SIEMENS

SIMOTION

SIMOTION IT
SIMOTION IT Diagnostics and Configuration

Diagnostics Manual

Valid as of Version 4.4

04/2014

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Ⓟ 04/2014 Subject to change

Preface

SIMOTION Documentation

An overview of the SIMOTION documentation can be found in the SIMOTION Documentation Overview document.

This documentation is included as electronic documentation in the scope of delivery of SIMOTION SCOUT. It comprises ten documentation packages.

The following documentation packages are available for SIMOTION V4.4:

- SIMOTION Engineering System Handling
- SIMOTION System and Function Descriptions
- SIMOTION Service and Diagnostics
- SIMOTION IT
- SIMOTION Programming
- SIMOTION Programming - References
- SIMOTION C
- SIMOTION P
- SIMOTION D
- SIMOTION Supplementary Documentation

Hotline and Internet addresses

Additional information

Click the following link to find information on the the following topics:

- Ordering documentation / overview of documentation
- Additional links to download documents
- Using documentation online (find and search manuals/information)

http://www.siemens.com/motioncontrol/docu

Please send any questions about the technical documentation (e.g. suggestions for improvement, corrections) to the following e-mail address:
docu.motioncontrol@siemens.com

My Documentation Manager

Click the following link for information on how to compile documentation individually on the basis of Siemens content and how to adapt it for the purpose of your own machine documentation:

http://www.siemens.com/mdm

Training

Click the following link for information on SITRAIN - Siemens training courses for automation products, systems and solutions:

http://www.siemens.com/sitrain

FAQs

Frequently Asked Questions can be found in SIMOTION Utilities & Applications, which are included in the scope of delivery of SIMOTION SCOUT, and in the Service&Support pages in Product Support:

http://support.automation.siemens.com

Technical support

Country-specific telephone numbers for technical support are provided on the Internet under Contact:

http://www.siemens.com/automation/service&support

Table of contents

Fundamental safety instructions 1

1.1 General safety instructions

⚠ WARNING

Risk of death if the safety instructions and remaining risks are not carefully observed

If the safety instructions and residual risks are not observed in the associated hardware documentation, accidents involving severe injuries or death can occur.

- Observe the safety instructions given in the hardware documentation.
- Consider the residual risks for the risk evaluation.

⚠ WARNING

Danger to life or malfunctions of the machine as a result of incorrect or changed parameterization

As a result of incorrect or changed parameterization, machines can malfunction, which in turn can lead to injuries or death.

- Protect the parameterization (parameter assignments) against unauthorized access.
- Respond to possible malfunctions by applying suitable measures (e.g. EMERGENCY STOP or EMERGENCY OFF).

1.2 Industrial security

Note

Industrial security

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. For more information about industrial security, visit http://www.siemens.com/industrialsecurity.

To stay informed about product updates as they occur, sign up for a product-specific newsletter. For more information, visit http://support.automation.siemens.com

⚠ WARNING

Danger as a result of unsafe operating states resulting from software manipulation

Software manipulation (e.g. by viruses, Trojan horses, malware, worms) can cause unsafe operating states to develop in your installation which can lead to death, severe injuries and/or material damage.

- Keep the software up to date.
  Information and newsletters can be found at:
  http://support.automation.siemens.com
- Incorporate the automation and drive components into a state-of-the-art, integrated industrial security concept for the installation or machine.
  For more detailed information, go to:
  http://www.siemens.com/industrialsecurity
- Make sure that you include all installed products into the integrated industrial security concept.

Introduction 2

2.1 Overview of SIMOTION IT

Overview of SIMOTION IT manuals

The "SIMOTION IT Ethernet-based HMI and diagnostic functions" are described in three manuals (IT = Information Technology):

- SIMOTION IT Diagnostics and Configuration
  This present manual describes the direct diagnosis of SIMOTION devices. Access is by means of a standard browser (e.g. Firefox) via the IP address of the SIMOTION device. You can use the standard diagnostic pages or your own HTML pages for access.
- SIMOTION IT Programming and Web Services
  This manual describes the creation of user-defined web pages and access to the diagnostic functions via the two web services provided by SIMOTION IT.
  A web service enables users to create their own client applications in any programming language. These applications then communicate with the SIMOTION device using web technologies. The SOAP (Simple Object Access Protocol) communication protocol is used for transferring commands.
  The manual includes information on programming such clients, as well as a description of the SIMOTION IT web services (OPC XML-DA, Trace via SOAP TVS) via which data and operating states of the controller can be accessed and the variable trace functions can be used.
  See manual SIMOTION IT Programming and Web Services.
- SIMOTION IT Virtual Machine and Servlets
  This manual describes the Java-based function packages. The Jamaica Virtual Machine (JamaicaVM) is a runtime environment for Java applications on the SIMOTION device. It is an implementation of the "Java Virtual Machine Specification."
  The Servlets section of the manual describes the use of servlets in a SIMOTION device.
  See the manual SIMOTION IT Virtual Machine and Servlets.

