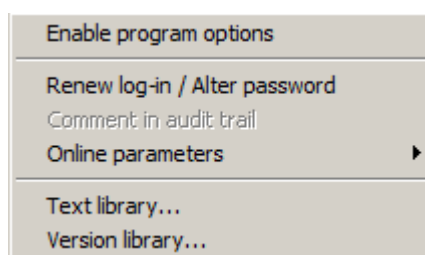
Data import from ext. mass storage ...



Reads in a setup file from an external mass storage device (USB memory stick).
The setup settings are displayed in the work pane.

4.4 Extras

Overview of menu items:



Enable program options

Enables optional functions in the setup program (entry of additional license numbers).

This function can also be used to register the setup program with a valid license number at a later point (30-day test version or full version) if no valid license number was entered during installation (demo mode).

Renew log-in / Alter password

Opens a window for user log-in activation.

Following installation of the setup program, the user name and password are not requested when the program starts until the user log-in is activated. Initially, users log in as "Specialist" with a blank password.

This function is used to activate the request for the user name and password when the program starts, and to change the current password.

Comment in AuditTrail

Creates a comment in the AuditTrail data of the setup program.

AuditTrail data is used in devices with increased security requirements to document operations in the relevant PC programs.

Online parameters

Provides access to the online parameters of the selected module. For this, an active connection to the central processing unit or to the multifunction panel is required.

The online parameters are also available in the navigation tree of the module concerned. The particular online parameters are described in the operating instructions of the respective module.

Text library...

Opens a window for editing the text library.

The text library is used to manage the various user languages for the multifunction panel and the central processing unit (Webserver function). When a new setup file is created, the national languages are copied to the setup file. They can then be edited in the file if necessary in the "Country settings" menu.

The language sequence can be changed and is also incorporated during transfer to the setup file. The first two languages (language 1 and language 2) are transferred to the multifunction panel and the central processing unit (Webserver function) and can be selected there.

The **LANGUAGE >** button enables the respective language to be edited in various submenus.

⇒ Chapter 7 "Languages", page 89

4 Menu bar

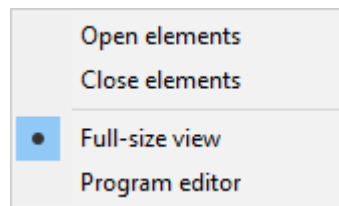
Version library...

Displays the contents of the version library.

The list contains the standard versions of the device software (incl. PLC application and Web-server) and the compatible hardware versions for these, which are provided with the setup program by the device manufacturer. Additional software versions that have been imported at a later point (e.g. customer-specific versions) are also included. The list also contains important information about the compatibility between the base unit and the connected modules (input/output modules, multifunction panel, router module).

4.5 View

Overview of menu items:



Open elements

Opens (expands) all elements in the display window so that the respective settings are visible.

Close elements

Closes (collapses) all elements in the display window.

Full-size view (depending on the license)

The work pane includes all modules and features of the project.

Program editor (depending on the license)

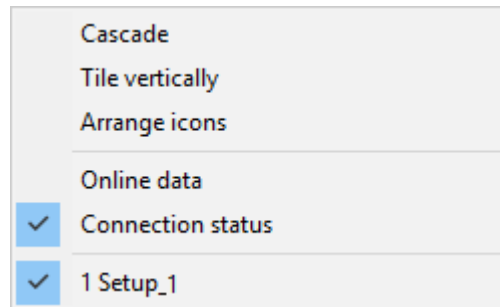
The work pane contains only the CPU with the features "Program generator" and "Program editor".

Only program data is transferred between setup program and the system, but no configuration data.

4 Menu bar

4.6 Window

Overview of menu items:



Cascade



Displays all open setup windows as overlapping.
To bring a window to the foreground, left-click the window.

Tile vertically



Displays all open setup windows below one another.
To activate a window, left-click in the relevant window.

Arrange icons

Arranges the icons for all minimized setup windows in the lower part of the user interface.
This function only takes effect if an icon has been moved from this area.

Online data

Hides or displays the Online data window.
A checkmark in front of the menu item indicates that the window is displayed.

Connection status

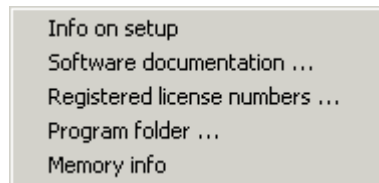
Hides or displays the line for displaying the connection status.
A checkmark in front of the menu item indicates that the line is displayed.

Open windows (here: Setup1)

Displays the name of open setup files as a list.
To activate a window, left-click the name of the window in the list. A checkmark in front of a name indicates that it is an active window.
In the example illustrated here, only one setup file, "Setup 1", is open.

4.7 Info

Overview of menu items:



Info on setup

Displays information about the setup program, such as the version number.
The version number is required for contact with the Service hotline, for example.

Software documentation ...

Opens the manual for the setup program (B 705000.6) as a PDF file.
The document opens in the program (PDF viewer) that is set for the particular PC for files with the extension "PDF".

Registered license numbers ...

Displays all registered license numbers and active options, if relevant.
The license numbers and information about active options are required for contact with the Service hotline, for example.
Information about obtaining a fee-based license number can be found on the manufacturer's website (see software download of setup program).

Program folder ...

Displays the various folders (directories) that are used on the hard disk drive or in the network by the setup program.
To display the contents of the folder, click the button (on the right next to folder path).

Memory info

Displays the memory information.
The memory information is intended for use in diagnostics. It is requested by a service technician or the device manufacturer if necessary.

4 Menu bar

5 Project configuration

This section describes all project-specific configuration options. The settings apply globally for the particular project.



NOTE!

Configuration and parameterization of modules are described in the operating manuals of the relevant modules.

5.1 Project data information

The project data information consists of the **Project information header** and the **Project information text** and is used to provide a description of the project. The information is only saved in the setup file and is not transferred to the system.

The Project information header and the Project information text can be accessed directly using the corresponding menu item in the navigation tree or display window. Within the "Project data information" setup dialog, left-click to switch between the header and the text.

Setup dialog

Parameters

Parameter	Selection/settings	Description
Project information header		
Short info	Enter text	Brief description of the project
Programmer	Enter text	Name of programmer
Type code	Enter text	Type code
Job	Enter text	Job number
Extra info	Enter text	Extra information
Project information text		
Project information text	Enter text	Detailed description of project

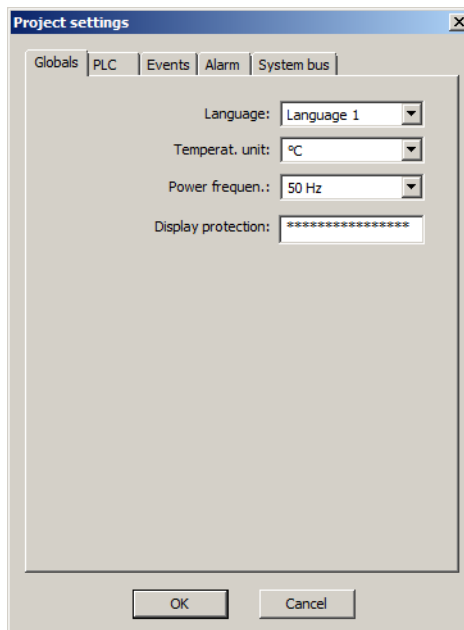
5 Project configuration

5.2 Project settings

This includes general settings such as language selection, temperature unit, and power frequency, and settings relating to the collective alarm and system faults. Specific settings for the PLC function are also applied here and the PLC application is selected.

5.2.1 General information

Setup dialog



Parameters

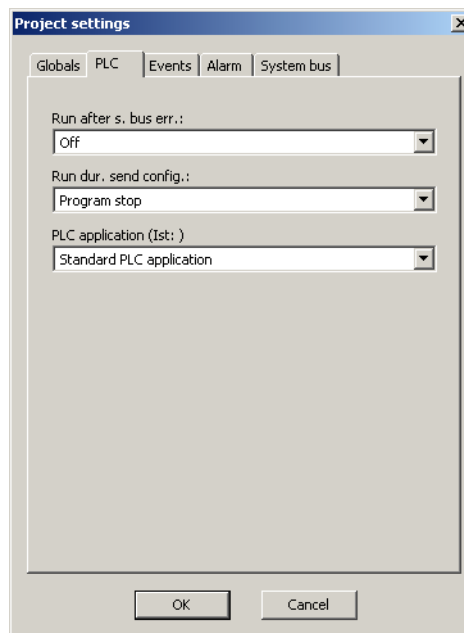
Parameter	Selection/settings	Description
Language	Selection of the active device language for the multifunction panel and central processing unit (Webserver function)	
	Language 1 Language 2	Language 1 and Language 2 are specified in the country settings.
Temperat. unit	Unit in which the temperature values are displayed on the multifunction panel and Web pages of the central processing unit (Webserver function).	
	°C °F	Degrees Celsius Degrees Fahrenheit
Power frequen.	Power frequency of the voltage supply used This information is required to filter out supply-related faults for analog inputs.	
	50 Hz 60 Hz	Select power frequency (country-specific).

5 Project configuration


Parameter	Selection/settings	Description
Display protection (as of system version 02)	Password to prevent the display of configuration data in the setup program. Without password (default setting), the configuration data is always displayed. With an existing password and incorrect input, the configuration is not displayed; but it can be transferred from the setup program to the system and also be read from the system.	
	***** (enter password)	Password (max. 16 characters; case sensitive)

5.2.2 PLC


Setup dialog



Parameters

Parameter	Selection/settings	Description
Run after s. bus err.	Off	No continuation The system remains in the "Stop" state until the central processing unit switch is turned manually from "Stop" to "Run".
	On	Continuation The system returns automatically to the "Run" state.
Run dur. send config. 	Program stop	The system is stopped (safer state for modules).
	No change	System continues to run.

5 Project configuration

Parameter	Selection/settings	Description
PLC application 	Selection of PLC application to be used by the system.	
	Own PLC application Standard PLC application 294.01.01-18 (example)	PLC application created by user Factory-default PLC application Additional versions that can be selected in the version library are listed if relevant.

Run dur. send config.

If "No change" is selected, please note:

- If the configuration of modules (including central processing unit) is changed and transferred to the system, the system remains in the "Run" state.
- If the project configuration is changed (project settings, hardware arrangement, country settings, user list, time zone, and daylight saving time), the system enters the "Stop" state when the configuration is transferred; in some circumstances, a reset is also triggered.

This enables you to change the configuration of modules during ongoing operation; the project configuration cannot be changed (e.g. addition of modules).

PLC application

If "Own PLC application" is selected, the following functions are available:

- PLC enabled: If this option is activated (checkbox selected), the modules of hardware arrangement and the relevant inputs and outputs are transferred upon starting the PLC programming system from the setup program.
- "Import" button: You can use an existing PLC application as a template for your own PLC application. The following sources are available for this: Version library, PLC project archive, or setup file.
- "CODESYS" button:
Starts the PLC programming system.
"Start for debug" starts the PLC programming systems without a new created device description; this prevents a program stop when logging-on to the target system.
"Plugin new initialization" initializes the CODESYS plugin for the devices of the measuring, control, and automation system again (e. g. after uninstalling and reinstalling CODESYS).



NOTE!

The PLC programming system must first be installed before it can be started with the "CoDeSys" button.

The CoDeSys software is part of the setup program MiniDVD. Further documentation is available in the PLC programming system in the form of an extensive online help function.



CAUTION!

You essentially have total freedom when creating your own PLC application.

This may result in unintended system behavior.

The PLC programmer is responsible for system behavior.



CAUTION!

No breakpoints may be set in FastTask.

A breakpoint results in a reset of the central processing unit.

See online help function in PLC programming system.

**NOTE!**

When you exit the CoDeSys, your PLC application is compiled and returned to the setup program.

Your PLC application is transferred if you confirm with the "OK" button when you exit the dialog, or aborted if you click the "Cancel" button.

When data is transferred to the device, your PLC application is permanently stored in the central processing unit; it is retained after a "power off".

You must ensure that the PLC is no longer in the "Debug Stop" mode.

**NOTE!**

Ab Systemversion 05 (CODESYS V3.5 SP10 Patch 0) wird für die Gerätesuche in CODESYS (Netzwerk durchsuchen) der Gerätename der CPU fest vergeben. Dazu werden drei Bytes der MAC-Adresse verwendet.

Beispiel:

MAC-Adresse der CPU: 00-0C-D8-09-88-A4

Gerätename in CODESYS: 705001, MAC: ...09:88:a4

**NOTE!**

As of system version 05 (CODESYS V3.5 SP10 Patch 0), the device name of the CPU for the device search in CODESYS (scan network) is fixed. For this, three bytes of the MAC address are used

Example:

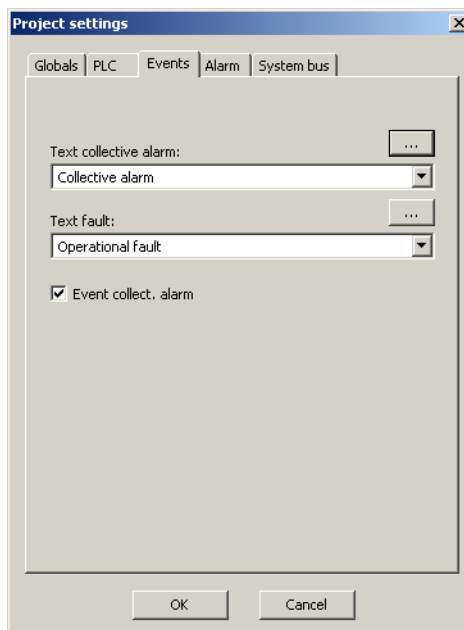
MAC address of the CPU: 00-0C-D8-09-88-A4

Device name in CODESYS: 705001, MAC: ...09:88:a4

5 Project configuration

5.2.3 Events

Setup dialog



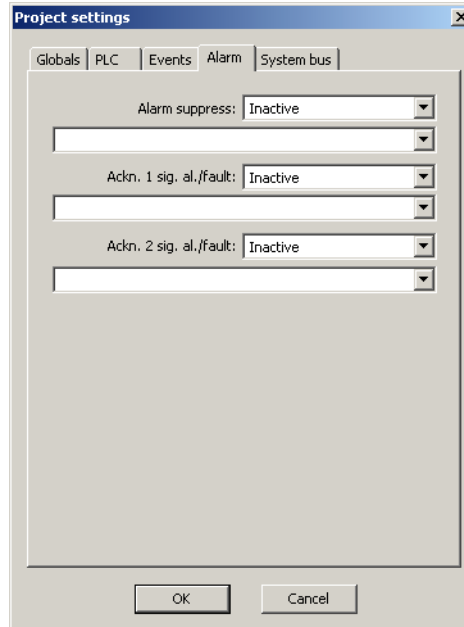
Parameters

Parameter	Selection/settings	Description
Text collective alarm	Text that is displayed on the multifunction panel (or in the Webserver function of the central processing unit) in the event of a system collective alarm.	
	Use default text or select other text from the drop-down list.	Text in currently selected device language Click the ... button to open a window in which the text for the various languages is displayed and can be edited.
Text fault	Text that is displayed on the multifunction panel (or in the Webserver function of the central processing unit) in the event of a system fault and is entered in the event list.	
	Use default text or select other text from the drop-down list.	Text in currently selected device language Click the ... button to open a window in which the text for the various languages is displayed and can be edited.
Event collect. alarm	Not selected (empty)	Collective alarm is not entered in the event list.
	Selected (✓)	Collective alarm is entered in event list.



5.2.4 Alarm

The following settings relate to a collective alarm or collective fault in the system.

Setup dialog



Parameters

Parameter	Selection/settings	Description
Alarm suppress	Signal to activate alarm suppression	
	Inactive Module (source of signal)	No alarm suppression Alarm suppression by a signal (high active), which is to be selected in the field that follows (digital selector).
Ackn. 1 sig. al./fault 	Signal 1 for acknowledgement of collective alarm and fault in system	
	Inactive Module (source of signal)	No signal selected Acknowledgement by a signal (high active), which is to be selected in the field that follows (digital selector).
Ackn. 2 sig. al./fault 	Signal 2 for acknowledgement of collective alarm and fault in system	
	Inactive Module (source of signal)	No signal selected Acknowledgement by a signal (high active), which is to be selected in the field that follows (digital selector).

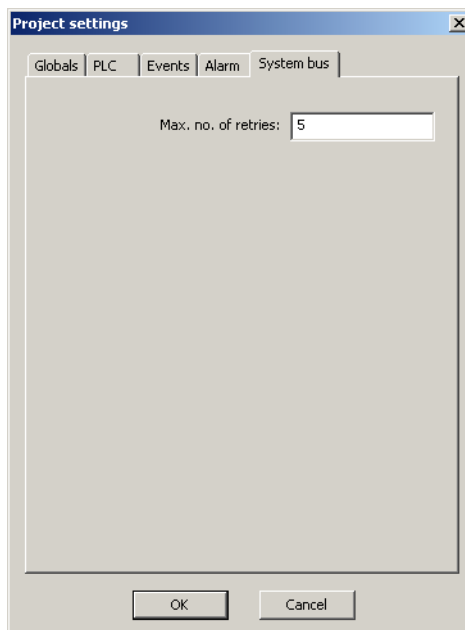
Ackn. 1 sig. al./fault; Ackn. 2 sig. al./fault

Both signals are linked with OR, so that each signal acknowledges the collective alarm and the fault.

5 Project configuration

5.2.5 System bus

Setup dialog



Parameters

Parameter	Selection/settings	Description
Max. no. of retries	Maximum number of retries with an incorrect frame	
	3 to 5 to 10	Maximum number



CAUTION!

This parameter affects transfer via the system bus. Incorrect settings disrupt or sever communication within the system. This parameter may only be changed by a service technician of the device manufacturer (or with instructions from a service technician of the device manufacturer).

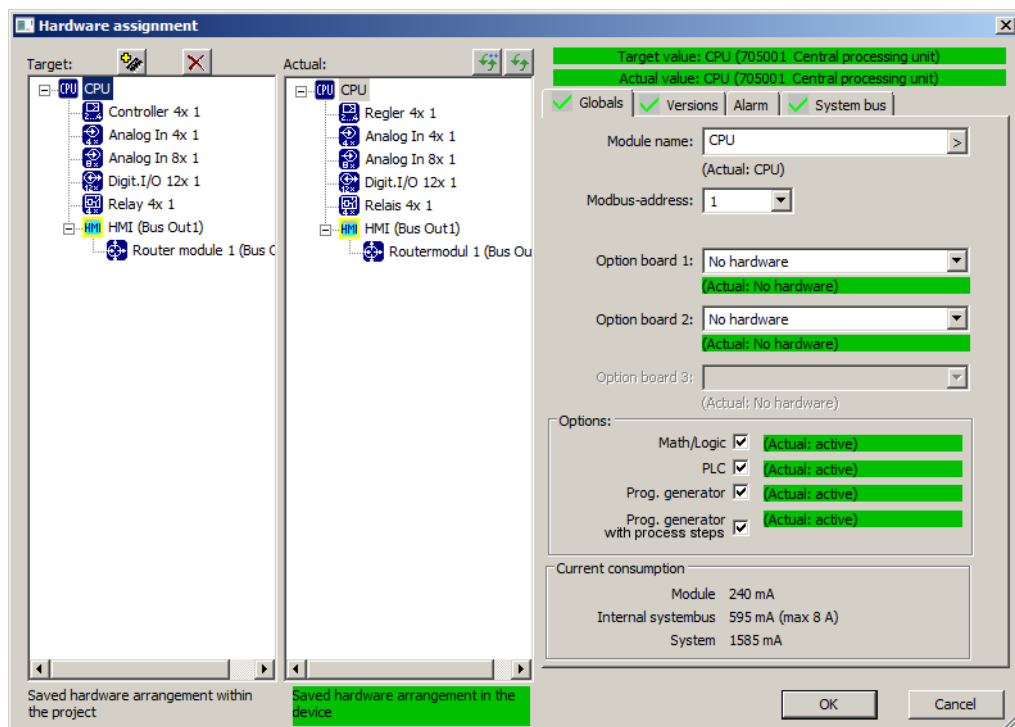
5.3 Hardware arrangement

The hardware arrangement is used to define the project structure. The following description relates to user-defined creation of a new project.

The first module in hardware arrangement is specified when the new project is set up (**FILE > NEW**).

In the hardware arrangement, all additional modules that follow the first module (e.g. the central processing unit – CPU) can then be selected. The module arrangement must correspond to the actual order.

Setup dialog



The "Target" pane displays the hardware arrangement saved in the project (setup file).

The "Actual" pane displays the state of a device that has already been connected, or the most recently connected device. There are two possible versions for reading-in the actual arrangement:

Version 1: Hardware arrangement stored in device (the text below the "Actual" pane is highlighted green as in the example above)

Version 2: Actual hardware arrangement (the text below the "Actual" pane is highlighted red)

Version 1 is displayed if the hardware arrangement stored in the base unit corresponds to the actual arrangement when the system is started.

Version 2 is displayed if the hardware arrangement stored in the base unit does *not* correspond to the actual arrangement when the system is started.

The version displayed is not affected by which of the following functions is read into the actual arrangement:

Function 1: Re-start device and read in actual arrangement again








Function 2: Read in actual arrangement again

If a fault occurs when reading in with Function 2, Function 1 can be used to determine the actual hardware arrangement.

5 Project configuration

Various buttons are available at the top of each pane for editing the project structure. The following table provides an explanation of the functions.

Function of buttons



Button	Function
	Add new target arrangement module.
	Copy selected target arrangement module.
	Remove selected module from target arrangement.
	Shift position of selected target arrangement module upward.
	Shift position of selected target arrangement module downward.
	Re-start device and read in actual arrangement again.
	Read in actual arrangement again.

Menus (tabs) for the module-specific settings are located on the right side of the "Hardware arrangement" window. These are explained in the following sections.

5.3.1 General

Setup dialog

Parameters

Parameter	Selection/settings	Description
Module name	Use default text or change text.	Text in language 1 (according to country settings) Click the > button to open a window in which the text is displayed in language 1 and language 2 and in which the text can be edited.
Modbus-address	1 to 254 (Dependent on module position)	The Modbus address is assigned automatically by the setup program on the basis of the hardware arrangement. If required, you can select another address from the drop-down list.
Option board 1 to 3	Select option, provided relevant board is available for the particular module.	Boards for expansion slots (module-specific)
Options	Optional function (module-specific extra code)	
	Not selected (empty)	Function is not active.
	Selected (✓)	Function is active.
Current consumption	(No input field)	Displays the maximum current consumption of the particular module and all input/output modules in a string and in the entire system.
		

5 Project configuration

Options

The following optional functions are available following prior enabling and activation:

Central processing unit:

- Math/logic (for all multichannel controller modules within the project)
- PLC according to IEC 61131-3 (CoDeSys V3)
- Program generator 1 to 9
- Program generator with process steps, 1 to 9 (as of system version 02)

Multifunction panel:

- Recording function

Current consumption

Module: Current consumption of relevant module

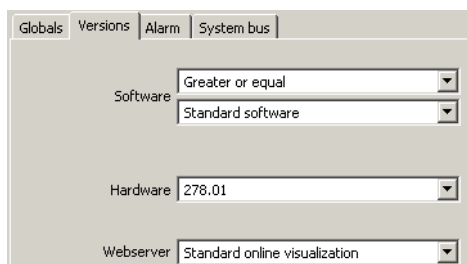
Internal system bus: Current consumption of all input/output modules in a string

The maximum admissible current consumption within a string is 8 A.

System: Current consumption of all modules in the entire system; i.e. all strings, including the multifunction panel

5.3.2 Versions

Setup dialog



Parameters

Parameter	Selection/settings	Description
Software (Requirement) 	Requirement for comparison of module software versions The software update must be performed if the version in the module does not meet the specified requirement.	
	Compatible	Compatible with standard version
	Greater or equal	Greater than or equal to the version set below
	Equal	Equal to the version set below
Software (Version) 	Software version of module (only for modules with processor)	
	Standard software 248.01.01 (example, module-dependent)	Most recent version in the version library of the setup program (standard version) If relevant, additional versions are listed that can be selected in the version library and can be specifically selected for the software update.
Hardware 	Hardware version of the module	
	287.01.xx (example, module-dependent)	Additional versions that can be selected in the version library are listed if relevant. Only those versions are available that are compatible with the selected software version.
Websserver	Version of Websserver function (only for central processing unit and multifunction panel)	
	No online visualization	No Websserver function
	Standard online visualization 295.01.01 (example, module-dependent)	Current version of Websserver function provided as default Additional versions that can be selected in the version library are listed if relevant.

Software

When transferring the configuration, the software version of the relevant module is also compared with the version selected here and – according to the requirement – transferred to the system if necessary and updated there. In this process, the software of the base unit and mul-

5 Project configuration

tifunction panel is updated first. Following this, the configuration data is transferred. Finally, the software of the input/output modules is updated.



NOTE!

Switching to an older version may result in the functions of the module being restricted.

Example composition of a version number for central processing unit 248.xx.yy:
248 = basic version, xx = compatibility index (system version), yy = current version

In the central processing unit, the basic version and the compatibility index of the selected software determine which software versions of the modules (input/output modules, multifunction panel, router module) are supported. The version library contains an overview of the compatible versions.

⇒ Chapter 4.4 "Extras", page 35

The information in the version library is important for exchange of modules. A replacement module with the same basic version and a higher compatibility index is downward compatible and therefore admissible. If the compatibility index is lower, the replacement module must be upgraded with a software update.



NOTE!

Thyristor power controller (type 70906x; as of system version 04): Software update of this module is not supported by the setup program of the measuring, control, and automation system.

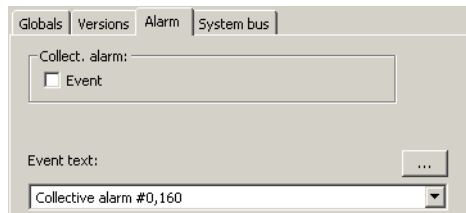
Hardware

The central processing unit 705001 is equipped with 128 MB RAM as of hardware version 278.02.xx. The dependencies between hardware and software versions are to be observed.


> Kap. 9.5 "Abhängigkeit von der HW-Version der Zentraleinheit"

5.3.3 Alarm

Setup dialog



Parameters

Parameter	Selection/settings	Description
Collect. alarm 	Not selected (empty) Selected (✓)	The collective alarm of the relevant module is not entered in the event list. The collective alarm of the relevant module is entered in the event list of the central processing unit or multifunction panel.
Event text	Text that is displayed on the multifunction panel (or in the Webserver function of the central processing unit) in the event of a collective alarm in the module concerned.	
	Use default text or select other text from the drop-down list.	Text in currently selected device language Click the ... button to open a window in which the text for the various languages is displayed and can be edited.

Collective alarm

Each module delivers a collective alarm, which is displayed on the multifunction panel (status line) or in the Webserver function of the central processing unit.

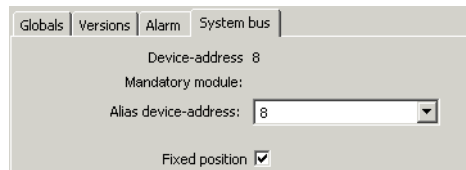
In addition, a collective alarm can be entered into an event list with event text as specified here. The central processing unit contains an event list in which the events and the correspondingly configured alarms of the central processing unit, and all connected input/output modules and router modules are entered. If the recording function is enabled (option), the multifunction panel also contains an event list and an alarm list; these list the events and alarms of the multifunction panel separately.

The last 150 events or alarms are stored in the corresponding list in the chronological order of their appearance. All lists can be viewed on the multifunction panel or using the Webserver function.



5 Project configuration

5.3.4 System bus

Setup dialog



Parameters

Parameter	Selection/settings	Description
Device address	(No input field)	Displays the system bus address of the module.
Mandatory module, optional module	(No input field)	Indicates whether the module is mandatory or optional.
Alias device address 	Classification of mandatory module/optional module	
	(0) No address 1 to 99	The module is classified as a mandatory module. The module is classified as an optional module.
Fixed position 	Port restriction for an optional module	
	Not selected (empty) Selected (✓)	Function is not active. Function is active.

Alias device address

All modules are classified as mandatory modules by default. A mandatory module is essential for operation of the entire system; i.e. as a rule, a problem relating to a mandatory module results in system failure ("Stop" state). A mandatory module may only be operated in the position which is defined by the hardware arrangement.

The multifunction panel and router module can be labeled as optional modules by setting an alias address, e.g. the same address as the displayed device address. All modules connected to an optional module also then become optional modules. Failure of an optional module does not result in system failure.

The router module also has two rotary coding switches for setting an alias device address. This enables the "hot connect" functionality as the router module always has a unique identifier within the system – independently of the configuration in the setup program.

The alias device address must be unique; i.e. it may only appear in the system once.



NOTE!

If a system is to be set to a specific state by the PLC when a module fails, the relevant module must be an optional module.

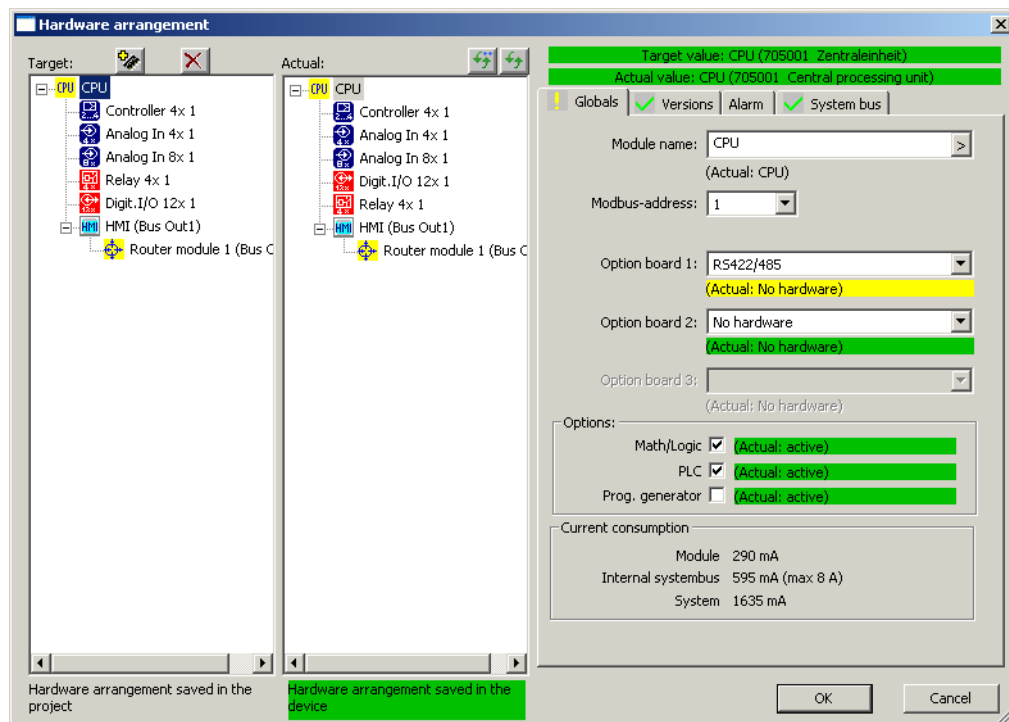
Fixed position

If this function is activated, a multifunction panel or router module that has been classified as an optional module can only be connected to the module that has been specified in the hardware arrangement (central processing unit, router module, or multifunction panel). In the case of connection to a router module, this stipulation also applies to the port used in the configuration (Bus Out1 or Bus Out2).

5.3.5 Target/actual comparison

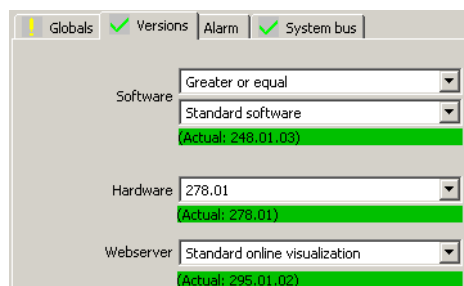
The target/actual comparison compares the hardware arrangement stored in the project with the hardware arrangement stored in the device.

Setup dialog

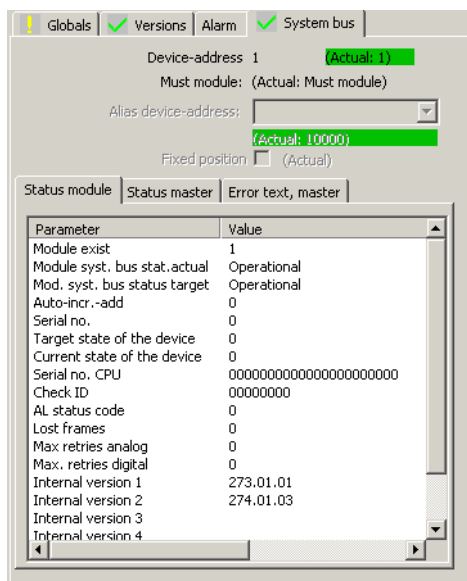


Convergences between the target and actual states are indicated in green; deviations in module arrangement are displayed in red. Relevant differences between the target and actual states are highlighted in yellow.

The following figures provide examples for the "Versions" and "System bus" tabs.



5 Project configuration

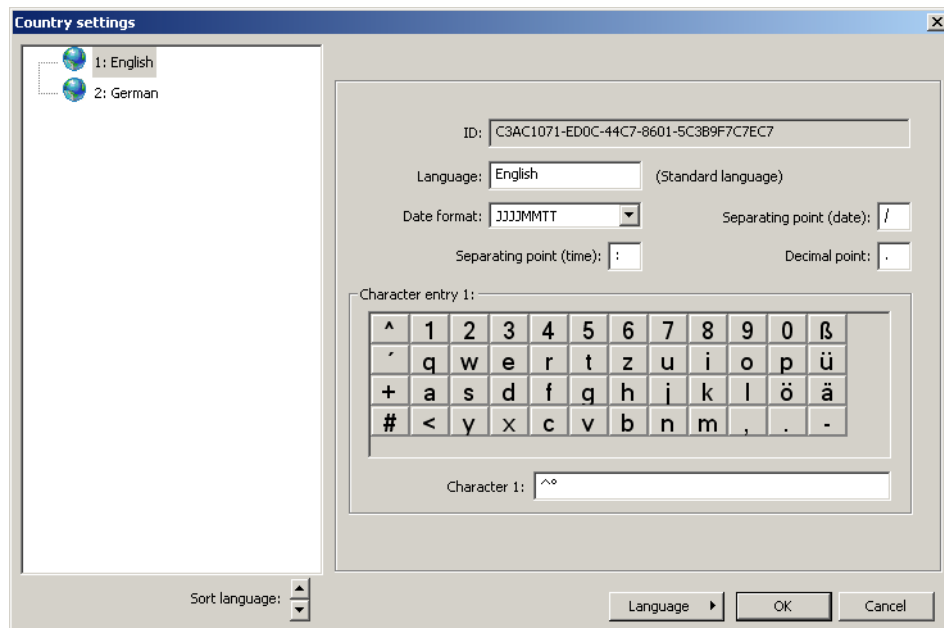


The "System bus" tab contains additional status information for the relevant module.

5.4 Country settings

The country settings (language and country-specific settings such as date format and decimal points) are transferred from the text library by the setup program when a setup file is created. A country setting can be relocated to another position in the list ("Sort language"). The first two country settings in the list are sent to the multifunction panel and the central processing unit (Webserver function) and are available at these locations for switching between languages.

Setup dialog



Parameters

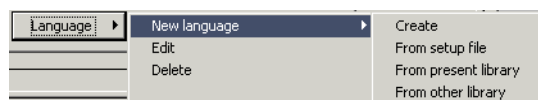
Parameter	Selection/settings	Description
ID	(No input field)	Internal ID (for identifying the language, for service purposes only)
Language	Use default text or enter different text.	Description of language
Date format	TTMMJJJJ (DDMMYYYY) MMTTJJJJ (MMDDYYYY) JJJJMMTT (YYYYMMDD)	Example: 31-12-2010 Example: 12-31-2010 Example: 2010-12-31
Decimal point	Use default character or enter different character.	Example for decimal point "." (period): 100.5
Separating point (date)	Use default character or enter different character.	Example for separating character "/" (forward slash): 31/12/2010
Separating point (time)	Use default character or enter different character.	Example for separating character ":" (colon): 23:59:59

5 Project configuration

Parameter	Selection/settings	Description
Character entry	Characters for the virtual keypad of the multifunction panel	
	Left-click virtual key in keypad area. If necessary, change key assignment in text field (below keypad area).	The relevant key is selected and the characters that are assigned to the key appear in the text field. The first character on the left corresponds to the character on the key.


Language

Select the **LANGUAGE** button to access various editing options:



For example, you can edit a language or create a new language based on an existing language.

Language editing functions

Selection	Submenu	Function
New language	Create	A new language is created on the basis of the selected language.
New language	From setup file	The new language is created from an existing setup file. To do this, you must select the setup file from a directory (file ending in ".230"). If the setup file contains multiple languages, these are given as options.
New language	From present library	The new language is created from the text library of the current setup program. If the text library contains multiple languages, you must select the desired language.
New language	From other library	The new language is created from another library. To do this, you must select the text library from a directory (file ending in ".dat"). If the setup file contains multiple languages, these are given as options.
Edit 		Opens the "Device texts" window, which can be used to edit the language (target language).
Delete		Deletes the selected language.

Edit

The process for editing languages is described in a separate section.

⇒ Chapter 7 "Languages", page 89.

5.5 User list

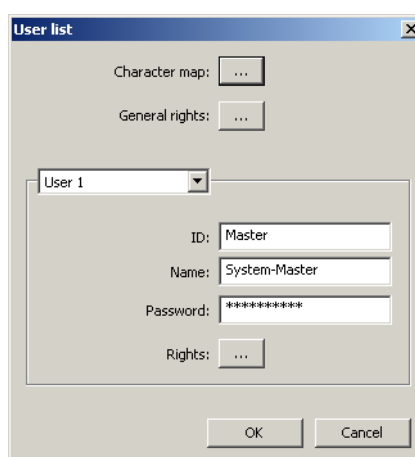
The User list is used to assign the user ID, name, and password for different users, and to manage users' rights. The system supports up to five (as of system version 02: 50) users with different rights.

These settings are essential for logging into the system; i.e. via the setup program to the central processing unit and multifunction panel, or directly at the multifunction panel. They do not relate to the setup program log-in.

The general rights (standard rights) are also specified here. These come into effect if no users are logged into the system.

5.5.1 User list (system version 01)

Setup dialog



Parameters

Parameter	Selection/settings	Description
Character map	Select button	⇒ Chapter 5.5.5 "Character map", page 65
General rights	Select button	⇒ Chapter 5.5.6 "General rights (system version 01)", page 66
User 1 to User 5	Select relevant user from the drop-down list.	The default settings for the relevant user are displayed and can be changed. ⇒ Chapter 5.5.3 "Default user settings", page 63
ID	Use ID assigned by default or assign different ID.	The ID (user ID) is requested at log-in.
Name	Use name assigned by default or assign different name.	A designation that describes the function (rights) of the user should be used as the name. The name is not requested at log-in.
Password	Use password assigned by default or assign different password.	The password is requested at log-in.
Rights	Select button	⇒ Chapter 5.5.7 "User rights (system version 01)", page 67

5 Project configuration

5.5.2 User list (as of system version 02)

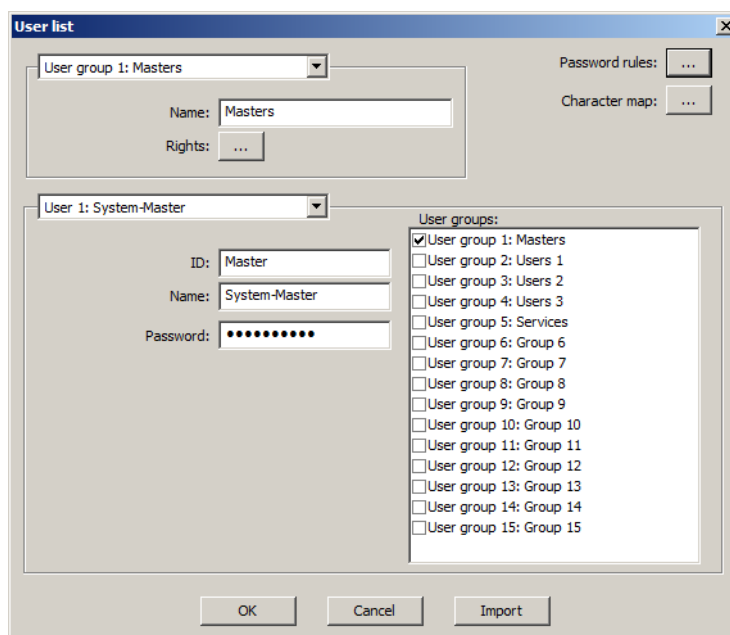


NOTE!


User administration is either possible with the setup program and the multifunction panel or can be restricted to the multifunction panel. The selection is done in the multifunction panel by parameter "User list only at device" (Parameterization > HMI > Device settings). The user right "Administrate users" is necessary for the user administration with the multifunction panel.

See operating manual of multifunction panel 840 (B 705060.0).


Setup dialog



Parameter

Parameter	Selection/settings	Description
Password rules (as of system version 04)	Select the button	⇒ Chapter 5.5.4 "Password rules (automatic logoff)", page 64
Character map	Select the button	⇒ Chapter 5.5.5 "Character map", page 65
User group 1 to User group 15, General rights 	Select relevant user group from the drop-down list.	The following parameters "Name" and "Rights" refer to the selected user group. The rights for a user who is not logged on are defined by selection of "General rights".
Name	Use default name or enter other name.	For the name a designation should be used that describes the function (rights) of the user group. The name is not requested during logon.

5 Project configuration

Parameter	Selection/settings	Description
Rights	Select the button	Rights of the user group ⇒ Chapter 5.5.8 "Rights (as of system version 02)", page 68
User 1 to User 50 	Select relevant user from the drop-down list.	The default settings for the relevant user are displayed and can be changed by the operator. ⇒ Chapter 5.5.3 "Default user settings", page 63
ID	Use default ID or enter other ID.	The ID (user ID) is requested during logon.
Name	Use default name or enter other name.	For the name a designation should be used that describes the function (rights) of the user. The name is not requested during logon.
Password	Use default password or enter other password.	The password is requested during logon.
User groups	Select one or several user groups (select checkbox).	The relevant user gets the rights of the selected user group.

User group 1 to User group 15, General rights

For the assignment of user rights up to 15 groups are provided which get certain rights. This task is normally performed by the plant manufacturer. An individual name can be given to each group in order to make it easier to distinguish the groups (e. g. "Master", "Users", "Service"). Rights that are assigned to the group "General rights" are valid for an user who is not logged on.