See also

PDF in the Internet: SIMOTION IT Programming and Web Services (http://support.automation.siemens.com/WW/view/de/61148084/0/en)

PDF in the Internet: SIMOTION IT Virtual Machine and Services (http://support.automation.siemens.com/WW/view/de/61148107/0/en)

2.2 Schematic diagram of the function packages in the SIMOTION device

Access to a device with SIMOTION IT

SIMOTION IT allows HTTP/S access to a device by several means, which are shown in the diagram.

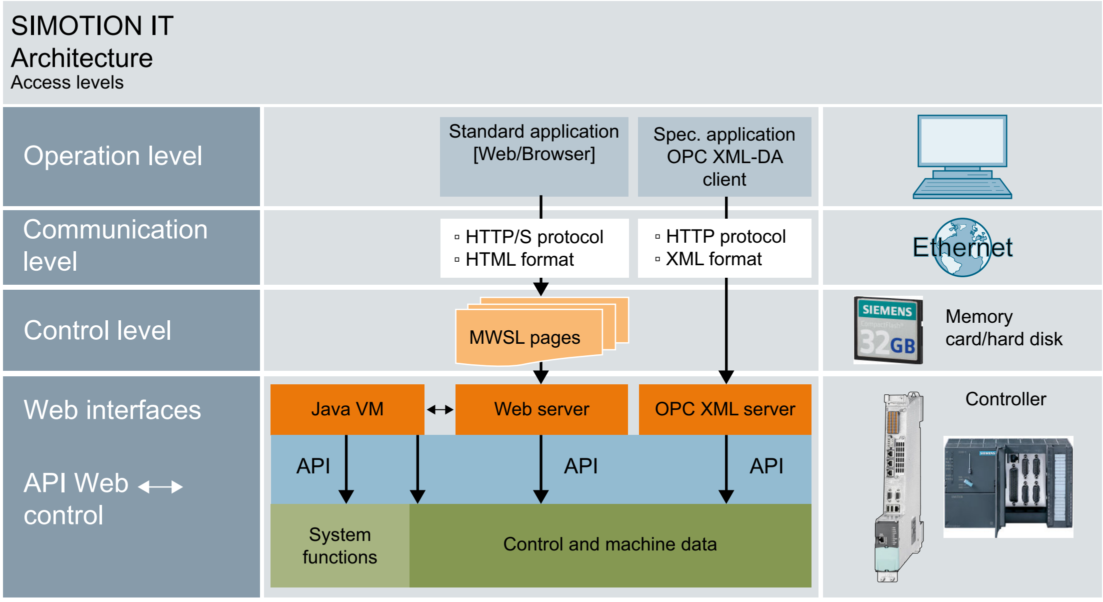


Figure 2-1 SIMOTION IT architecture of the HTTP/S access levels

Representation of the function packages

The following figure is a schematic diagram of the function packages in the SIMOTION device.

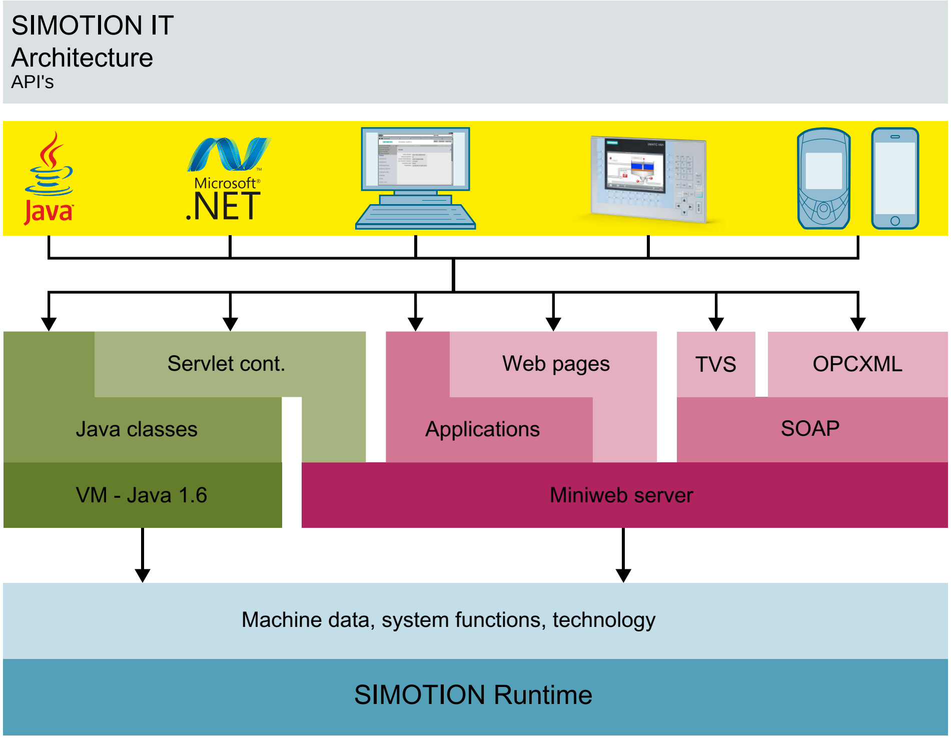


Figure 2-2 SIMOTION IT architecture of the APIs

2.3 Form of delivery

Form of delivery

"SIMOTION IT Ethernet-based HMI and Diagnostic Functions" are included in the control firmware.