User 1 to User 50

Up to 50 users can be administrated in the system and each user may be assigned to one or several groups. As a result, the user gets the rights of the relevant group. This task is normally performed by the plant operator.

5.5.3 Default user settings

User 1 to User 5

User 1 is assigned all rights by default. Users 2 to 4 have restricted rights by default. Users 1 to 4 are intended for logging in via the setup program (to central processing unit and multifunction panel) and directly at the multifunction panel.

User 5 has the same rights as User 1 by default, however only for log-in via the setup program (to central processing unit and multifunction panel). This user is typically used for performing service functions.

The following IDs, names, and passwords are set by default:

User	ID	Name	Password
User 1	Master	System Master	9200
User 2	User 1	Data Management	1
User 3	User 2	Data Management	2

5 Project configuration

User	ID	Name	Password
User 4	User 3	Data Management	3
User 5	User 4	Service	9200

5.5.4 Password rules (automatic logoff)

This function is supported as of system version 04 and allows the device to be protected against unauthorized access.

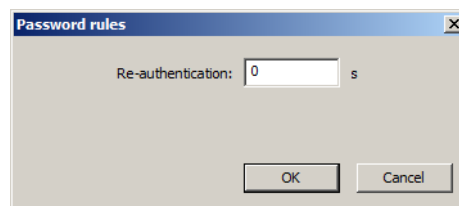
If the function is active and a user is logged on, there must be an operator action on the device (keypress on the touchpad) within a configurable time period (reauthentication time) so that the user remains logged on. The re-authentication time period begins with each keypress to run again. After the re-authentication time has expired, the user is automatically logged off with the next keypress. As a result, a new logon is required before the next operator action.



NOTE!

If the re-authentication time expires during a configuration process, all changes made in the current configuration screen get lost. If the device is in a mode in which the user must wait (setup transfer or data transfer to or from the USB flash drive, for example), the elapse of re-authentication time is stopped.

Setup dialog



Parameters

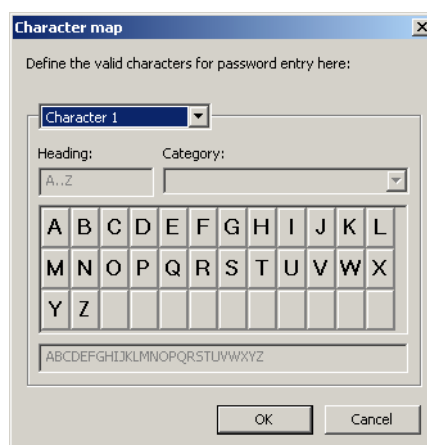
Parameter	Selection/settings	Description
Re-authentication	0 bis 65535	Re-authentication time in seconds 0 = function is not active

5.5.5 Character map

The characters that are available for assigning passwords are specified in the character map. The characters are displayed on the multifunction panel in the form of a virtual keypad, which is organized in levels (index dividers). To select the level, click the relevant tab.

If the setup program is used to assign or change a password, only the characters specified in the setup program are admissible. Subdivision in levels is irrelevant in this case.

Setup dialog



Parameters

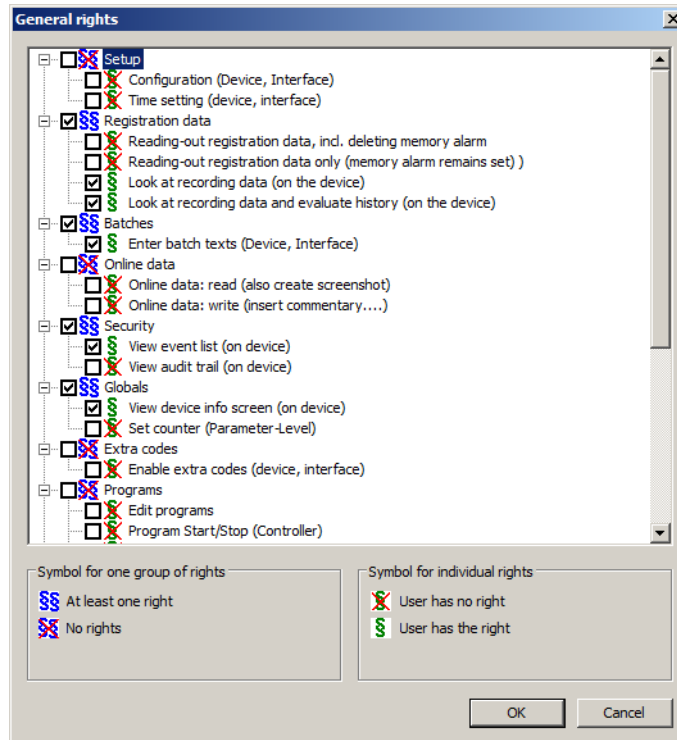
Parameter	Selection/settings	Description
Character 1 to Character 16 (Character level)	Select level from the drop-down list. The pre-allocated default levels 1 to 4 can be edited. Additional levels can be added for specific users.	Virtual keypad level for assigning the password on the multifunction panel The virtual keypad can consist of up to 16 levels.
Heading	Use name assigned by default or assign different name.	Text of tab (level) for the virtual keypad of the multifunction panel
Category	Select relevant category from the drop-down list (if necessary).	The category allows levels to be differentiated by the type of the characters defined in it.
Input field (below)	Enter or change characters	The characters are displayed in the keypad field in the order of entry (from left to right, from top to bottom). The display corresponds to the virtual keypad of the multifunction panel.

5 Project configuration

5.5.6 General rights (system version 01)

The general rights apply to a user who is not logged into the system.

Setup dialog



Assigning rights

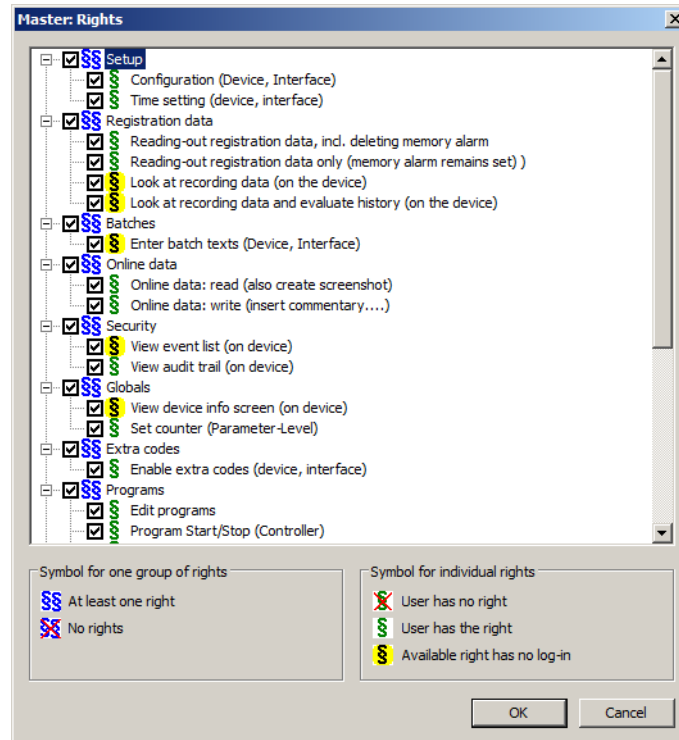
The rights are listed in the form of a tree structure. Click "+" to expand the display so that the relevant sub-items (individual rights) are visible. Click "-" to minimize the display so that only the higher-ranking item (group) is visible.

To activate the rights, click the corresponding checkbox.

5.5.7 User rights (system version 01)

The user rights apply to the relevant users when they are logged into the system.

Setup dialog



Assigning rights

The rights are listed in the form of a tree structure. Click "+" to expand the display so that the relevant sub-items (individual rights) are visible. Click "-" to minimize the display so that only the higher-ranking item (group) is visible.

To activate the rights, click the corresponding checkbox.



NOTE!

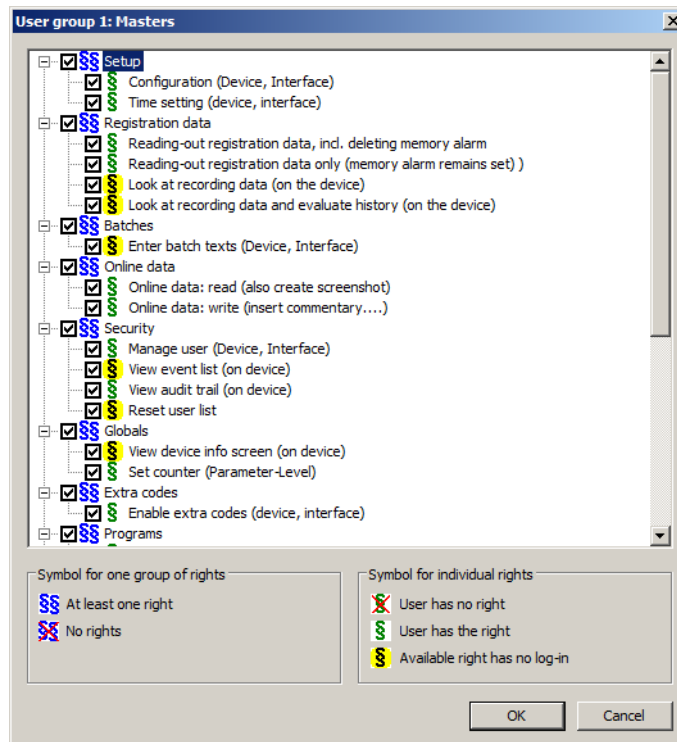
The user rights also include the general rights (rights available without logging in). If one of these rights is deactivated in this dialog (checkbox cleared), no change is made. When the dialog is opened again, the right is displayed as active again.

5 Project configuration

5.5.8 Rights (as of system version 02)

In this dialog the rights of the relevant user group or the general rights are defined. The rights of a user group are valid for all logged on users of this user group. The general rights are valid for a user who is not logged on.

Setup dialog



Assign rights

The rights are listed as a tree structure. Click "+" to expand the display: the relevant subitems (single rights) become visible. Click "-" to reduce the display: Only the parent item (group) is visible.

The rights are activated by a click on the corresponding checkbox.

5.5.9 Overview of rights

The following rights can be assigned as general rights and as user rights.

Group	Individual right
Setup	Configure (device, interface)
	Time setting (device, interface)
Registration data	Read-out registration data, incl. delete memory alarm
	Read-out registration data only (memory alarm remains set)
	View recording data data (on the device)
	View recording data and evaluate history (on the device)
Batches	Enter batch texts (device, interface)
Online data	Online data: read (also create screenshot)
	Online data: write (add comment, etc.)
Security	Administrate user (device, interface) (as of system version 02)
	View event list (on device)
	View AuditTrail (on device)
	Reset user list (as of system version 02)
General	View device info screen (on device)
	Set counters (parameter level)
Extra codes	Enable extra codes (device, interface)
Programs	Edit
	Start/Stop (generator)
	Temporary change
Controller	Parameterization and self-optimization
	Operation
Process screen	Operation
User level	View user level 1
	View user level 2
	View user level 3
Mixed	View operating ring
	Acknowledge collective alarms
	View service window
	Log-in only via setup program

5 Project configuration

Effect of the rights

Individual right	Effect
Configure	The configuration can be written (edited) and read. In the device manager the menu item "Configuration" is available; in the submenu "Service" the function "Load default configuration" is available.
Time setting	In the device manager, submenu "Parameterization" > "HMI", the menu item "Date and time" (Setting of date, time, and daylight saving time) is available. Date and time can also be set with the setup program (HMI > Online parameters > Date an time).
Read-out registration data, incl. delete memory alarm	In the memory manager (flash manager) the following functions are available: "Update USB-stick" (write registration data to USB flash drive) "Backup -> USB-stick" (save all registration data on USB flash drive (Backup)), "Save all + update USB" (write current counters/statistics and registration data to USB flash drive).
Read-out registration data only (memory alarm remains set)	In the memory manager (flash manager) the following function is available: "Backup -> USB-stick" (save all registration data on USB flash drive (Backup)) – The memory alarm will be deleted! If the registration data are readouted with PCC (PCA Communication Software) then the following applies: If the user, logged-on via PCC, only has this right - and has not the right „Read-out registration data, incl. delete memory alarm“ - he only can read-out the data but not delete the memory alarm. In order to also delete the memory alarm, that option must be active within PCC (Not delete the memory alarm in the device: No).
View recording data data (on the device)	In the visualisation menu the following sceens are available: Diagram, Bar graph, Text screen, Process screen, Digital diagram, Report, Counters/Integrators, Enter comments.
View recording data and evaluate history (on the device)	In the visualisation menu all relevant sceens are available (see above). In the diagram and in the digital diagram the memory display function (history) is accessible. It is possible to enter a comment text. In the protocol of the closed batch the diagram view can be opened.
Enter batch texts	In the visualisation menu the following sceens are available: Current batch, Last closed batch. In the protocol of the current batch the batch texts can be edited.
Online data: read (also create screenshot)	In the setup program the online data are avaiable. A screenshot can be taken from screen content of the multifunction panel (HMI > Online Parameters > Screenshot).
Online data: write (add comment, etc.)	(Right is not used.)
Administrate user (device, interface)	In the device manager, submenu "Login", the functions for user administration are active.
View event list (on device)	In the alarm and event menu the event lists of the mutifunction panel and of the central processing unit are available.
View AuditTrail (on device)	In the device manager the menu item "Audit Trail" is present (the list contains all audit trail messages).
Reset user list	The user list can be reset (function of the setup program, online parameters).

5 Project configuration

Individual right	Effect
View device info screen (on device)	In the device manager the device info menu is available (it contains information on the device, on the Ethernet interface, and current process values).
Set counters (parameter level)	In the device manager, submenu "Parameterization" > "HMI", the menu item "Counters/Integrators" (set start value) is available.
Enable extra codes (device, interface)	Extra codes can be enabled (function of the setup program, online parameters).
Programs: Edit	In the device manager the menu item "Program schema" is available. In the generator screen (Start/Stop) the buttons "Manual mode" and – during manual mode – "Edit" are active.
Programs: Start/Stop (generator)	In the generator screen (Start/Stop) the buttons "Start"/"Abort", "Pause", "Next section" und "Previous section" are active.
Programs: Temporary change	In the generator screen (Start/Stop) 0000 – during program run – the button "Temp. change" is active.
Controller: Parameterization and self-optimization	In the controller screen (controller x) the button "Self-optimization Start-Stop" is active. In the device manager, submenu "Parameterization" the menu item "Controller" is available.
Controller: Operation	In the controller screen (overview) the setpoint value can be changed (setpoint value display is active as a button). In the controller screen (controller x) the buttons "Setpoint value", "Output level", "Manual mode", "Open actuator" and "Close actuator" are active (depending on operation mode and controller type).
Process screen: Operation	In the process screen (with input object) it is possible to make an input.
View user level 1	In the device manager, submenu "User level" the relevant menu item "User level x" is displayed. Prerequisite: The user level (user area) has to be configured in the setup program before. If none of the rights exists, the menu item "User level" disappears from the device manager.
View user level 2	
View user level 3	
View operating ring	In the visualisation menu the menu item "Operating level" is displayed. After a reboot of the multifunction panel the operating level is displayed. Prerequisite: The operating level has to be activated in the setup program before (at least one of a maximum of 10 visualisations).
Acknowledge collective alarms	In the alarm list the button "Acknowledge" (collective alarm) is active.
View service window	In the device manager the menu item "Service" is available. In the memory manager (flash manager) the functions "Service data -> USB stick" (write service data to USB flash drive) and "Software update" are available.
Log-in only via setup program	A user logon to the device is only possible with the setup program; the user cannot be selected directly at the device.

5 Project configuration

5.5.10 Hierarchic user administration on the device (as of system version 03)

A user registered on the device (multifunction panel 840), who has user administration rights for the device (function of system version 02), can add, edit, or remove users. In this context, a new user is assigned to one or more user groups. Likewise, it is possible to change the user group membership of an existing user.

As of system version 03, a user who performs user administration can assign only user groups of which he is a member to another user. This applies both for adding a new user and for editing an existing user.

Through appropriate configuration using the setup program (allocation of rights, user group assignment), it is now possible to restrict the user administration on the device in consideration of hierarchy and function of the users.

Example

In a production plant, there are a production manager, several masters and many skilled workers. These persons are assigned to the user groups shown below and – with the exception of the skilled workers – have the right to administrate users on the device

Production manager: 1 (production manager), 2 (master) and 3 (skilled worker)

Master: 2 and 3

Skilled worker: 3

The production manager can administrate the masters and the skilled workers, the masters can administrate the skilled workers (and also the masters). Because the production manager belongs to the user groups 1, 2, and 3, while the masters belong to the user groups 2 and 3 only, it is ensured that a master is not able to administrate the production manager. (This would be the case if the masters would belong to all user groups to which the production manager belongs – specifically 1, 2, and 3.)

5.5.11 User logon by the PLC (as of system version 05)

The PLC can log on a user to the system (extra code 224 required). For this purpose a special PLC application must be created.

This way, user logon via interface with an RFID chip card can occur. Here, a suitable card reader and a free serial interface (RS232, RS422/485) on the central processing unit are additionally required.

Up to 50 text pairs can be managed by means of a universal text list in the setup program (CPU – setup only: universal text list). When a user login by the PLC occurs, the text list can contain such things as the RFID UID of the chip card and the associated user ID (for up to 50 users).

A user logon by the PLC is only possible if no user is currently logged on. A failed user logon may be signaled in an appropriate manner by the PLC application (e.g. by setting a digital output or by a text on the multifunction panel).

User logoff is still only possible by operation on the multifunction panel or by automatic logoff.

5.6 Time zone and daylight saving time

This dialog is used to apply the settings for the time zone and daylight saving time.

The date and time themselves can be set in the central processing unit configuration in "Online parameters".

⇒ Operating manual B 705001.0 (central processing unit)

Setup dialog

Parameters

Parameter	Selection/settings	Description
T. zone (GMT)	Time zone (without daylight saving time adjustment)	
	-720 to 60 to +720	Time zone in minutes (0 = GMT) Example: Germany = 60 (GMT + 1 h)
Sync. at batch	Permit synchronization during batch reporting	
	Activated (checkbox selected) Not activated	Synchronization is permitted Synchronization is not permitted
Daylight saving time	Automatic time adjustment (winter time <-> daylight saving time)	
	Automatic Off	Automatic adjustment according to the settings for the start and end of daylight saving time No automatic adjustment
Start daylight saving time	January to March to December	Month
	First, second, third, fourth, last	Day of the week in the month
	Sunday to Saturday, 1 to 31	Day of the week
End daylight saving time	00:00 to 02:00 to 22:59:59	Time
	January to October to December	Month
	First, second, third, fourth, last	Day of the week in the month
End daylight saving time	Sunday to Saturday, 1 to 31	Day of the week
	01:00:01 to 03:00 to 24:00	Time

5 Project configuration

5.7 Module data information

Along with the project data information, relevant information can also be entered for each module.

The module data information consists of the **Module information header** and the **Module information text** and is used to provide a description of the module. The information is only saved within the setup file and is not transferred to the system.

The Module information header and the Module information text can be accessed directly via the corresponding menu item for the module in the navigation tree or display window. Within the "Module data information" setup dialog, use the left mouse button to switch between the header and the text.

Setup dialog

Module data information

Module information header | Module information text

Device name : CPU Creation date : 30.7.2012
Device SW version : 248.01.xx Date of change : 31.7.2012
VDN : Program version : 1.00 J

Short info:

Programmer:

Type code:

Job:

Extra info:

OK Cancel

Parameters

Parameter	Selection/settings	Description
Module information header		
Short info	Enter text	Brief description of the module
Programmer	Enter text	Name of programmer
Type code	Enter text	Type code according to order details
Job	Enter text	Job number
Extra info	Enter text	Extra information
Module information text		
Module information text	Enter text	Detailed description of module

This section uses a simple example to illustrate the basic procedure for initial startup of the measuring, control, and automation system. This is intended to serve as a brief introduction for an experienced user.

The example starts from the assumption that the setup program was successfully installed and started.

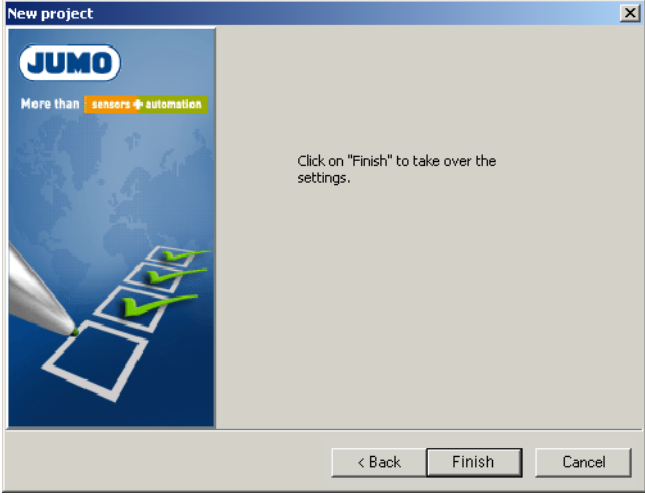
6.1 Creating a project

When a project is created, the type and arrangement of the modules (project structure) are defined. For the user-defined creation described here, the first module is specified initially, for example the central processing unit. Further modules are then selected by editing the hardware arrangement.

There are also various options for using an existing project structure to create a new project (see screenshot for step 2).