Note

The functionality must be activated in the SIMOTION SCOUT project in the hardware configuration of the control. You can activate the web server services in the hardware configuration on the "Ethernet extended/Webserver" tab in the object properties of the control.

These settings are preset in V4.1.2 and higher.

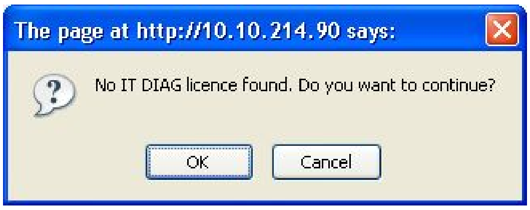
Documentation, tools, examples, and configuration files

You can find the documentation, tools, examples, configuration files, and other supplementary features on the "Documentation, Utilities & Applications" DVD.

Runtime licenses before Version 4.2

The older versions require an OPC XML-DA single-user license for access to the Watch page, for example.

When any of these pages is opened, the following is displayed:



The page at http://10.10.214.90 says:

No IT DIAG licence found. Do you want to continue?

Figure 2-3 Warning - Missing license

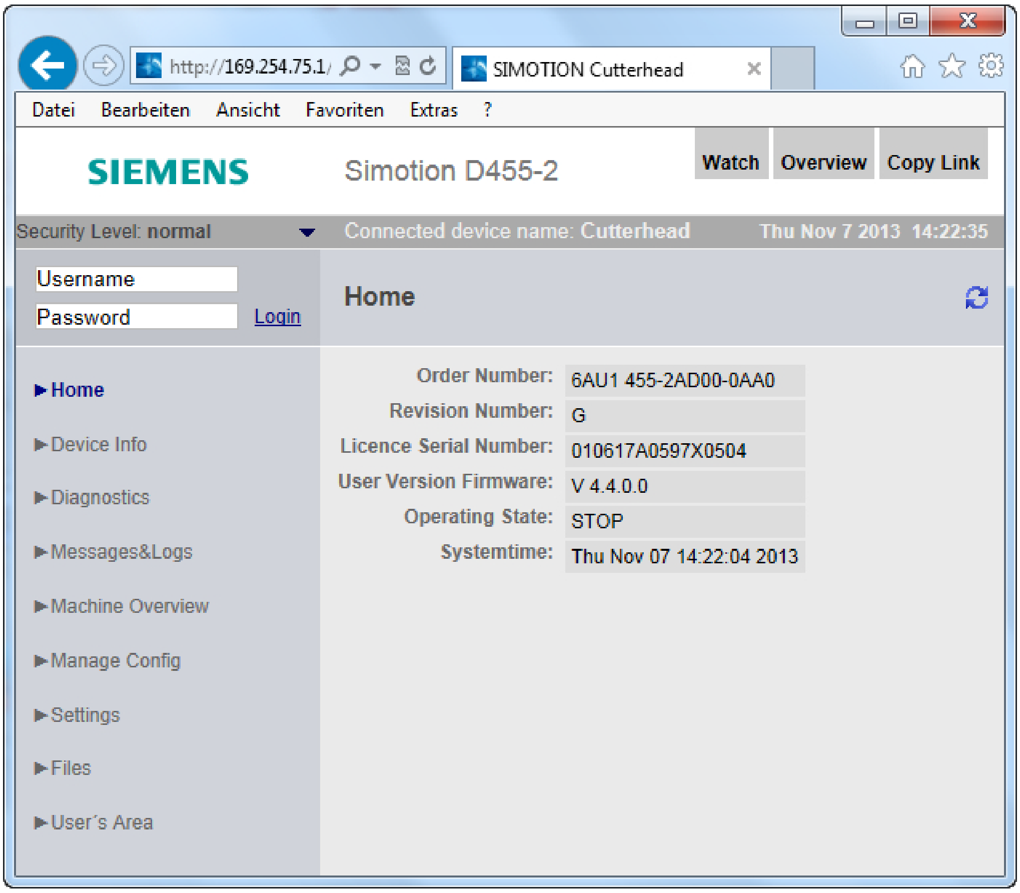
If you click the **OK** button, the requested page is opened. You can thus continue even without a license. However, an entry is made in the diagnostic buffer and the error LED on the control starts to flash.

2.4 Possible applications

2.4.1 Standard information

Application of diagnostic pages

The Web pages from SIMOTION IT provide information on a SIMOTION device. The information is accessed via the Web browser and the Ethernet.