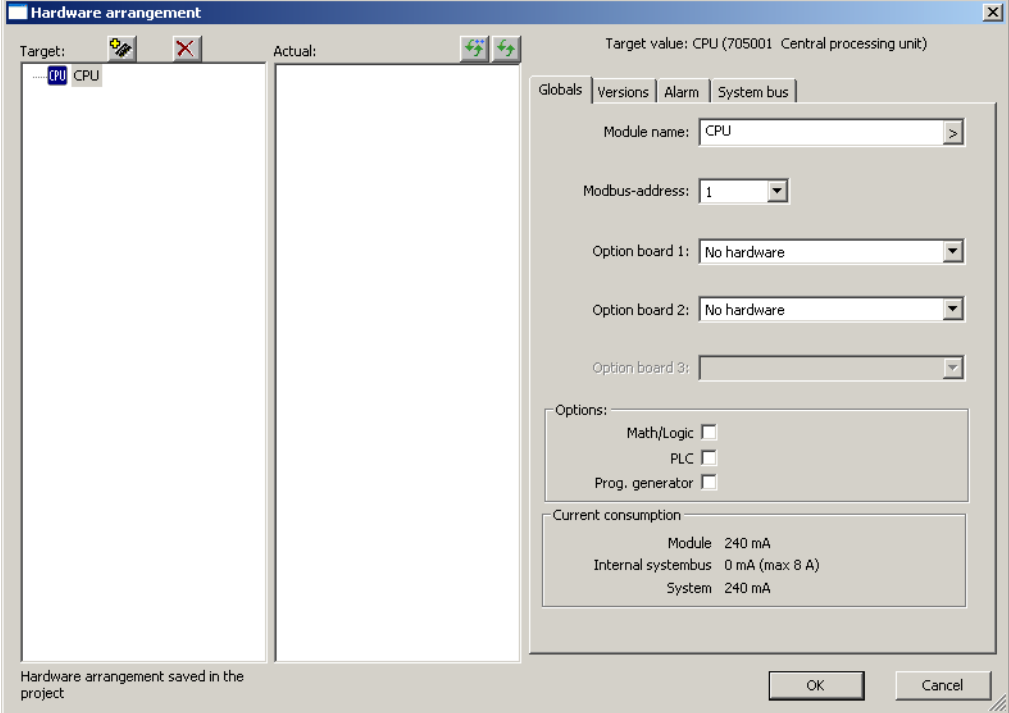

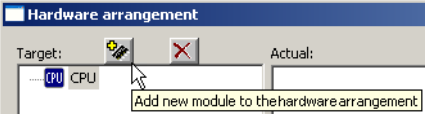
Step	Activity
1	Menu bar: Create a new project using FILE > NEW .
2	Select "User-defined setting" and click NEXT . <div data-bbox="608 920 1257 1413" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> </div>
3	Select the central processing unit (CPU) as the first module of the project, where appropriate consider the system version (here: 01 or 02), and click NEXT . <div data-bbox="608 1503 1257 1995" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> </div>

6 Initial startup

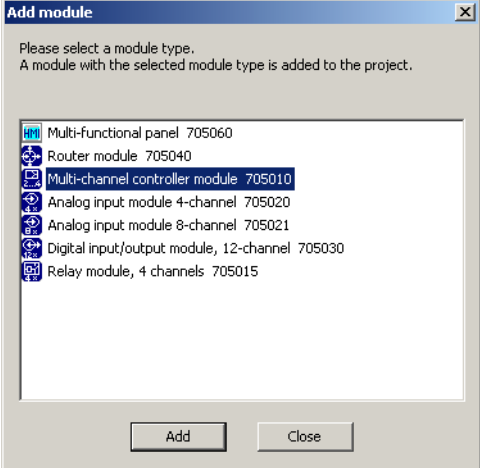
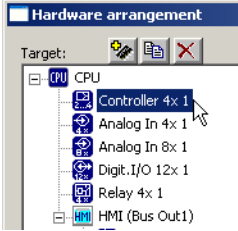
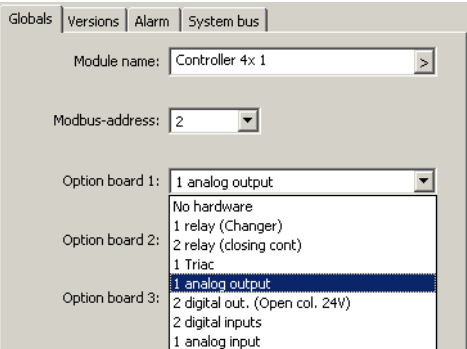
Step	Activity
4	<p>Click FINISH to apply the settings.</p> 

6.2 Configuring the hardware arrangement

As the project is being created with user-defined settings, the other modules must be selected once the first module has been defined. The order of modules in the configuration must correspond to the actual arrangement.

Step	Activity
1	<p>The following window for configuring the module arrangement (target arrangement) opens automatically once you have closed the previous dialog with the FINISH button. You can also open this window in the navigation tree or display window by double-clicking "Hardware arrangement".</p> 
2	<p>Click  to add more modules.</p> 

6 Initial startup

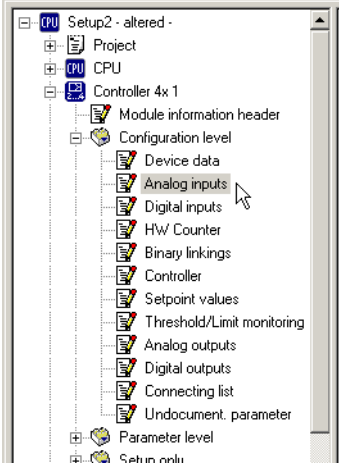
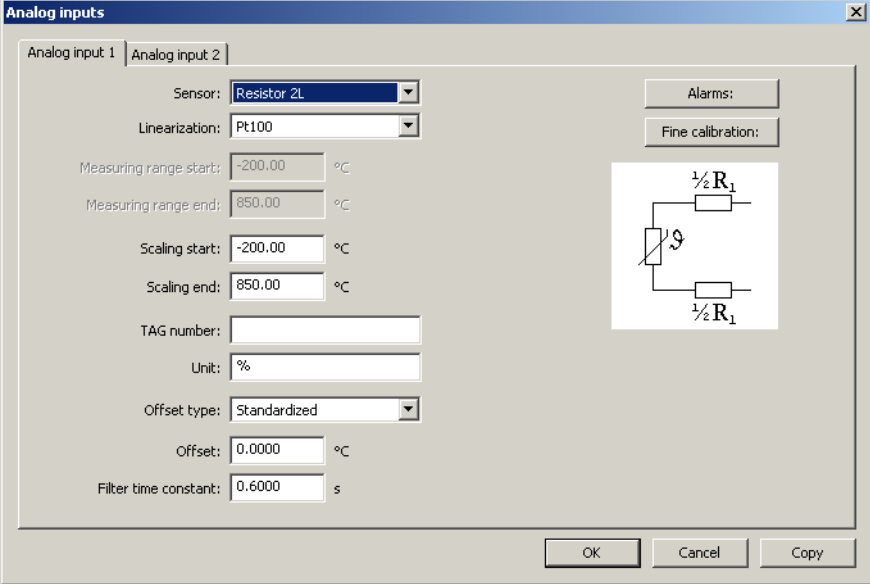
Step	Activity
3	<p>Select the module to the immediate right of the central processing unit in the actual arrangement (DIN rail) (here: multichannel controller module) and click ADD. Select and add all modules in turn in the correct order. Finally, click CLOSE.</p> 
4	<p>If necessary, select the optional inputs and outputs for the expansion slots of the multichannel controller module. To do this, click "Controller 4x 1" in the hardware arrangement:</p>  <p>For each expansion slot in the drop-down list, select the type of input or output that corresponds to the actual equipment on the multichannel controller module:</p> 
5	<p>If necessary, also select the optional interfaces of the central processing unit (CPU) and multifunction panel (HMI) in the same manner, as described in step 4.</p>

Step	Activity
6	<p>Activate optional functions if necessary. To do this, click "CPU" (central processing unit) or "HMI" (multifunction panel) in the hardware arrangement and click the relevant function to select it.</p> <p>This relates to the following functions:</p> <p>Central processing unit:</p> <ul style="list-style-type: none"> - Math/Logic (for all multichannel controller modules in the project) - PLC according to IEC 61131-3 (CoDeSys V3) - Program generator 1 to 9 - Program generator with process steps, 1 to 9 <div data-bbox="716 600 1155 748" style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p>Options:</p> <p>Math/Logic <input type="checkbox"/></p> <p>PLC <input type="checkbox"/></p> <p>Prog. generator <input type="checkbox"/></p> <p>Prog. generator with process steps <input type="checkbox"/></p> </div> <p>Multifunction panel:</p> <ul style="list-style-type: none"> - Recording <div data-bbox="716 835 1155 936" style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p>Options:</p> <p>Recording <input type="checkbox"/></p> </div> <p>Functions that have not been enabled cannot be selected here.</p> <p>⇒ EXTRAS > ENABLE PROGRAM OPTIONS</p>
7	<p>Click OK to complete configuration of the hardware arrangement. The hardware arrangement is transferred to the navigation tree:</p> <div data-bbox="762 1115 1053 1339" style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <pre> Setup2 - altered - ├── Project ├── CPU ├── Controller 4x 1 ├── Analog In 4x 1 ├── Analog In 8x 1 ├── Digit.I/O 12x 1 ├── Relay 4x 1 └── HMI </pre> </div>

6 Initial startup

6.3 Configuring modules

Individual modules must be configured to determine the function of inputs and outputs, to configure or parameterize internal functions, or to connect signals, for example. A brief example of this is provided here.

Step	Activity
1	<p>Select the module to be configured. To do this, expand the navigation tree and double-click the relevant branch to select it.</p> <p>Example: Controller 4x 1 (multichannel controller module) > Configuration level > Analog inputs</p> 
2	<p>Make the necessary settings for the relevant application.</p> <p>Example: An RTD temperature probe is connected in a 2-wire circuit at analog input 1 of the multichannel controller module.</p> 
3	<p>Configure all other modules – including the central processing unit – and parameterize if necessary, using the principle as described in steps 1 and 2. During this process, make all the settings required for the application.</p>



NOTE!

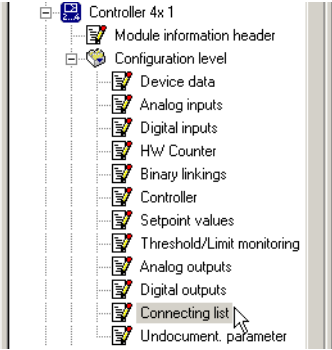
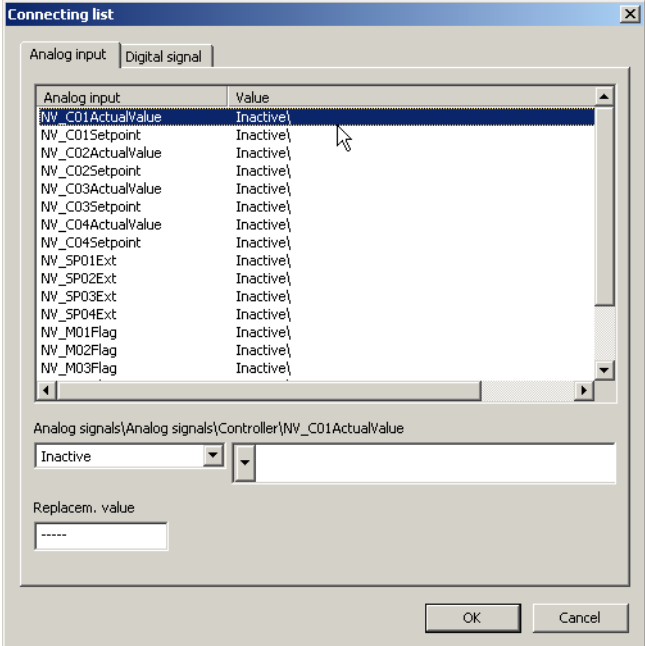
The setting options for configuration and parameterization are described in detail in the operating manuals of the relevant modules.

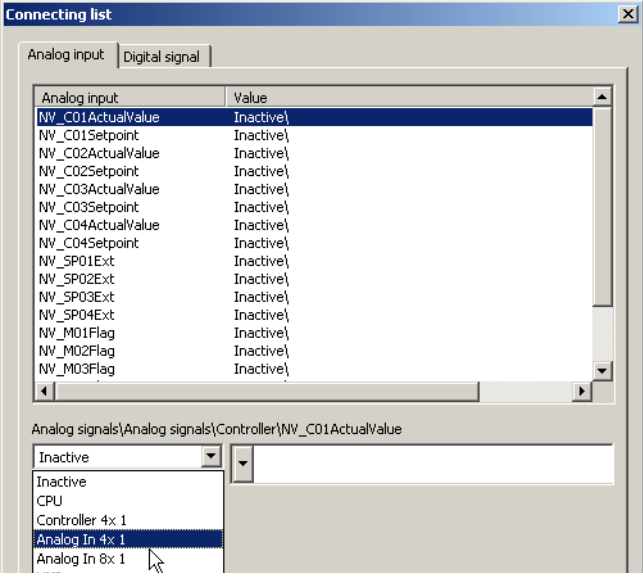
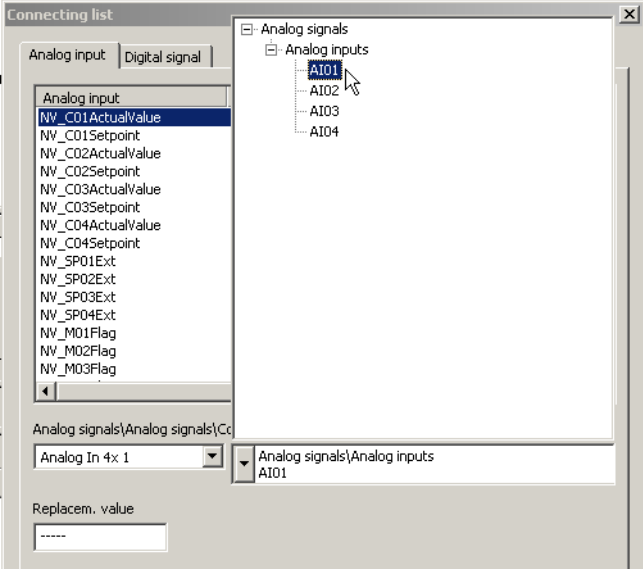
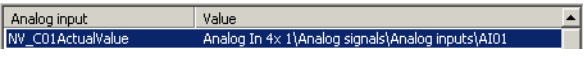
6 Initial startup

6.4 Connecting external input signals via the system bus

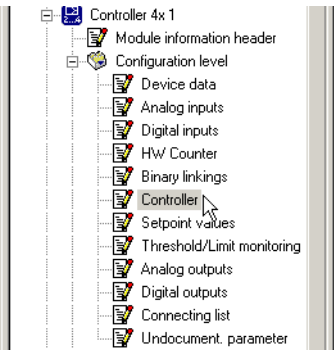
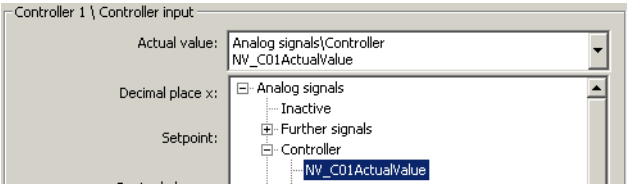
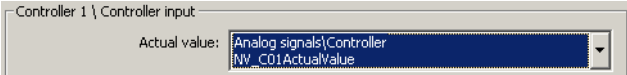
If external input signals are to be used for a module, they must be connected to other signals in the NV connecting list. These may be output signals of different modules, or signals of the same module. Signals of the same module are available directly in the drop-down lists during configuration of functions.

The designation for an external input signal starts with "NV_".

Step	Activity
1	<p>Open the NV connecting list for the relevant module by double-clicking.</p> <p>Example: Controller 4x 1 (multichannel controller module)</p> 
2	<p>Click to select the external input signal.</p> <p>Example: NV_C01ActualValue (provided as actual value for controller channel 1)</p> 

Step	Activity
3	<p>In the drop-down list, click to select the other module of which the output signal is required for connection (all modules in the project and the output signals of these modules are available in the list).</p> <p>Example: Analog In 4x 1 (4-channel analog input module)</p> 
4	<p>In the drop-down list, click to select the signal required as the output signal for connection.</p> <p>Example: AI01 (analog input 1 of 4-channel analog input module)</p>  <p>This completes the process in this example for connecting analog input 1 of the 4-channel analog input module to the NV_C01ActualValue external input of the multichannel controller module via the system bus.</p> <p>Result:</p> 

6 Initial startup

Step	Activity
5	<p>Assign the external input signal in the configuration menu of the relevant module to the required function.</p> <p>Example: Select the external input signal NV_C01ActualValue in the configuration menu of the multichannel controller module as the signal for the actual value of controller channel 1.</p> <p>To do this, double-click the "Controller" menu item to select it:</p>  <p>In the submenu "Controller 1" > "Controller input", select the signal NV_C01ActualValue from the drop-down list for the actual value:</p>  <p>Result:</p> 
6	Configure all necessary connections, using the principle described in steps 1 to 5.



NOTE!

An external input signal can also be used for configuration if it has not yet been assigned a signal in the NV connecting list.

6.5 Transferring a configuration

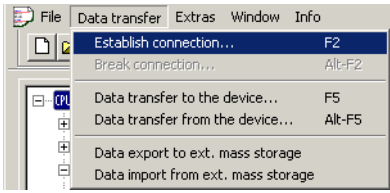

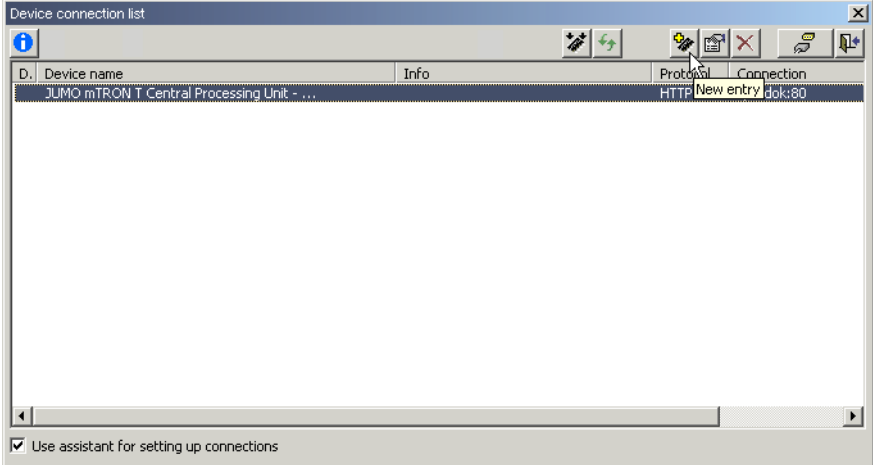
The configuration that has been created with the setup program must be transferred to the measuring, control, and automation system. The following options can be used to do this:

- Connection via LAN interface (HTTP or HTTP proxy)
- Connection via USB interface

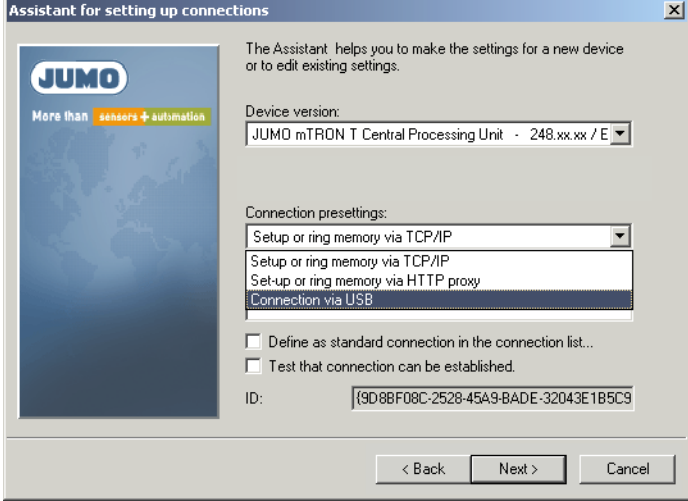

The following instructions start from the assumption that the IP addresses of the central processing unit and the multifunction panel have not yet been established, meaning that only transfer via the USB interface is possible.

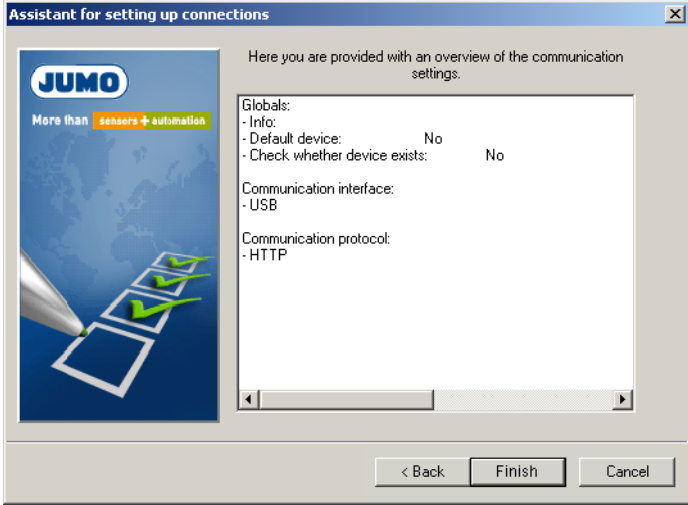

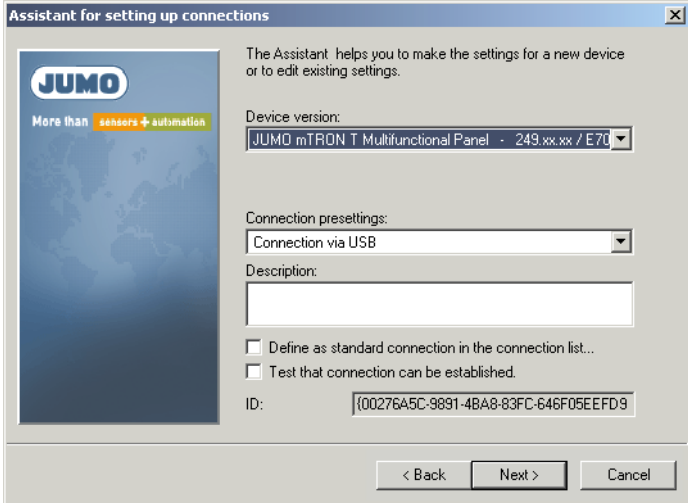
It is also assumed that the central processing unit and multifunction panel are each already connected to the PC via a USB cable (potentially via a USB hub).