Security Level: normal

Connected device name: Cutterhead

Thu Nov 7 2013 14:22:35

Order Number:	6AU1 455-2AD00-0AA0
Revision Number:	G
Licence Serial Number:	010617A0597X0504
User Version Firmware:	V 4.4.0.0
Operating State:	STOP
Systemtime:	Thu Nov 07 14:22:04 2013

Figure 2-4 Home

The SIMOTION device is connected to the local Ethernet for this purpose. Diagnostic pages can then be accessed from any computer in the network using the IP address of the device.

HTTPS connections are also supported. The HTTPS connection should be used where possible because, with HTTP, the login and passwords are not encrypted for transmission.

The use of SIMOTION IT standard pages does not require a special installation. The device is already appropriately set up.

See also

Secure Socket Layer (Page 155)

Security concept (Page 26)

Log-in administration (Page 110)

2.4.2 User-defined information

Displaying information in user-defined pages

In addition to displaying the standard pages, SIMOTION IT allows you to create your own web pages. The manual *SIMOTION IT Programming and Web Services* describes the methods for creating your own web pages.

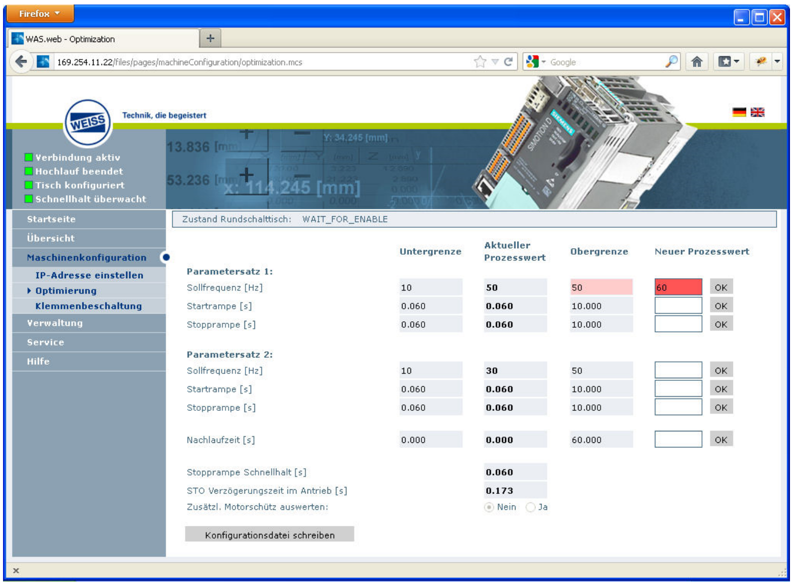
With the aid of a JavaScript library, device data can be queried and displayed in a web page.

A further option is the use of the MiniWeb Server Language (MWSL). A language based on ECMA script, which is executed on the server side.

The "variable providers" can be used to read and write the following information on a web page:

- System variables of the SIMOTION device
- System variables and configuration data of the technology objects
- Global unit variables
- Drive parameters
- IO variables
- Global device variable
- Connection monitoring

User-defined pages provide numerous options for displaying device information.



Zustand Rundschalttisch: WAIT_FOR_ENABLE

	Untergrenze	Aktueller Prozesswert	Obergrenze	Neuer Prozesswert	
Parametersatz 1:					
Sollfrequenz [Hz]	10	**50**	50	60	OK
Startrampe [s]	0.060	**0.060**	10.000		OK
Stopprampe [s]	0.060	**0.060**	10.000		OK
Parametersatz 2:					
Sollfrequenz [Hz]	10	**30**	50		OK
Startrampe [s]	0.060	**0.060**	10.000		OK
Stopprampe [s]	0.060	**0.060**	10.000		OK
Nachlaufzeit [s]	0.000	**0.000**	60.000		OK
Stopprampe Schnellhalt [s]		**0.060**			
STO Verzögerungszeit im Antrieb [s]		**0.173**			
Zusätzl. Motorschütz auswerten:		● Nein ○ Ja			

Figure 2-5 Example of a user-defined SIMOTION IT web page of WEISS GmbH

MWSL

The MWSL is executed on the server side. It enables the creation of dynamic HTML code on web pages. You can also use the MWSL if the created pages are displayed on devices that do not support JavaScript. Variable functions can be executed faster and more directly (closer to the system) than when using JavaScript.

However, be aware that evaluation of MWSL code puts a load on the server and can take quite a long time if controls are working at full capacity, holding up other web processes and requests.

JavaScript

SIMOTION IT supports you in creating dynamic and flexible web pages thanks to an extensive JavaScript library. Unlike MWSL, the library is executed in the browser. The use of JavaScript relieves the load on the control and provides considerably more options than the MWSL. For display purposes, however, a modern browser with corresponding JavaScript support is required; this is something that cannot be guaranteed in all automation environments.

2.5 New features

What new features does the current version offer?

Version 4.4

- Security concept (Security Level)
- Revised login administration (Page 110). Separate storage of user data in file UserDataBase.xml. New page Users & Passwords (Page 84) for editing user data.
- New version of MiniWeb
- Output of messages by the messaging system on the SIMOTION IT pages without an adverse impact on processing.
- New display formats for floating-point numbers in the Watch (Page 47) table
- New variables provider ITDiag
- Traces (WTRC files) can now be loaded and displayed in SIMOTION SCOUT.

Commissioning 3

3.1 Hardware and software requirements

Hardware requirements

- SIMOTION device
- Web-enabled device such as PC, notebook, smartphone with a minimum resolution of 320x240 pixels.

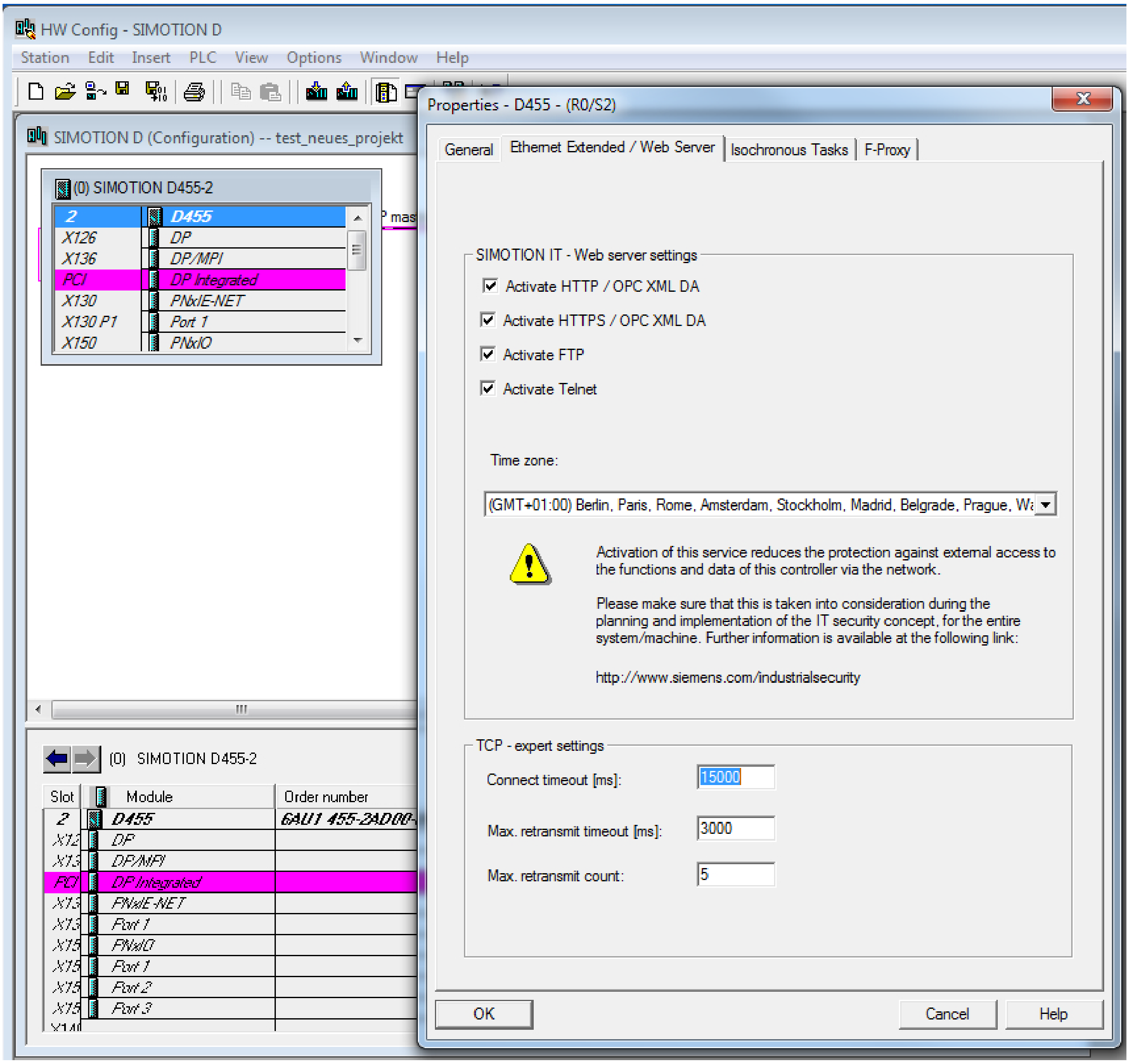
Software requirements

- Browser: Firefox as of Version 3 and Microsoft Internet Explorer as of Version 8.

3.2 Activating communications services in HW Config

Activating the SIMOTION IT web server in HW Config

The web server of the SIMOTION control can be activated in the HW Config. To do that, navigate via **Device object properties** to the **Ethernet Extended / Web Server** tab.