If only one USB cable is available, it is also possible to transfer the configuration to the central processing unit and multifunction panel in turn. If this method is used, you must cancel the dialog for selecting an additional connection each time.


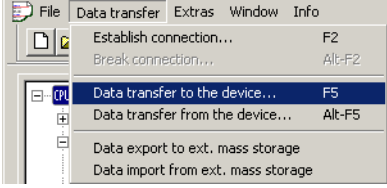

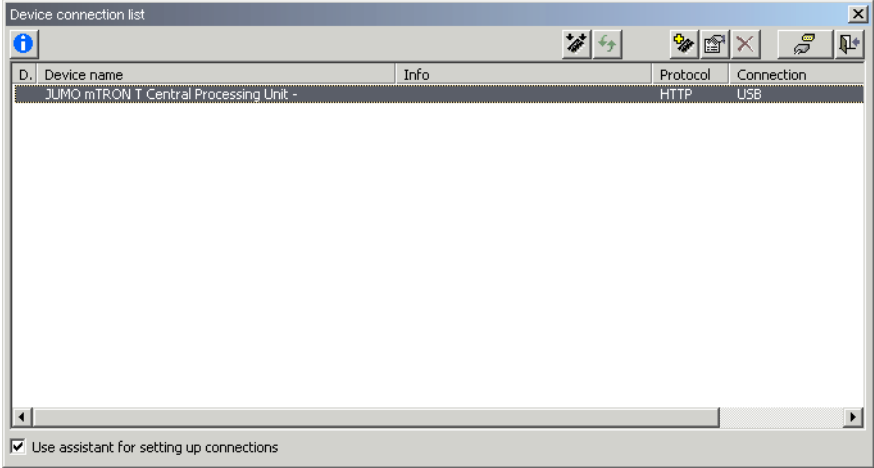
Step	Activity
1	<p>Use the menu item DATA TRANSFER > ESTABLISH CONNECTION... to open the device connection list.</p> 
2	<p>Activate the checkbox for "Use assistant for setting up connections" (select checkbox), if this has not already been pre-set. Then, click  to create a new entry. (If the device connection list does not yet contain any entries, the assistant opens immediately; see step 3.)</p> 

6 Initial startup

Step	Activity
3	<p>Configure the USB connection to the central processing unit. To do this, select the appropriate version of the central processing unit from the "Device version" drop-down list. Then, in the "Connection presettings" drop-down list, select the "Connection via USB" entry. Then click NEXT.</p> 
4	<p>Enter the user ID and device password. Then click NEXT.</p>  <p>This example starts from the assumption that only one central processing unit and one multifunction panel are connected to the PC via a USB interface. If multiple devices of the same type are connected – for example two central processing units – the relevant device must be selected.</p> <p>⇒ Chapter 8.2.1 "Selecting a device connected via USB interface", page 104</p>

Step	Activity
5	<p>Check the settings and click FINISH.</p> 
6	<p>Close the device connection list (central processing unit) using the  button (or alternatively with X) to proceed to configuration of the USB connection to the multifunction panel. If the device connection list (multifunction panel) does not yet contain any entries, the assistant opens immediately (if this is not the case, see step 2).</p> <p>Select the appropriate version of the multifunction panel from the "Device version" drop-down list. Then, in the "Connection presettings" drop-down list, select the "Connection via USB" entry. Then click NEXT.</p> 
7	<p>Carry out the next steps as described in steps 4 and 5.</p>

6 Initial startup

Step	Activity
8	<p>Select the menu entry DATA TRANSFER > DATA TRANSFER TO THE DEVICE – or click  – to start the transfer.</p>  <p>The screenshot shows a menu titled 'Data transfer' with the following options: 'Establish connection...' (F2), 'Break connection...' (Alt-F2), 'Data transfer to the device...' (F5), 'Data transfer from the device...' (Alt-F5), 'Data export to ext. mass storage', and 'Data import from ext. mass storage'. The 'Data transfer to the device...' option is highlighted.</p>
9	<p>Select the central processing unit and multifunction panel from the relevant device connection list and click the  button to establish the connection.</p>  <p>The screenshot shows a window titled 'Device connection list' with a table containing one entry: 'JUMO mTRON T Central Processing Unit -'. The table has columns for 'D.', 'Device name', 'Info', 'Protocol', and 'Connection'. The 'Protocol' column shows 'HTTP' and the 'Connection' column shows 'USB'. There are several icons in the top right corner of the window, including a green arrow icon. A checkbox at the bottom left is checked and labeled 'Use assistant for setting up connections'.</p>

This section describes how to manage the languages for the multifunction panel and the central processing unit Web pages (Webserver function). Alongside the texts, this also includes the country-specific settings such as the date format and decimal points. The following text exclusively uses the term "languages" for this.

Languages can be edited, created, or removed. When performing these functions, a distinction is made between the languages in the text library of the setup program and the languages in the country settings of a project (project-specific setup file).

Text library

The text library is used to manage the various languages, independently of projects. When a new project is created, these languages are copied to the setup file by the setup program.

Menu bar function: **EXTRAS > TEXT LIBRARY...**

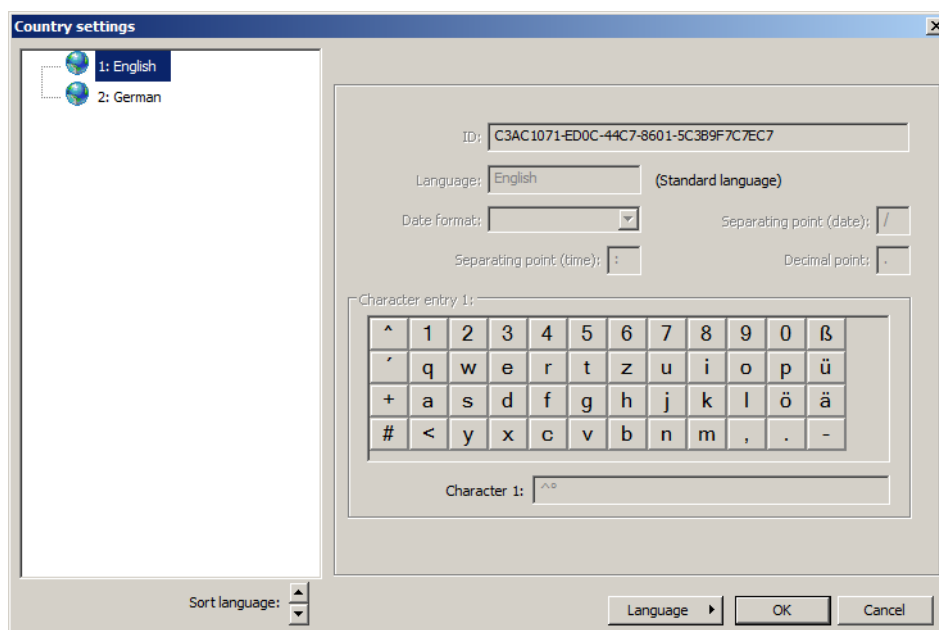
This function is only available if a license number has been registered that covers text library editing.

The language sequence can be changed and is also incorporated during transfer to the setup file. The first two languages (language 1 and language 2) are transferred to the multifunction panel and the central processing unit and can be selected there.

Country settings

The country settings are used to manage the various languages for specific projects. When a new project is created, the languages are transferred to the setup file from the text library.

To access this function in the navigation tree or display window, double-click "Country settings". Once the function has been called up, all languages that are available in the setup file are displayed.



A language can be moved to a different position in the list ("Sort language"). The first two languages in the list are sent to the multifunction panel and the central processing unit and are available at these locations for switching between languages.



NOTE!

Only language 1 of the dynamic tag texts of the central processing unit (program names, channel names) is transferred to the device. A language change at the device does not effect these texts. Where appropriate, the order of the languages must be changed before the transfer.

7 Languages

The **LANGUAGE >** button enables the respective language to be edited in various submenus. Standard languages cannot be edited. Standard languages can be identified by the fact that the dialog window does not contain any editable fields. If a standard language needs to be changed, a new language based on the standard language must be created first.


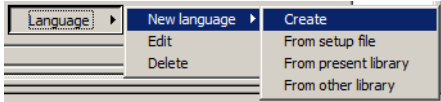
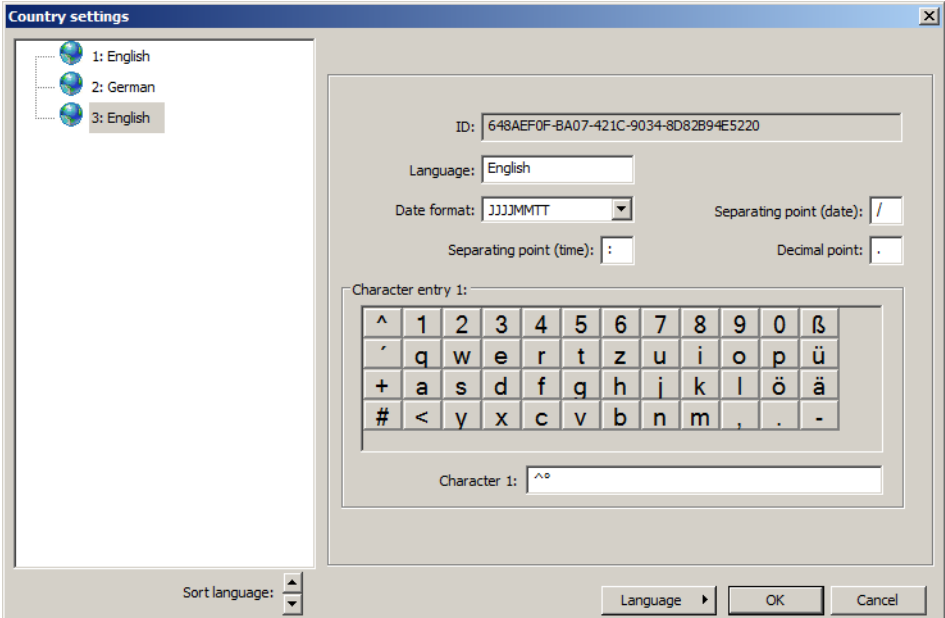



NOTE!

Languages can be edited in the text library and in the country settings, and can be copied between these two areas. As a rule, all country-specific or customer-specific changes should be made in the text library; project-specific changes should be made in the country settings.

7.1 Creating a new language

The following example explains how to create a new language on the basis of an existing language. The language can be subsequently edited.

Step	Activity
1	Select an existing language (by left-clicking) to use for creating the new language. 
2	Select the function: LANGUAGE > NEW LANGUAGE > CREATE  <p>This creates a copy of the language and an overview of the data is displayed. The fields with a white background indicate that the language can be edited.</p> 
3	Assign a new name so that the new language can be identified. 

7 Languages

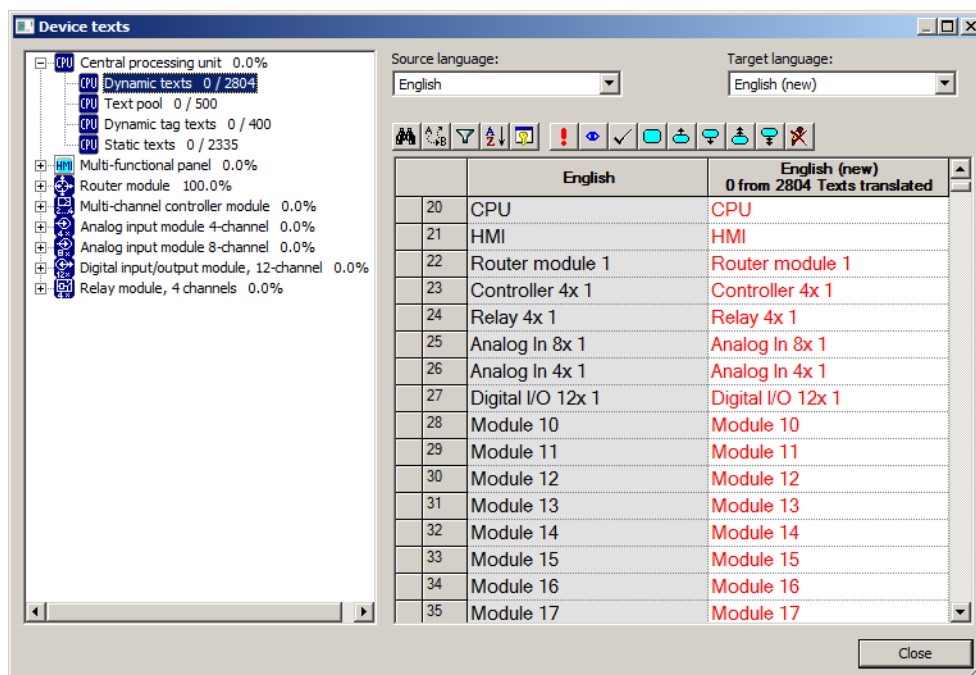
Step	Activity																								
4	<p data-bbox="395 280 893 309">Edit the new language: LANGUAGE > EDIT.</p> <div data-bbox="746 344 1120 427" style="border: 1px solid gray; padding: 2px; margin: 10px 0;"> <div style="display: flex; align-items: center;"> <div style="border: 1px solid gray; padding: 2px; margin-right: 5px;">Language ▾</div> <div style="border: 1px solid gray; padding: 2px;"> New language ▾ Edit Delete </div> </div> </div> <p data-bbox="395 436 1468 497">Statistics are shown on the number of texts of the first module (central processing unit) and of the respective categories of text.</p> <div data-bbox="443 506 1426 1173" style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Device texts</p> <ul style="list-style-type: none"> [-] CPU Central processing unit 0.0% <ul style="list-style-type: none"> [-] CPU Dynamic texts 0 / 2804 [-] CPU Text pool 0 / 500 [-] CPU Dynamic tag texts 0 / 400 [-] CPU Static texts 0 / 2335 [+] HMI Multi-functional panel 0.0% [+] Router module 100.0% [+] Multi-channel controller module 0.0% [+] Analog input module 4-channel 0.0% [+] Analog input module 8-channel 0.0% [+] Digital input/output module, 12-channel 0.0% [+] Relay module, 4 channels 0.0% </div> <div style="width: 50%;"> <p>Target language: English (new) ▾</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Statistics</th> <th>Total</th> <th>Translated</th> <th>Not translated</th> </tr> </thead> <tbody> <tr> <td>Dynamic texts</td> <td>2804</td> <td>0</td> <td>2804</td> </tr> <tr> <td>Text pool</td> <td>500</td> <td>0</td> <td>500</td> </tr> <tr> <td>Dynamic tag text</td> <td>400</td> <td>0</td> <td>400</td> </tr> <tr> <td>Static texts</td> <td>2335</td> <td>0</td> <td>2335</td> </tr> <tr> <td>Sum</td> <td>6039</td> <td>0</td> <td>6039</td> </tr> </tbody> </table> </div> </div> </div> <p data-bbox="395 1187 1141 1216">Clicking on another module shows the statistics of this module.</p> <p data-bbox="395 1227 1141 1256">Click on the particular category of text of a module to edit texts.</p> <p data-bbox="395 1267 941 1296">⇒ Chapter 7.2 "Editing a language", page 93</p>	Statistics	Total	Translated	Not translated	Dynamic texts	2804	0	2804	Text pool	500	0	500	Dynamic tag text	400	0	400	Static texts	2335	0	2335	Sum	6039	0	6039
Statistics	Total	Translated	Not translated																						
Dynamic texts	2804	0	2804																						
Text pool	500	0	500																						
Dynamic tag text	400	0	400																						
Static texts	2335	0	2335																						
Sum	6039	0	6039																						

7.2 Editing a language

The following screenshot shows the source language texts on the left and the target language texts on the right.

SOURCE LANGUAGE drop-down list: Selection of language in left column. This language cannot be edited.

TARGET LANGUAGE drop-down list: Selection of language in right column. Only this column can be edited.



Texts that are displayed in red on a white background have not yet been edited (i.e. not translated). The other types of display are listed in the "Toolbar" section that follows.

To change a text, simply click in the text field with the left mouse button. The selected field is displayed with a black outline. If the text has been changed, it is displayed in black on a white background when the field is exited. This marks the text as edited (translated).

	English	English (new)
20	CPU	CPU
21	HMI	Multifunction panel
22	Router module 1	Router module 1



NOTE!

Static texts, such as parameter names, that are too long for the display on the multifunction panel are abbreviated automatically in the menu ("..."). However, the text will be displayed in full length within the dialog box in which the relevant parameter is set.

Generally, texts should be as short as possible and unambiguous. Longer texts that occur in the same menu should already vary at the beginning of the text.

7 Languages

Toolbar

The toolbar provides various functions for text editing.



Button	Function
	Find text.
	Replace text with different text.
	Use filters to reduce the amount of text in the list.
	Sort text alphabetically.
	Display text ID (in place of line number).
	Mark text as "not edited" (red text).
	Mark text as "to be checked" (blue text).
	Mark text as "edited" (translated) (black text).
	Bookmark the text.
	Jump to previous bookmark.
	Jump to next bookmark.
	Jump to previous bookmark (over all text categories).
	Jump to next bookmark (over all text categories).
	Protect text against writing (gray background).

Errors during text entry

Errors made during text entry are indicated by a background color.

Background	Meaning
Blue	Insufficient memory is available. The total number of characters is too great and must be reduced (shorten text).
Yellow	The text entered is too long; it does not fit in the window provided.
Purple	The text entered contains characters that cannot be displayed on the device.
Brown	Error when editing a place holder (#). The "#" symbol is used as a place holder. Text is generated automatically at the location of the place holder by the device software. Example: "Device ID #1,100". "Device ID" can be changed, but "#1,100" cannot .

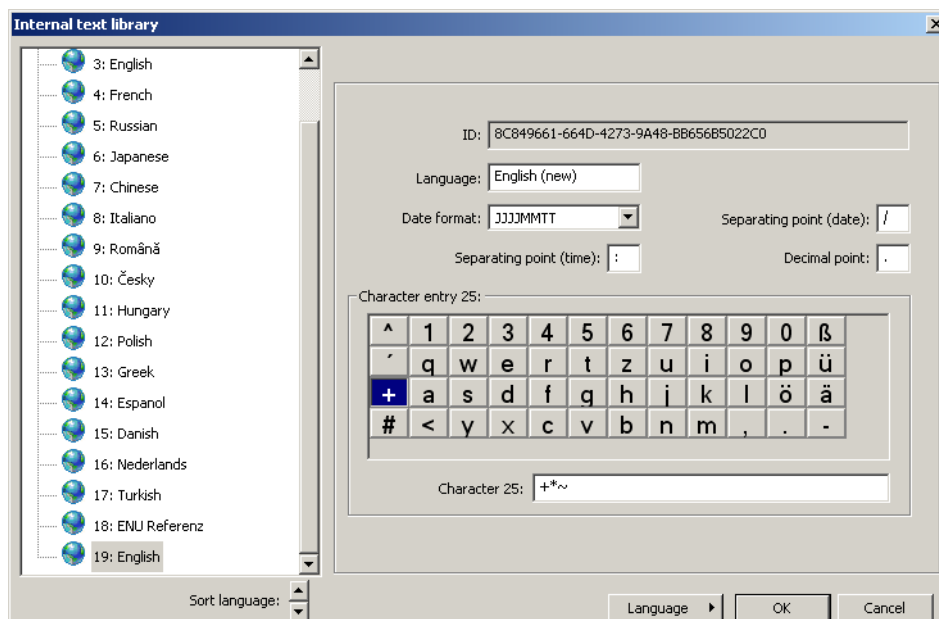


NOTE!

Any errors that occur must be rectified.
Setup files that contain errors must not be transferred to the device.

7.3 Device character set

When a new language is created, the characters that are available for text entry on the multi-function panel (virtual keypad) can also be specified.



Step	Activity
1	Left-click a virtual key in the "Character entry" field (example: "+"). The characters that are assigned to the key are displayed in the text field. The first character on the left corresponds to the character on the key.
2	Change the key assignment in the text field if necessary (if an invalid character is entered, the background becomes purple).

Following transfer of the setup file, the characters are available on the multifunction panel for text entry in the sequence specified.

Example: Assignment of "+" key



8 Connection to the system

This section describes the various options for establishing a connection between the setup program and the system.

Connection can be made via:

- LAN interface (HTTP or HTTP proxy)
- USB interface



NOTE!

The USB interface is not intended for permanent connection due to the fact that the USB plug is not secured against unintentional removal as it does not feature a locking device.