HW Config - SIMOTION D
Station Edit Insert PLC View Options Window Help
SIMOTION D (Configuration) -- test_neues_projekt
(0) SIMOTION D455-2
P mas
(0) SIMOTION D455-2
Properties - D455 - (R0/S2)
General
Ethernet Extended / Web Server
Isochronous Tasks
F-Proxy
OK
Cancel
Help

2	D455
X126	DP
X136	DP/MPI
PCI	DP Integrated
X130	PNxIE-NET
X130 P1	Port 1
X150	PNxIO

Slot	Module	Order number
2	D455	6AU1 455-2AD00-
X12	DP	
X13	DP/MPI	
PCI	DP Integrated	
X13	PNxIE-NET	
X13	Port 1	
X15	PNxIO	
X15	Port 1	
X15	Port 2	
X15	Port 3	

SIMOTION IT - Web server settings

☑ Activate HTTP / OPC XML DA

☑ Activate HTTPS / OPC XML DA

☑ Activate FTP

☑ Activate Telnet

Time zone: (GMT+01:00) Berlin, Paris, Rome, Amsterdam, Stockholm, Madrid, Belgrade, Prague, Wa

Activation of this service reduces the protection against external access to the functions and data of this controller via the network.

Please make sure that this is taken into consideration during the planning and implementation of the IT security concept, for the entire system/machine. Further information is available at the following link:

http://www.siemens.com/industrialsecurity

TCP - expert settings

Connect timeout [ms]: 15000

Max. retransmit timeout [ms]: 3000

Max. retransmit count: 5

Figure 3-1 HW Config settings

The screenshot shows the default web server settings. When you deactivate a service, the corresponding communications port is closed. If no service is activated, the web server of the control is also deactivated.

The web server is addressed via HTTP/S. FTP and Telnet are only connected to the user administration.

Service	Port
HTTP (Browser, OPC XML)	Setting in WebCfg.xml – default 80
HTTPS (Browser, OPC XML)	Setting in WebCfg.xml – default 443
FTP	21
Telnet	23

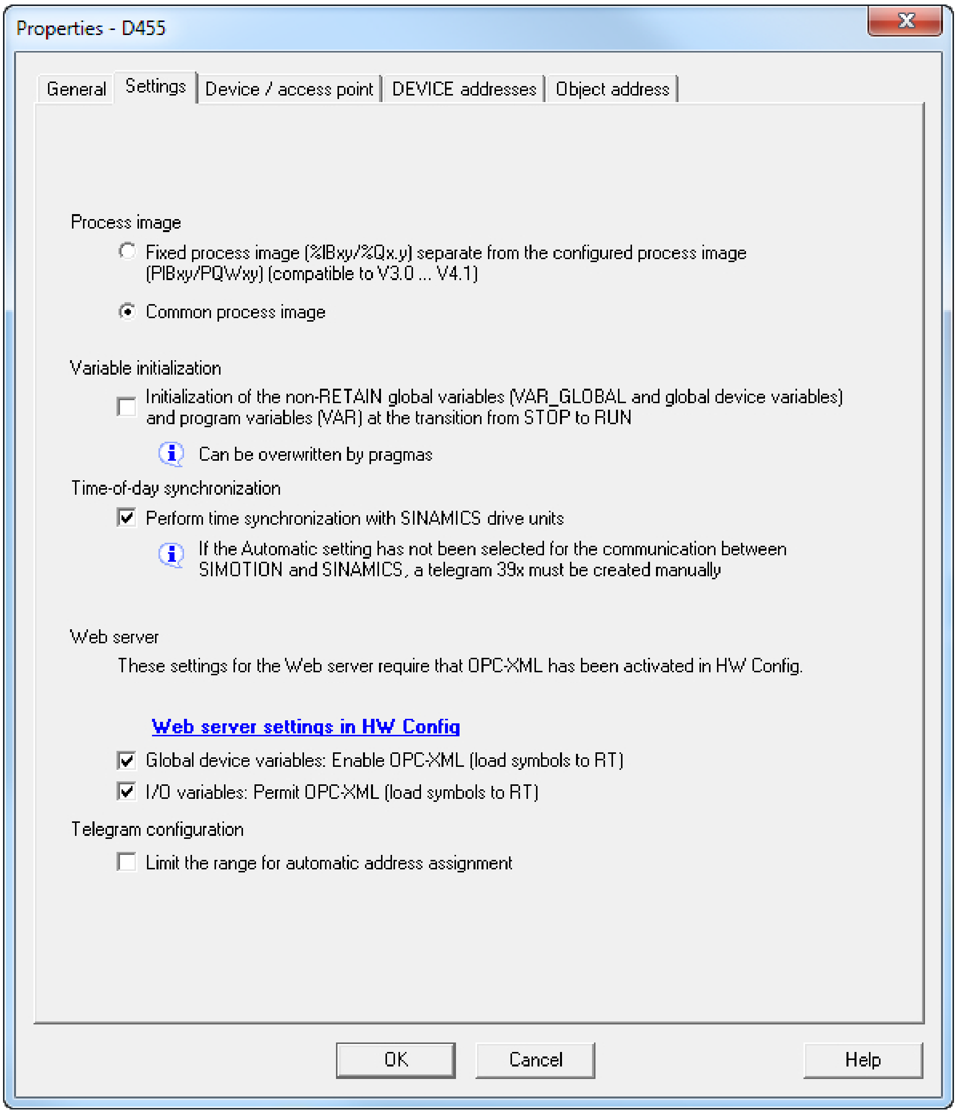
Setting the time zone

The time zone of the web server can be set in two different ways. One possible way is the setting shown here made via the drop-down list in the HW Config dialog box.

The second way is to make the setting in the web page **Settings**. In this case, the value in the HW Config dialog box will be ignored.

Calling up HW Config from SCOUT

In SCOUT, you can go to the settings in HW Config via **Gerät > Eigenschaften > Einstellungen** with the link **Web server settings in HW Config**.



Process image

○ Fixed process image (%IBxy/%Qx.y) separate from the configured process image (PIBxy/PQWxy) (compatible to V3.0 ... V4.1)

● Common process image

Variable initialization

□ Initialization of the non-RETAIN global variables (VAR_GLOBAL and global device variables) and program variables (VAR) at the transition from STOP to RUN

Can be overwritten by pragmas

Time-of-day synchronization

☑ Perform time synchronization with SINAMICS drive units

If the Automatic setting has not been selected for the communication between SIMOTION and SINAMICS, a telegram 39x must be created manually

Web server

These settings for the Web server require that OPC-XML has been activated in HW Config.

Web server settings in HW Config

☑ Global device variables: Enable OPC-XML (load symbols to RT)

☑ I/O variables: Permit OPC-XML (load symbols to RT)

Telegram configuration

□ Limit the range for automatic address assignment

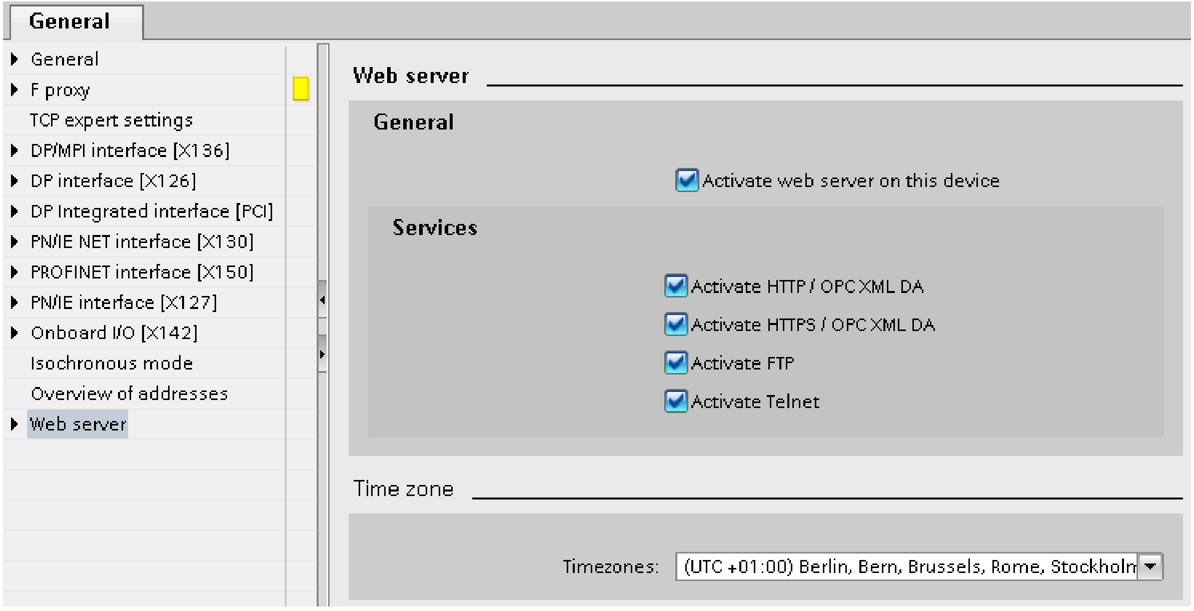
Figure 3-2 SCOUT connection to HW Config

3.3 Activating communications services in SCOUT TIA

Procedure

Proceed as follows to activate the web server in the TIA Portal:

1. Select the SIMOTION device in the network view / device view.
2. In the Inspector window, select the "Properties" tab and click the "General" tab.
3. Select "Web server".
   The web server is deactivated in the basic setting. You must activate the relevant checkboxes so that the CPU displays the websites.



Web server

General

☑ Activate web server on this device

Services

☑ Activate HTTP / OPC XML DA

☑ Activate HTTPS / OPC XML DA

☑ Activate FTP

☑ Activate Telnet

Time zone

Timezones: (UTC +01:00) Berlin, Bern, Brussels, Rome, Stockholm

Figure 3-3 Activating the web server

The web server is addressed via HTTP/S. FTP and Telnet are only connected to the user administration.