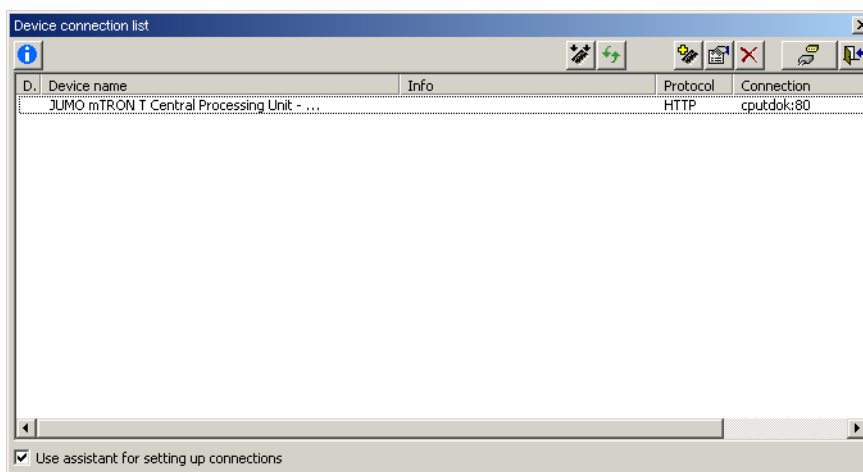
Data transfer between the setup program and the system requires a connection to be present.

Function in the menu bar: **DATA TRANSFER > ESTABLISH CONNECTION...**

8.1 Device connection list

The device connection list contains all devices for which a connection has already been configured. This is generally the central processing unit and the multifunction panel.

You can add connections to new devices, change the features of existing connections (e.g. interface parameters), and remove connections.



Connection settings assistant

The "Use assistant for setting up connections" function helps you to create a new entry (i.e. a new connection) and edit existing entries.

The assistant is always active once the device connection list has been opened (checkbox selected). It starts each time a new entry is to be added to the device connection list.


⇒ Chapter 8.2 "Configuring a connection with the assistant", page 99



You can deactivate the assistant by clearing the checkbox. If a new entry is then added to the device connection list, you must select the individual configuration steps without the assistant. However, if you open the device connection list again, the assistant is re-activated.

⇒ Chapter 8.3 "Configuring a connection without the assistant", page 106

8 Connection to the system

Establishing a connection

If you wish to establish a connection (or start data transfer without an existing connection), the setup program opens the device connection list. You must then select the relevant device in the device connection list and click the  button. Depending on the project configuration (hardware arrangement), the connection to the central processing unit is established first, and then the connection to the multifunction panel.







If you do not wish to connect a certain device, close the relevant dialog ("Device connection list" window) using the  button (or alternatively with ).

If the project does not contain a multifunction panel or central processing unit, the corresponding setup program dialog does not open.

Toolbar

The toolbar in the device connection list provides various functions.



Button	Function
	Display information about the device connection list.
	Create new entry.
	Edit features.
	Permanently remove entry.
	Establish connection to the device marked in the list.
	Close dialog.

8.2 Configuring a connection with the assistant

The connection settings assistant helps you to configure a new connection.

The assistant is always active once the device connection list has been opened (checkbox selected). It starts each time a new entry is to be added to the device connection list.

⇒ Chapter 8.1 "Device connection list", page 97



NOTE!

It is recommended that new connections are configured with the assistant. The assistant can be used by users without expert knowledge.

Setup dialog – device and type of connection

Parameters

Parameter	Selection/settings	Description
Device version	Select the appropriate device version from the drop-down list.	Version of central processing unit or multifunction panel
Device group / machine line	If necessary, select relevant device group/machine line from the drop-down list to assign a new connection to it.	This line only appears if the PCC software has been installed on the relevant PC. If multiple device groups/machine lines are available, they can be selected in the drop-down list.
Connection pre-settings	Setup or ring memory via TCP/IP Setup or ring memory via HTTP proxy Connection via USB	LAN interface (HTTP protocol), connection to device within an Intranet (or VPN) LAN interface (HTTP protocol), connection to device via proxy server and Internet USB interface
Description	Enter text if relevant.	Description of connection

8 Connection to the system

Parameter	Selection/settings	Description
Define as standard connection in the connection list...	Connection is automatically made to a standard device; other devices must be connected via the device connection list.	
	Not selected (empty)	Device is not a standard connection device.
	Selected (✓)	Device is a standard connection device.
Test that connection can be established.	If this option is activated, a test is performed following configuration for whether a connection can be made to the selected device via the selected interface.	
	Not selected (empty)	No test
	Selected (✓)	Test after configuration completed
ID	(No input field)	Internal ID (for AuditTrail data of device)

When you click the **NEXT** button, the assistant opens the next setup dialog.

8 Connection to the system

Setup dialog – Log-in on device

The screenshot shows a window titled "Assistant for setting up connections" with a sub-tab "Log-in on device". On the left is a JUMO logo and a graphic of a key with a yellow tag labeled "LOGIN". The main area contains a "Log-in" section with two checkboxes: "Do not log in" (unchecked) and "Save ID and password" (checked). Below these are two input fields: "User ID:" containing the text "Master" and "Device password:" which is masked with asterisks. A note at the bottom states: "Note: Log-in takes place with the current user. If the log-in is to be performed with a different user ID, then the corresponding ID and password have to be entered here!". At the bottom of the dialog are three buttons: "< Back", "Next >", and "Cancel".

Parameters

Parameter	Selection/settings	Description
Do not log in	Activate this option (select checkbox) if connection is to be made to the device without logging in. Without a log-in some functions may not be available; this is determined by which rights have been defined for a user who is not logged in. ⇒ Chapter 5.5.6 "General rights (system version 01)", page 66	
	Not selected (empty) Selected (✓)	Device log-in No log-in
Save ID and password	Activate this option (select checkbox) if the user ID and password are to be saved and used for the log-in.	
	Not selected (empty) Selected (✓)	User ID and password are not saved. Log-in is performed with the user ID and password that are used for the setup program log-in. User ID and password are saved.
User ID	Enter user ID (overwrite existing ID if necessary) Master	User name for device log-in
Device password	Enter password (overwrite existing password if necessary) 9200	Password for device log-in

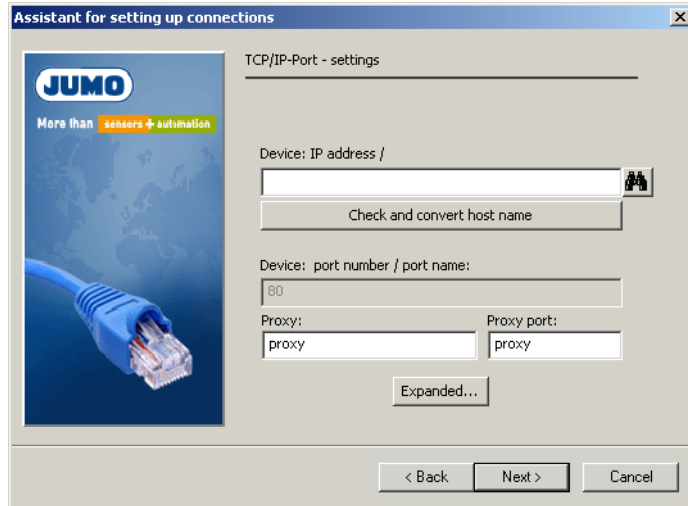
When you click the **NEXT** button, the assistant opens the next setup dialog.

8 Connection to the system



Setup dialog – TCP/IP-Port – settings

This dialog depends on the selected connection presettings.

The screenshot is an illustration for "Setup or ring memory via HTTP proxy". With the exception of the "Proxy" and "Proxy port" parameters, the description also applies to "Setup or ring memory via TCP/IP".



Parameters

Parameter	Selection/settings	Description
Device: IP address / host name	Enter IP address or name. Alternatively, click the  button and select the device in the list by double-clicking.	IP address or host name of device The  function searches for all devices that are present in the local network and displays them in a list. ⇒ Chapter 8.4 "Searching for devices in the network", page 108
Check and convert host name	(Button)	Button for converting the host name into the IP address of the device. If applicable, all registered host names for an address and alternative addresses are displayed.
Device: port number / port name	80 The port number or port name can only be changed in the expanded settings (see below).	Port number or port name of device
Proxy (For HTTP proxy only)	Enter IP address or name. proxy	IP address or name of proxy server
Proxy port (For HTTP proxy only)	Enter port number or name. proxy	Port number or port name of proxy server
Expanded...	(Button)	Expanded settings for communication These settings should only be changed in exceptional circumstances.

When you click the **NEXT** button, the assistant opens the next setup dialog.

8 Connection to the system

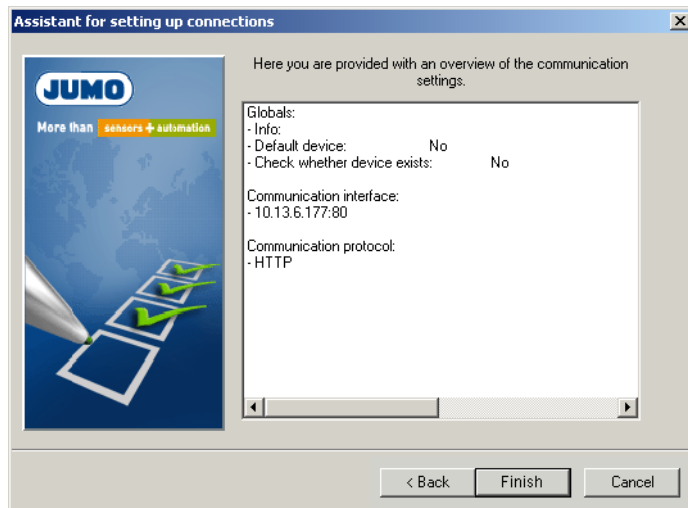
Setup dialog – Overview of the settings

At the end of configuration, you receive an overview of the settings.

If the "Connection via USB" connection presetting was selected, this overview is displayed immediately after the "Log-in on device" dialog, as no settings are generally required for USB connection or only one device of the same type is connected.

⇒ Chapter 8.2.1 "Selecting a device connected via USB interface", page 104

You can correct incorrect settings by using the **BACK** button to return to the relevant setup dialog and making the correction in the dialog.



When you click the **FINISH** button, the assistant closes and the new connection is entered into the device connection list.

8 Connection to the system

8.2.1 Selecting a device connected via USB interface

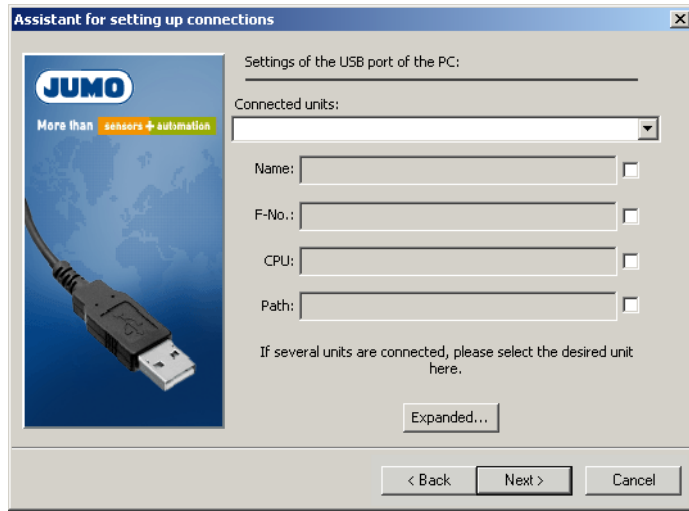
If multiple devices of the same type are connected via USB interface (e.g. two central processing units), a device must be selected in this dialog. Various test criteria can also be activated so that a connection to the device is established only following a successful test.

Setup dialog – Settings of the USB port of the PC

This dialog depends on the selected connection presets.

The screenshot is an illustration for "Connection via USB".

To access this dialog, hold the Ctrl and Shift keys and double-click the **NEXT** button – from the "Log-in on device" dialog.



Parameters

Parameter	Selection/settings	Description
Connected units	Select device.	Devices that are connected via USB interface are shown.
Name	Enter name To activate the input field, select the "Activate test yes/no" option on the right next to the field (select checkbox).	If the test is activated, the device is only connected if the device name corresponds.
F-No.	Enter device number (F-No. according to nameplate) To activate the input field, select the "Activate test yes/no" option on the right next to the field (select checkbox).	If the test is activated, the device is only connected if the device number corresponds.
CPU	Enter CPU serial number To activate the input field, select the "Activate test yes/no" option on the right next to the field (select checkbox).	If the test is activated, the device is only connected if the serial number of the CPU corresponds.
Path	Enter USB path To activate the input field, select the "Activate test yes/no" option on the right next to the field (select checkbox).	If the test is activated, the device is only connected if the USB path corresponds.

8 Connection to the system

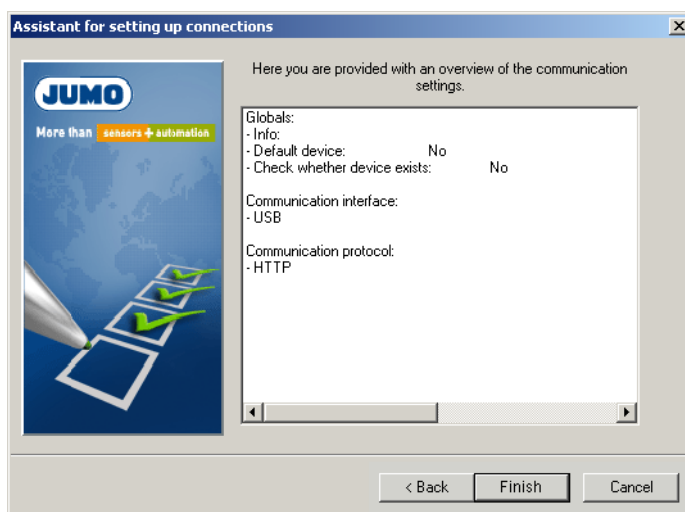
Parameter	Selection/settings	Description
Expanded...	(Button)	Expanded settings for communication These settings should only be changed in exceptional circumstances.

When you click the **NEXT** button, the assistant opens the next setup dialog.

Setup dialog – Overview of the settings

At the end of configuration, you receive an overview of the settings.

You can correct incorrect settings by using the **BACK** button to return to the relevant setup dialog and making the correction in the dialog.



When you click the **FINISH** button, the assistant closes and the new connection is entered into the device connection list.

8 Connection to the system

8.3 Configuring a connection without the assistant

You can deactivate the assistant in the device connection list (clear checkbox).

⇒ Chapter 8.1 "Device connection list", page 97

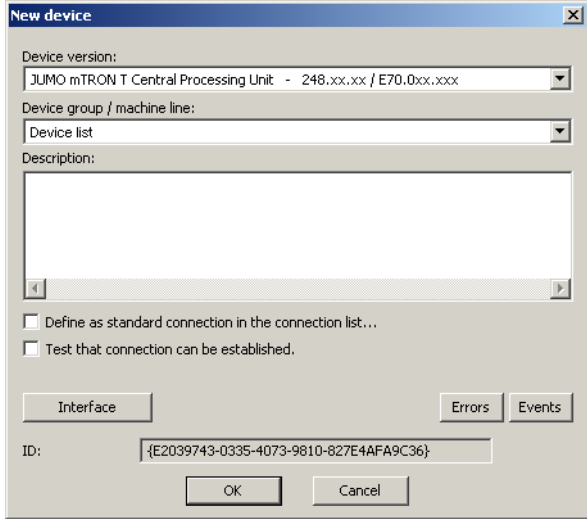
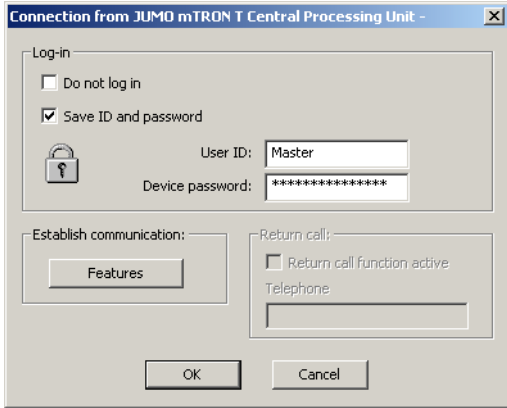
During configuration, you are not guided to the next step – as is the case with an active assistant. Instead, you must select the individual configuration steps independently.

The following example shows the basic procedure. The parameters in the individual setup dialogs are largely the same as those used for configuration with the assistant, meaning that a description is not necessary here. However, additional protocols and interfaces are available for the settings for establishing communication.

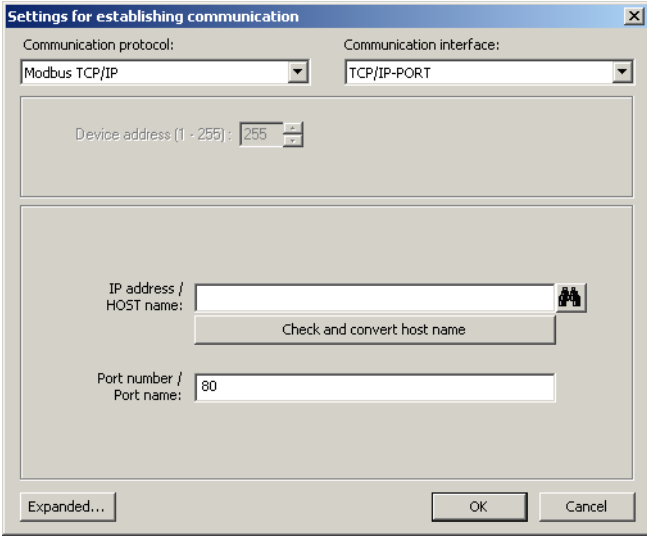


NOTE!

Expert knowledge is required to configure a new connection without an assistant; this is only intended for service use.

Step	Activity
1	Make the settings for the new device and click INTERFACE . 
2	Make the settings for log-in and click FEATURES . 


8 Connection to the system

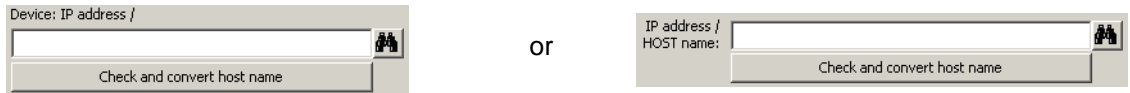
Step	Activity
3	<p>Make the settings for the protocol and interface and click OK.</p> <p>Before doing so, it may be necessary to click the EXPANDED... button to perform advanced settings for communication.</p> 
4	<p>Click the OK button to close all previously opened setup dialogs (windows).</p> <p>When you have closed the last setup dialog, the new connection is entered into the device connection list.</p>

8 Connection to the system

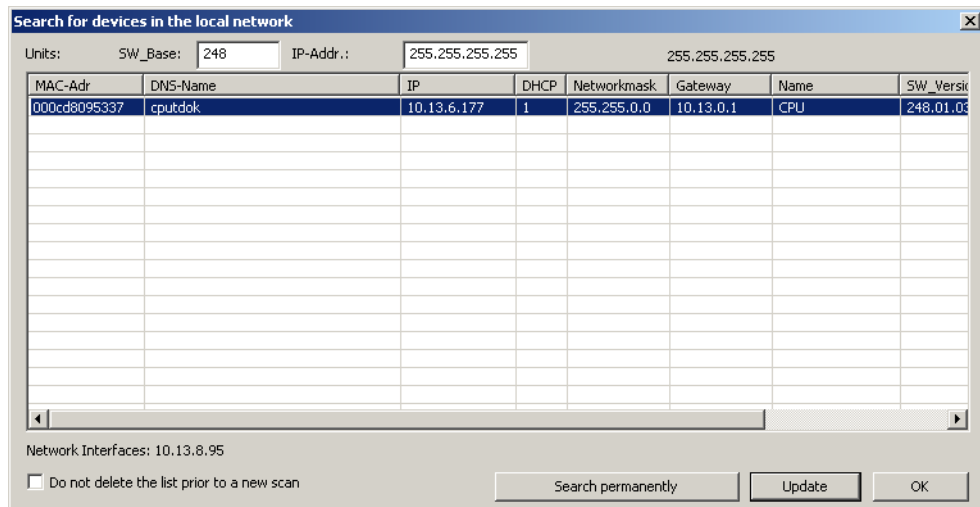
8.4 Searching for devices in the network

This function helps you to select the IP address or host name for the relevant device.

The  button is located on the right next to the input field in the dialog for entering the IP address or host name:



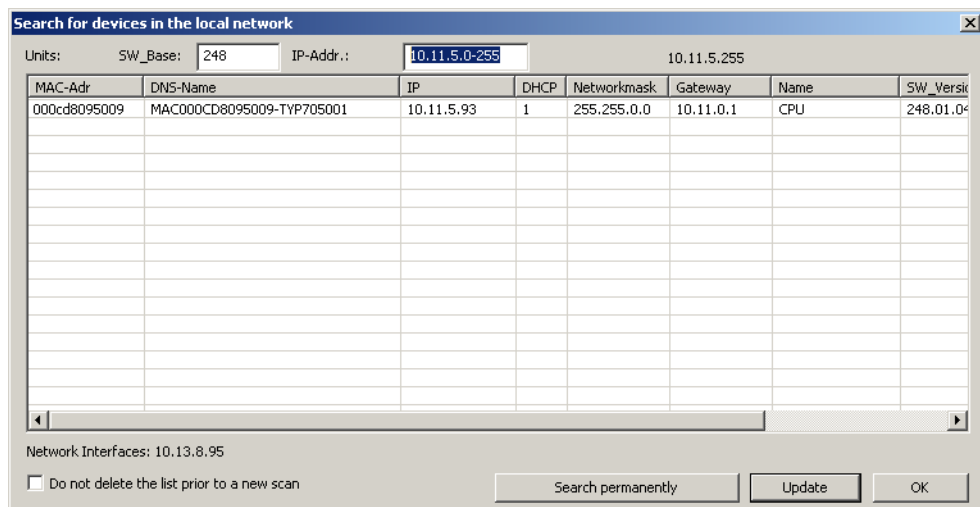
Use this button to start an automatic search for all relevant devices in the local network, and to list these:



The listed devices are in the same sub-network as the PC (sub-network mask: 255.255.0.0) that was used to perform the search.

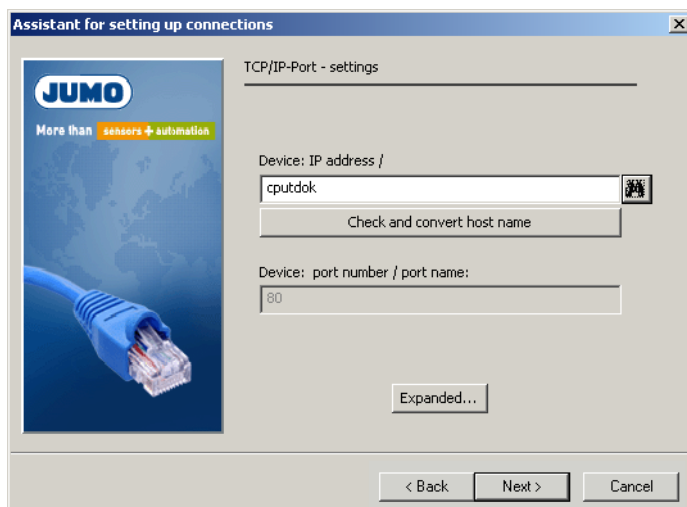
The search can be limited to specific devices or versions (here: 248 = CPU) by specifying the software version in the "SW_Base" field.

If you wish to search for devices in a different sub-network, you must enter the address range in the "IP-Adr." field. To do this, part of the IP address must be known; only the last byte can be entered as a range (e.g. 10.11.5.0-255):



8 Connection to the system

You can select the relevant device using the mouse pointer (click in line) and transfer it using **OK** (or by double-clicking the line). This enters the host name (DNS-Name) in the input field:



You can use the "Check and convert host name" function to establish the IP address and transfer it to the input field (subsequent editing may be necessary in the input field). Depending on the version, there may be an option to select the host name or IP address from a drop-down list.

8 Connection to the system

9 Version changes

This chapter describes the use of setup projects with the various system versions (stages) of the measurement, control, and automation system. The following scenarios in particular are considered for this:

- Using an old, unchanged setup project and adapting the system version (system downgrade)
- Adapting an old setup project to the new system version
- Changing the system version (system upgrade)



NOTE!

To ensure that even the newest system version is supported by the setup program, the newest version of the setup program should always be used. The current setup program can be downloaded from the manufacturer's website.

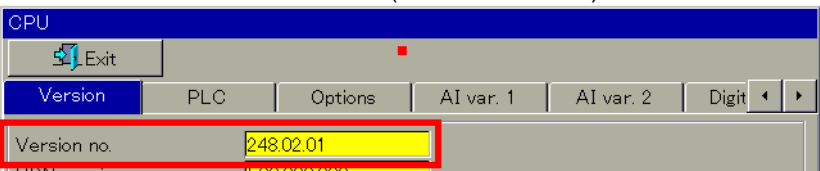


NOTE!

The dependencies between system version and hardware version of the central processing unit must be observed (see Chapter 9.7 "Dependence on the HW version of the CPU", page 121).

9.1 Overview

Preparatory steps

Step	Activity
1	Install the newest version of the setup program (from MiniDVD or by download).
2	<p>Check the current system version of the measurement, control, and automation system in the device manager of multifunction panel 840:</p> <p>DEVICE INFO > CPU > VERSION: Version no. (software version)</p>  <p>➔ The number in the second block of the software version indicates the system version (here: 02).</p>

Case distinctions

System with system version 02			System with system version 01		
Case 1:	Case 2:	Case 3:	Case 4:	Case 5:	Case 6:
Downgrading to system version 01 and using a setup project created for system version 01	Adapting a setup project created for system version 01 to system version 02	Creating a new setup project for system version 02 "Normal case" (no special steps required)	Creating a new setup project for system version 01 (or using an existing setup project again)	Upgrading to system version 02 (through new setup project with default settings)	Adapting a setup project created for system version 01 to system version 02 and upgrading to system version 02

The individual cases and the associated steps required are described in the following sections.

9 Version changes

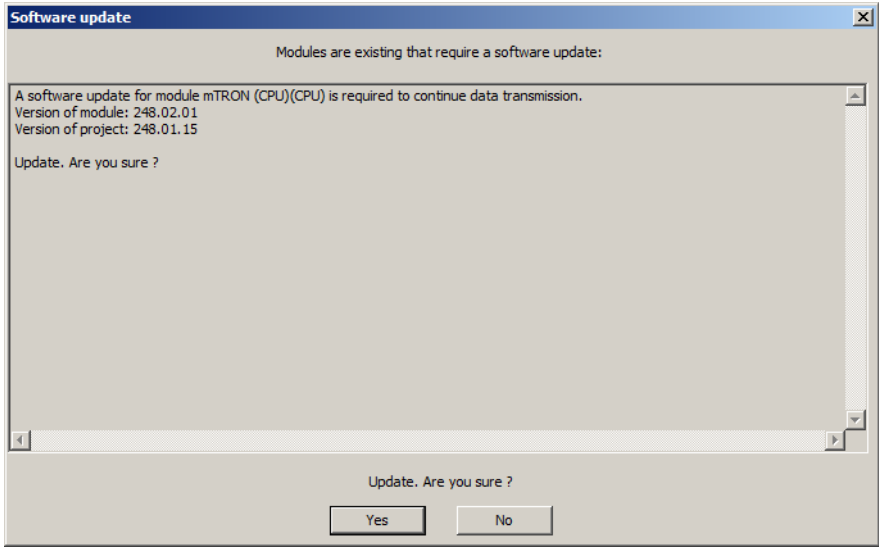
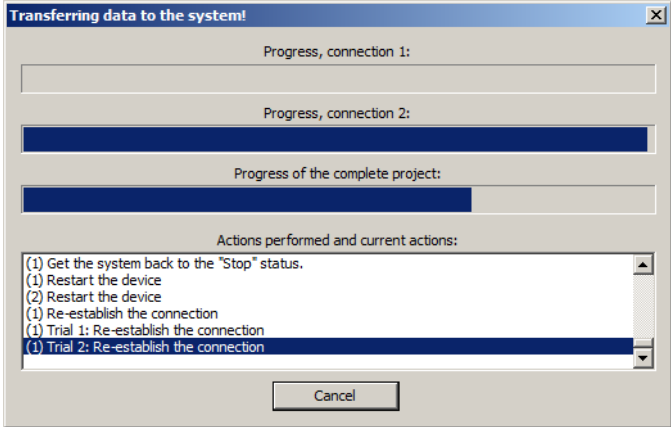
9.2 System with system version 02

The measurement, control, and automation system has system version 02 (CPU software status). The setup program also supports system version 02.

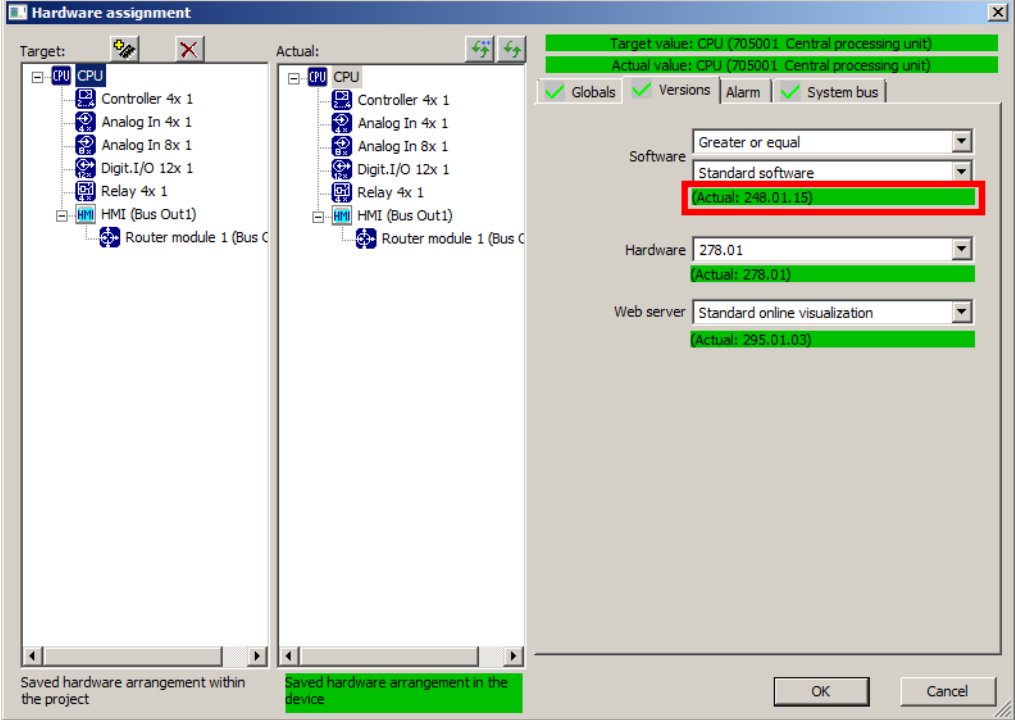
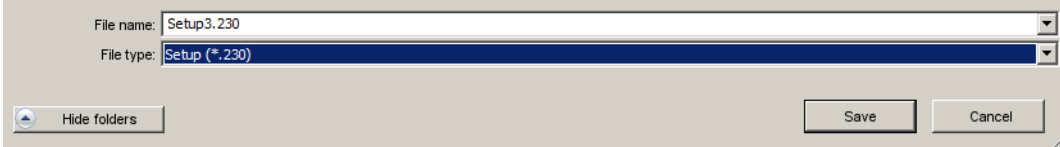
Case 1

Downgrading to system version 01 and using a setup project created for system version 01.

The downgrade is performed by the setup program while the configuration is being transferred.

Step	Activity
1	Open the existing setup file and transfer the project to the system: DATA TRANSFER > DATA TRANSFER TO THE DEVICE
2	The setup program recognizes that a software update (downgrade) is necessary for the CPU. Click "Yes" at the prompt.  <p>Software update dialog box showing a message: "Modules are existing that require a software update: A software update for module mTRON (CPU)(CPU) is required to continue data transmission. Version of module: 248.02.01 Version of project: 248.01.15 Update. Are you sure ?" with Yes and No buttons.</p> <p>➔ The statuses of the connections and the individual actions are displayed. In some cases, at the end of the transfer the setup program makes several attempts to re-establish the connection with the system. Do not interrupt this process under any circumstances.</p>  <p>Transferring data to the system! dialog box showing progress bars for connection 1, connection 2, and the complete project. Below the progress bars is a list of actions performed and current actions: (1) Get the system back to the "Stop" status, (1) Restart the device, (2) Restart the device, (1) Re-establish the connection, (1) Trial 1: Re-establish the connection, (1) Trial 2: Re-establish the connection. A Cancel button is at the bottom.</p>

9 Version changes

Step	Activity
3	<p data-bbox="395 282 1425 309">After successful transfer, check the CPU software version in the hardware assignment.</p>  <p data-bbox="395 1043 1453 1099">➔ The number in the second block of the software version indicates the system version, here 01.</p>
4	<p data-bbox="395 1126 1449 1182">If the setup file is saved under a new name with FILE > SAVE AS ..., do not change the file type (drop-down list).</p> 

9 Version changes

Case 2

Adapting a setup project created for system version 01 to system version 02.

In this case no change to the system version is required.

Step	Activity
1	Open the setup file and select FILE > SAVE AS ...
2	In the following dialog box, select the version of the central processing unit (here: 248.02.xx) from the drop-down list (file type) and click the "Save" button. <div data-bbox="395 539 1474 696" data-label="Image"> </div>
3	Exit the following dialog by clicking "OK". <div data-bbox="592 734 1275 1285" data-label="Image"> </div>
4	Save the setup file under the desired name.
5	Transfer the setup project to the system: DATA TRANSFER > DATA TRANSFER TO THE DEVICE



NOTE!

The standard PLC application is automatically adapted during the conversion. In case of an own (customer) PLC application, the user must ensure that the version libraries of the new system version are imported into the existing PLC application (see Chapter 9.8 "Adapt an own PLC application to the system version", page 121).

Case 3

Creating a new setup project for system version 02.

This is the "normal case"; the setup project can be created in the usual way (see example in Chapter 6 "Initial startup", page 75).

In the case of user-defined setting, system version 02 must be selected (CPU version, here: 248.02.xx).

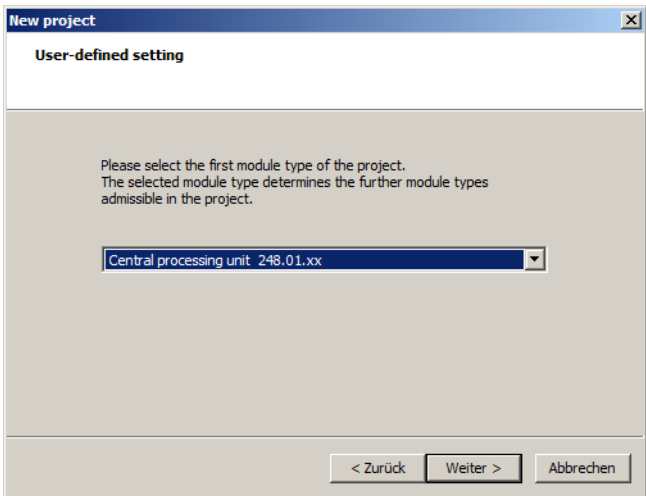
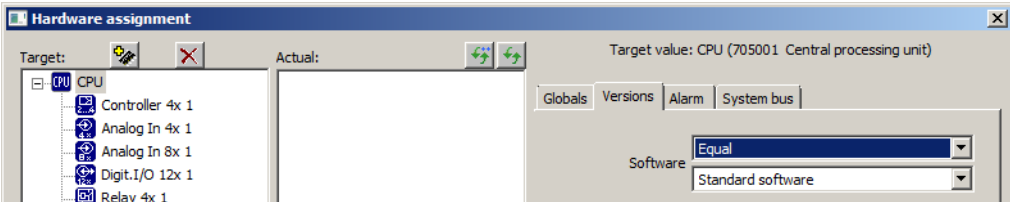
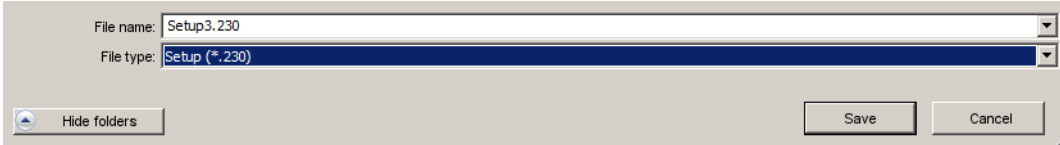
9.3 System with system version 01

The measurement, control, and automation system has system version 01 (CPU software status). The setup program already supports system version 02.

Case 4

Creating a new setup project for system version 01 (or using an existing setup project again).

In this case no change to the system version is required.

Step	Activity
1	<p>Create a new project by selecting FILE > NEW (user-defined setting) and select the CPU with version 248.01.xx.</p> 
2	<p>In the hardware assignment for the comparison of the CPU software, select the condition "Equal" and keep the software version (here: Standard software).</p> 
3	<p>If the setup file is saved with FILE > SAVE AS ..., do not change the file type (drop-down list).</p> 

9 Version changes

Case 5

Upgrading to system version 02 (through new setup project with default settings).

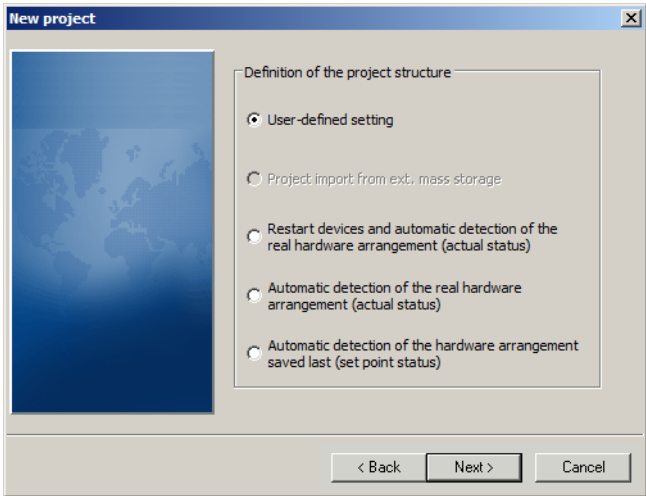
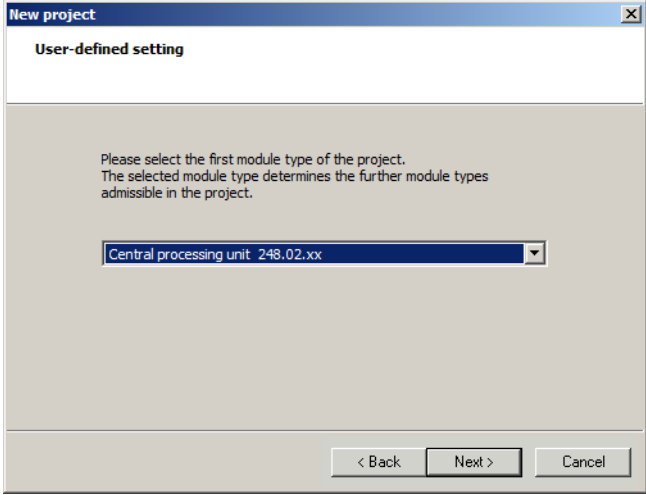
The upgrade is performed automatically by the setup program while the configuration is being transferred (setup project).



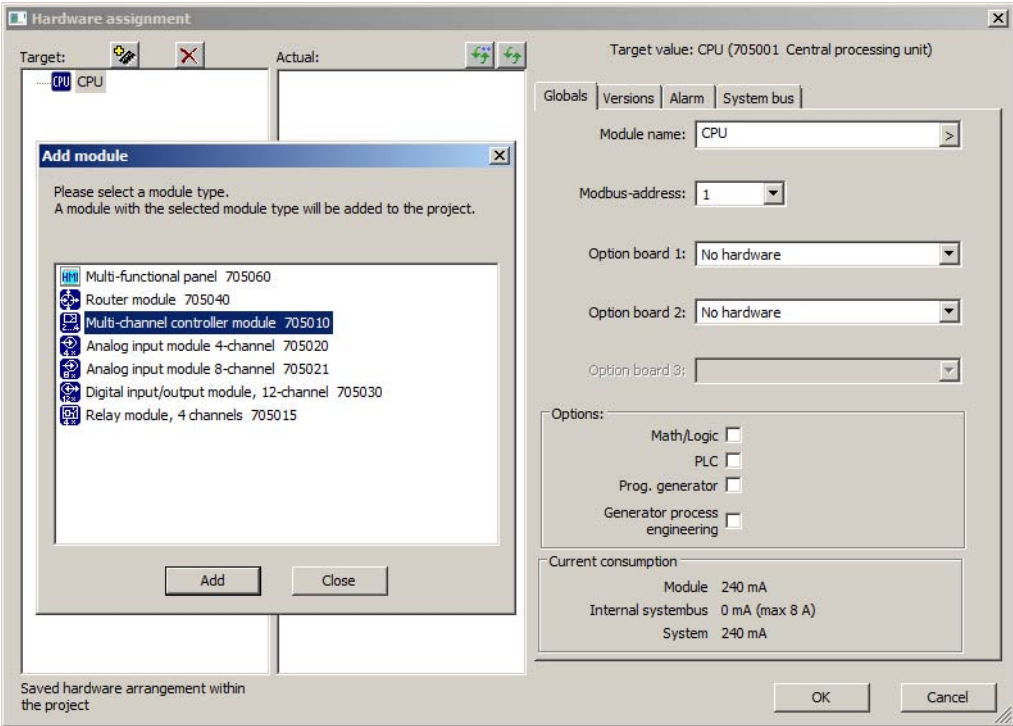
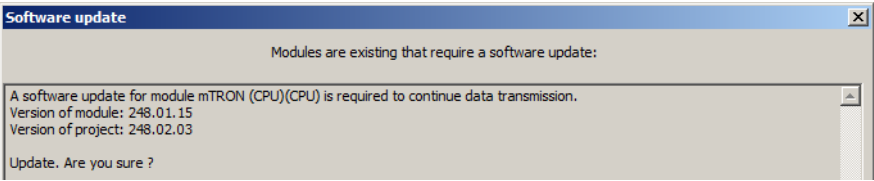
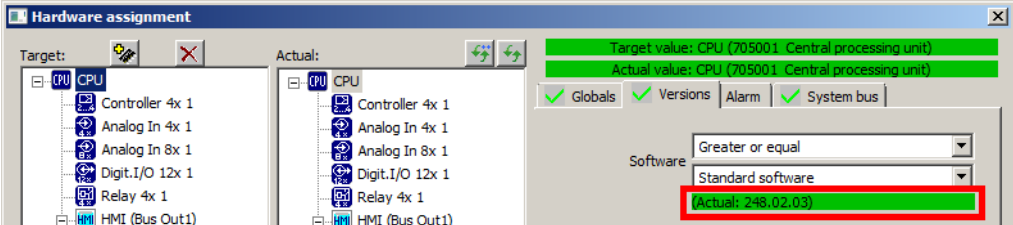
CAUTION!

The existing system configuration is overwritten by the transfer of a new setup project. All existing data is deleted from the system.

Extract the existing configuration beforehand with the setup program and save as a setup file on the PC.

Step	Activity
1	<p>Create a new setup project. To do this, select the option "User-defined setting".</p> 
2	<p>Select CPU with version 248.02.xx.</p> 

9 Version changes

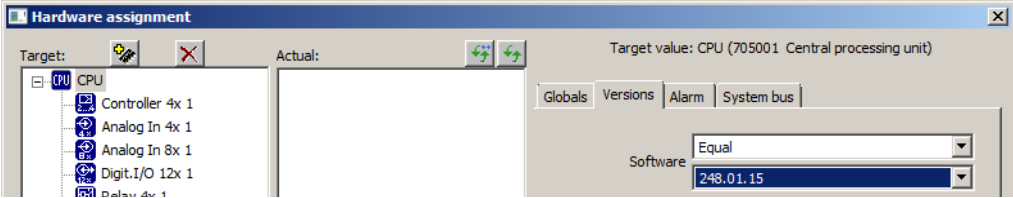
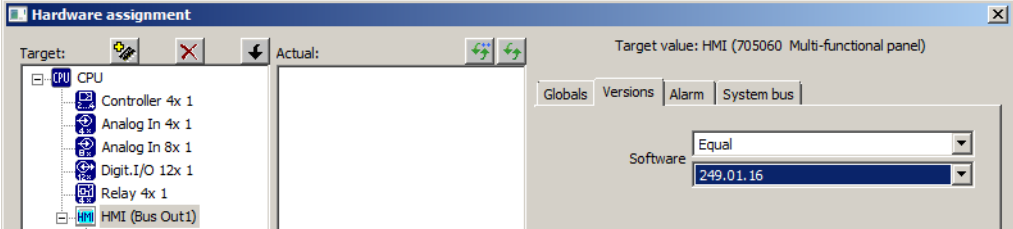
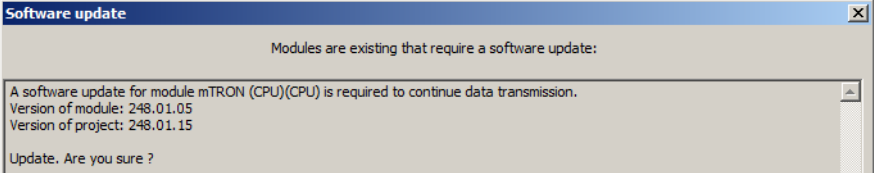
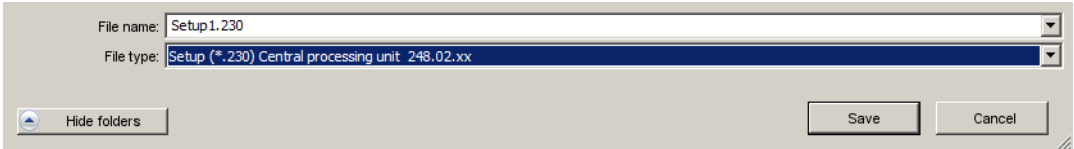
Step	Activity
3	<p>Configure the hardware assignment according to the system.</p> 
4	<p>Transfer the setup project to the system without further configuration: DATA TRANSFER > DATA TRANSFER TO THE DEVICE</p>
5	<p>The setup program recognizes that a software update (upgrade) is necessary for the CPU, and possibly also for the HMI. Answer the prompt with "Yes" in each case.</p> 
6	<p>After successful transfer, check the CPU software version in the hardware assignment (and if necessary, the HMI software version as well).</p>  <p>➔ The number in the second block of the software version indicates the system version, here: 02.</p>
7	<p>If necessary, open the previously saved setup file in the setup program and transfer the setup project to the system again (create the old configuration again, but based on system version 02).</p> <p>For this, the setup project must be adapted to system version 02 – before the transfer to the system (see Case 2).</p>

9 Version changes

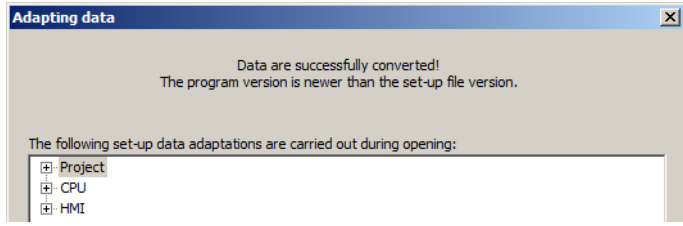
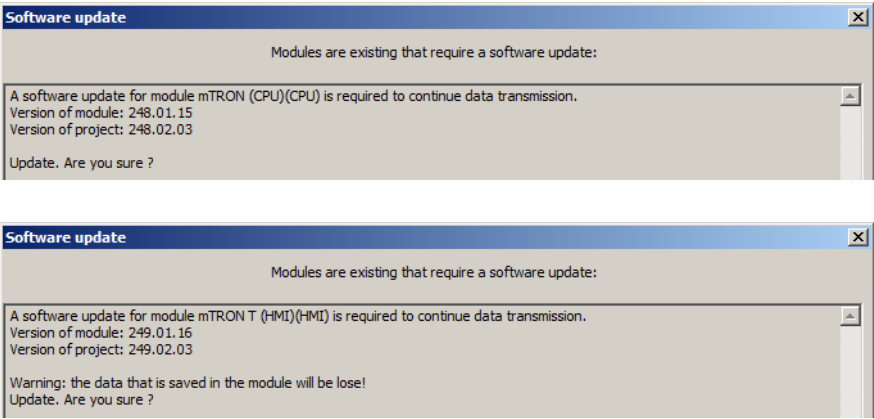
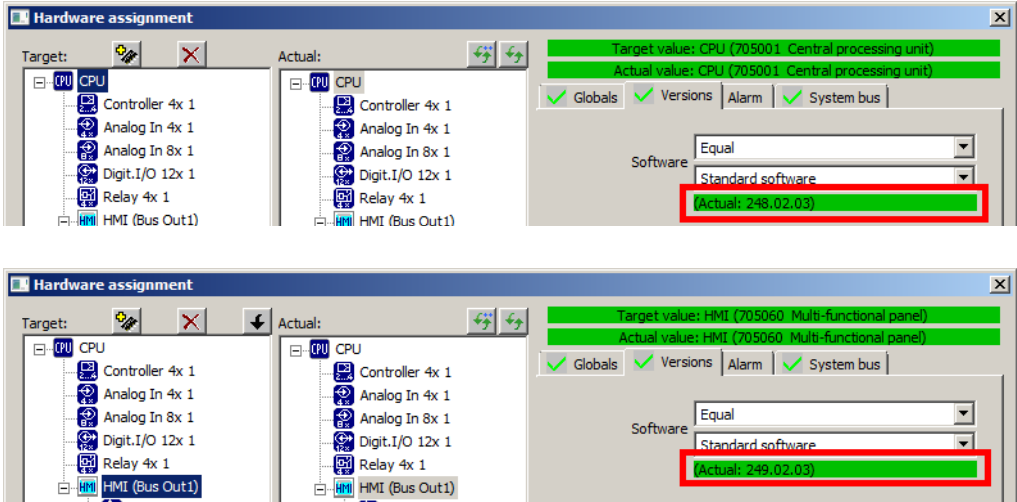
Case 6

Adapting a setup project created for system version 01 to system version 02 and upgrading to system version 02.

First, ensure that the latest version of system version 01 is installed on the system. Then convert the setup project for system version 02 and transfer it to the system. In this context the upgrade to system version 02 is also performed.

Step	Activity
1	<p>Open the existing setup project and, in the hardware assignment under CPU > VERSIONS > SOFTWARE, select the condition "Equal" and the latest software status for system version 01 (here: 248.01.15) (do not click "OK" yet).</p> 
2	<p>In the hardware assignment under HMI > VERSIONS > SOFTWARE, select the condition "Equal" and the latest software status for system version 01 (here: 249.01.16) and close the dialog by clicking "OK".</p> 
3	<p>If the CPU and HMI software versions need to be updated, the relevant prompts appear; answer these with "Yes".</p>  <ul style="list-style-type: none"> ➤ The statuses of the connections and the individual actions are displayed. In some cases, at the end of the transfer the setup program makes several attempts to re-establish the connection with the system. Do not interrupt this process under any circumstances. ➤ After the transfer is complete, the system has the latest version of system version 01.
4	<p>Adapt the setup project to system version 02; to do this, select FILE > SAVE AS ...</p> <p>In the following dialog box, select the version of the central processing unit (here: 248.02.xx) from the drop-down list (file type) and click the "Save" button.</p> 

9 Version changes

Step	Activity
5	Exit the following dialog by clicking "OK". 
6	Save the setup file under the desired name. ➔ The setup project now corresponds to system version 02.
7	Transfer the setup project to the system: DATA TRANSFER > DATA TRANSFER TO THE DEVICE
8	The setup program recognizes that a software update (upgrade) is required for the CPU and the HMI. Answer the two prompts with "Yes".  <ul style="list-style-type: none"> ➔ The statuses of the connections and the individual actions are displayed. In some cases, at the end of the transfer the setup program makes several attempts to re-establish the connection with the system. Do not interrupt this process under any circumstances. ➔ After the transfer is complete, the system has system version 02.
9	After successful transfer, check the CPU and HMI software versions in the hardware assignment.  <ul style="list-style-type: none"> ➔ The number in the second block of the software version indicates the system version, here: 02.

9 Version changes



NOTE!

The standard PLC application is automatically adapted during the conversion. In case of an own (customer) PLC application, the user must ensure that the version libraries of the new system version are imported into the existing PLC application (see Chapter 9.8 "Adapt an own PLC application to the system version", page 121).

9.4 System version 03

The cases described in the previous chapters generally also apply to the following scenarios:

- Change from a lower system version to system version 03 (upgrade)
- Change from system version 03 to a lower system version (downgrade)

As of system version 03, the analog output module 4-channel (705025) is supported. If this module should be added to an existing system, the following sequence must be followed:

- 1) Perform upgrade to system version 03 (example: case 6)
- 2) Connect analog output module 4-channel to the system
- 3) Add analog output module 4-channel to the configuration (hardware arrangement) and configure the module
- 4) Transfer the configuration to the system

For changing to a lower system version the following sequence must be followed:

- 1) Remove analog output module 4-channel from the configuration (hardware arrangement)
- 2) Transfer the configuration to the system
- 3) Disconnect analog output module 4-channel from the system
- 4) Perform downgrade of the system version (example: case 1)

9.5 System version 04

System version 04 requires a central processing unit with 128 MB RAM (HW version 278.02.xx). The setup program as of version 230.04.xx/4.00 is required to create applications for system version 04.

In order to change the system version, in principle it has to be proceeded in the same manner as described in the previous chapters. Here too, the setup program as of version 230.04.xx/4.00 is required.

9.6 System version 05

System version 05 requires a central processing unit with 128 MB RAM (HW version 278.02.xx). The setup program as of version 230.05.xx/5.00 is required to create applications for system version 05.

In order to change the system version, in principle it has to be proceeded in the same manner as described in the previous chapters. Here too, the setup program as of version 230.05.xx/5.00 is required.

9.7 Dependence on the HW version of the CPU

The central processing unit (CPU) with HW version 278.01.xx is equipped with 64 MB RAM, the central processing unit with HW version 278.02.xx has 128 MB RAM. The HW version is indicated on the nameplate of the central processing unit. Also it can be found in the setup project (Hardware assignment > Versions).

The following table gives an overview of the system versions (derived from the SW version of the CPU) and the compatible HW version of the CPU.

System version	SW version of CPU	HW version of CPU
01	248.01.xx	278.01.xx
02	248.02.xx	278.01.xx
03	248.03.01 or 248.03.02	278.01.xx
03	248.03.03	278.01.xx or 278.02.xx
04	248.04.xx	278.02.xx
05	248.05.xx	278.02.xx

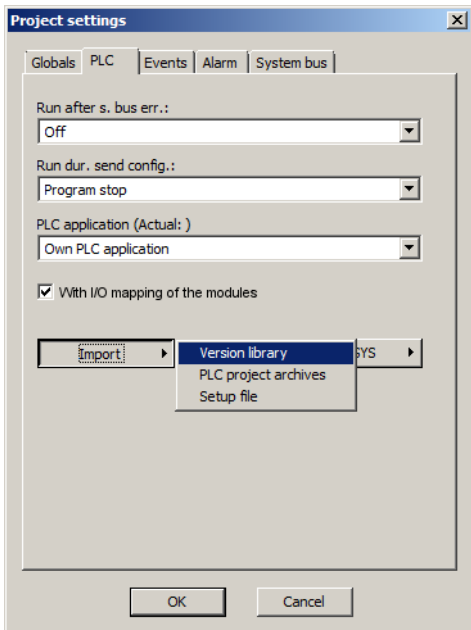
If an application of system version 01, 02, or of system version 03 up to SW version 248.03.02 shall be used with a central processing unit 278.02.xx, the setup file must be converted with the setup program (upgrade) before it can be transferred to the system. For this purpose the setup program as of version 230.04.xx/4.00 has to be used.

9.8 Adapt an own PLC application to the system version

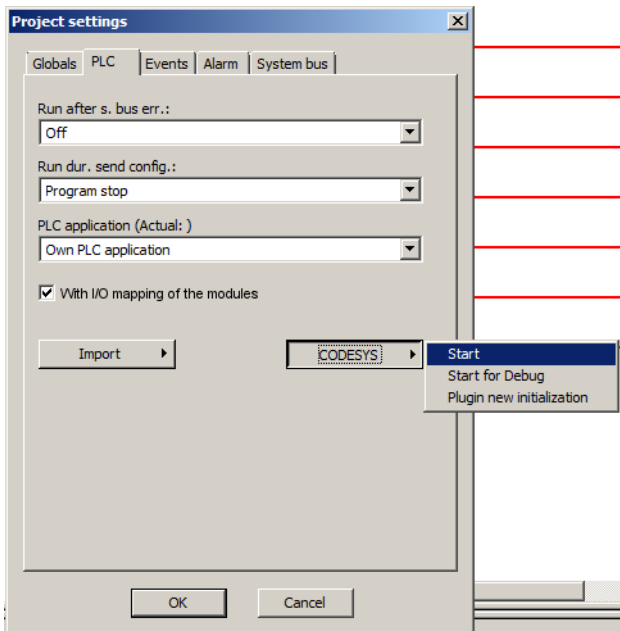
If an existing setup project contains an own PLC application, in case of a version change the application must be adapted to the new system version. Basically proceed as follows:

Step	Activity
1	In the setup program, open the existing setup project (File > Open...).

9 Version changes

Step	Activity
2	<p>In the setup program, under "Project settings" > "PLC": Select "Own PLC application" and import the version library:</p>  <p>➔ The window to select the PLC application opens.</p>
3	<p>In the setup program, select the one SPS application that corresponds to the new system version.</p> <p>➔ CODESYS starts with an empty boot project.</p>
4	<p>In CODESYS, save the project under a different name, exit CODESYS, and close the "Project settings" window with "Cancel".</p>

9 Version changes

Step	Activity
5	<p>In the setup program, under "Project settings" > "PLC": Select "Own PLC application" and start CODESYS.</p>  <p>➔ CODESYS starts with the own PLC application. Those libraries for which newer versions are available are listed in the "Project Environment" window.</p>
6	<p>In CODESYS, update all libraries listed in the "Project Environment" window (button "Set all to newest").</p> <p>➔ The new versions are shown in the "Action" column. The libraries were thus successfully updated.</p>
7	<p>In CODESYS, close the "Project Environment" window with "OK".</p> <p>➔ The new libraries are integrated into the existing (open) PLC application.</p>
8	<p>In CODESYS, delete the "Boot project(system program)" folder in the menu tree (Devices) and all its contents (select and delete the folder with the right mouse button).</p>
9	<p>In the file directory of the PC, open the empty boot project, previously saved under a different name, by double-clicking the file name.</p> <p>➔ CODESYS starts a second time (second window).</p>
10	<p>In CODESYS (second window), copy the "Boot project(system program)" folder from the empty boot project and insert it in the own PLC application (first window) in the menu tree below "Application".</p>
11	<p>In CODESYS (first window), complement the additional variables of the new system version in the I/O mapping of the CPU manually. See list of new variables:</p> <p>⇒ Chapter 9.9 "New variables in the CPU I/O mapping", page 124</p> <p>➔ The adaptation of the own PLC application in the strict sense is complete.</p>
12	<p>In CODESYS, rebuild the own PLC application: Successively select the functions "Clean all" and "Rebuild" in the "Build" menu.</p>
13	<p>In CODESYS, exit the own PLC application (and also CODESYS): File > Exit</p> <p>➔ The PLC application is transferred back to the setup program and CODESYS is terminated.</p>

9 Version changes

Step	Activity
14	In the setup program, confirm the hint concerning CODESYS with "OK" and quit the "Project settings" dialog with "OK". ➔ The changes become effective.
15	In the setup program, save the setup project (File > Save).

9.9 New variables in the CPU I/O mapping

Depending on the system version, additional variables are available in CODESYS in the I/O mapping of the CPU. In case of the adaptation of an own PLC application, these variables must be added manually in CODESYS by inserting the variable names in the concerning columns. Thereby all new variables of the previous system versions must be supplemented also.

Example: An own PLC application of system version 01 is to be adapted to system version 03. This requires that the new variables of system version 02 and of system version 03 are added in CODESYS.

9.9.1 New variables of system version 02

Integer PLC outputs

Variable	Channel
Status Prog.generator	
diPA_PSC1_Status	Status Generator 1
diPA_PSC2_Status	Status Generator 2
diPA_PSC3_Status	Status Generator 3
diPA_PSC4_Status	Status Generator 4
diPA_PSC5_Status	Status Generator 5
diPA_PSC6_Status	Status Generator 6
diPA_PSC7_Status	Status Generator 7
diPA_PSC8_Status	Status Generator 8
diPA_PSC9_Status	Status Generator 9

Digital PLC outputs

Variable	Channel
Program generator 1	
xPA_PSC1_BatchActive	Batch control
Program generator 2	
xPA_PSC2_BatchActive	Batch control
Program generator 3	
xPA_PSC3_BatchActive	Batch control
Program generator 4	
xPA_PSC4_BatchActive	Batch control

Variable	Channel
Program generator 5	
xPA_PSC5_BatchActive	Batch control
Program generator 6	
xPA_PSC6_BatchActive	Batch control
Program generator 7	
xPA_PSC7_BatchActive	Batch control
Program generator 8	
xPA_PSC8_BatchActive	Batch control
Program generator 9	
xPA_PSC9_BatchActive	Batch control

9.9.2 New variables of system version 03

Integer PLC outputs

Variable	Channel
Status Prog.generator	
diPA_PSC1_Prg_Repeat	Number of program repeats generator 1
diPA_PSC2_Prg_Repeat	Number of program repeats generator 2
diPA_PSC3_Prg_Repeat	Number of program repeats generator 3
diPA_PSC4_Prg_Repeat	Number of program repeats generator 4
diPA_PSC5_Prg_Repeat	Number of program repeats generator 5
diPA_PSC6_Prg_Repeat	Number of program repeats generator 6
diPA_PSC7_Prg_Repeat	Number of program repeats generator 7
diPA_PSC8_Prg_Repeat	Number of program repeats generator 8
diPA_PSC9_Prg_Repeat	Number of program repeats generator 9

9 Version changes

9.9.3 New variables of system version 05

Analog variables alarm

Variable	Channel
Application.mTron_T_main.axPA_AnalogIOAlarms[0,64]	Alarm1ExAI65
...	...
Application.mTron_T_main.axPA_AnalogIOAlarms[0,127]	Alarm1ExAI128
Application.mTron_T_main.axPA_AnalogIOAlarms[1,64]	Alarm2ExAI65
...	...
Application.mTron_T_main.axPA_AnalogIOAlarms[1,127]	Alarm2ExAI128

Integer variables alarm

Variable	Channel
Application.mTron_T_main.axPA_IntegerIOAlarms[0,64]	Alarm1ExInt65
...	...
Application.mTron_T_main.axPA_IntegerIOAlarms[0,127]	Alarm1ExInt128
Application.mTron_T_main.axPA_IntegerIOAlarms[1,64]	Alarm2ExInt65
...	...
Application.mTron_T_main.axPA_IntegerIOAlarms[1,127]	Alarm2ExInt128

Adaptation of the variables declaration

In the "mTron_T_main" program the array end value in the declaration of the relevant variables (axPA_AnalogIOAlarms, axPA_IntegerIOAlarms) must be increased from 63 to 127.



JUMO GmbH & Co. KG

Street address:
Moritz-Juchheim-Straße 1
36039 Fulda, Germany

Delivery address:
Mackenrodtstraße 14
36039 Fulda, Germany

Postal address:
36035 Fulda, Germany

Phone: +49 661 6003-0
Fax: +49 661 6003-607
Email: mail@jumo.net
Internet: www.jumo.net

JUMO Instrument Co. Ltd.

JUMO House
Temple Bank, Riverway
Harlow, Essex, CM20 2DY, UK

Phone: +44 1279 63 55 33
Fax: +44 1279 62 50 29
Email: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.

6733 Myers Road
East Syracuse, NY 13057, USA

Phone: +1 315 437 5866
Fax: +1 315 437 5860
Email: info.us@jumo.net
Internet: www.jumousa.com