Calling the HW Config from SIMOTION SCOUT TIA

You can switch directly to the appropriate tab of the Inspector window in the TIA Portal via SIMOTION SCOUT TIA.

Proceed as follows:

1. Select the SIMOTION device in the project navigator.
2. Select the "Properties" entry in the shortcut menu.
   The "Properties" dialog box opens.
3. Switch to the "Settings" tab and click the "Web server settings in HW Config" link.
   You can now make the web server settings in the TIA Portal.

See also

Activating communications services in HW Config (Page 20)

3.4 Configuring the SIMOTION device interface

Configuration of the Ethernet interface

SIMOTION IT can be accessed via any Ethernet interface used with SIMOTION, including the PROFINET IO interface.

To establish a connection between the standard diagnostics pages and a SIMOTION device via a browser, the following steps for configuring the Ethernet interface must be performed:

Table 3-1 Configuring the interface

Step	Procedure
1	The functionality must be activated in the SIMOTION SCOUT project in the hardware configuration of the CPU. You can activate the relevant services in the hardware configuration on the "Ethernet extended/Webserver" tab in the object properties of the CPU. In V4.1.2 and higher, HTTP/S FTP and Telnet are activated in the as-delivered state.
2	SIMOTION IT uses a user database called UserDataBase.xml to control access to the device. If no user database is found on the device, an empty user database is created when the control is started up. . You cannot log in until a user has been created. See Log-in administration (Page 110)
3	To display the standard diagnostics pages in the browser, you must enter the IP address of the SIMOTION device, e.g. http://169.254.11.22. The preset IP addresses are documented in the manuals for the respective controls. This factory setting can be changed in the HW Config and then loaded to the SIMOTION device.

Note

This requires suitable protective measures (e.g. network segmentation for IT security) to ensure safe system operation. You can find more information on Industrial Security on the Internet at:

www.siemens.de/industrialsecurity.

3.5 Security concept

Security concept of HTTP/S, FTP and Telnet access on the web server

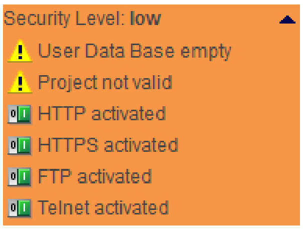
As of version V4.4, access to the SIMOTION IT web server is protected by a multiple stage security concept.

The security state of the web server is indicated by the Security Level on the web page. This Security Level can have three different stages: Low, Normal, High.

Security Level Low

The device is supplied with an empty user database. No projects exist yet. The security level is low to allow configuration of the device.

- In this state, access to the web server as an anonymous user is possible to enable use of functions such as the project and firmware update or OPC XML.
- Access to the FTP and Telnet is also possible.
- New users can be entered in the empty user database.



Security Level: **low**

⚠ User Data Base empty

⚠ Project not valid

HTTP activated

HTTPS activated

FTP activated

Telnet activated

Figure 3-4 Security Level Low

In this state, series commissioning is possible via the web server.

NOTICE
Protecting the device Security Level Low security level should only be used for commissioning and service as otherwise the device is not adequately access protected.

Security Level Normal

The controller has a user database. A project exists on the controller and HTTP, HTTPS, FTP, and Telnet are activated in HW Config.

- User password authentication is mandatory for access to web pages with sensitive content (e.g. firmware update watch table, ...), FTP and Telnet.

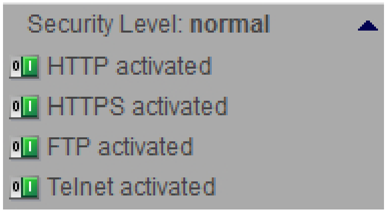

Security Level: **normal**
HTTP activated
HTTPS activated
FTP activated
Telnet activated

Figure 3-5 Security Level Normal

Security Level High

High security with maximum access protection:

- HTTP, HTTPS, FTP und Telnet were activated via the project in HW Config. Access to the Ethernet via the various ports of the services is then no longer possible. The web server cannot be used.

Authentication

Many different access scenarios are made possible by the various security levels.

Table 3-2 Access control Security Level Low

	HTTP/S websites without authorization	HTTP/S websites with authorization	FTP	Telnet
No project exists on the controller and service selector switch in position "8"				
No user in the UserDataBase.xml	✓	✓	✓	✓
Project exists or not on the controller and service selector switch in position "8"				
No user in the UserDataBase.xml	✓	✓	✓	✓
User exists in the UserDataBase.xml	✓	✓	✓	✓

✓ = access permitted

Table 3-3 Access control Security Level Normal

	HTTP/S websites without authorization	HTTP/S websites with authorization	FTP	Telnet
No project exists on the controller and service selector switch in position "8"				
User exists in the UserDataBase.xml	✓	Password	Password	Password
Project exists on the controller, the appropriate checkboxes are activated in HW Config and service selector switch in position "8" If a checkbox has not been activated in HW Config, access to the port of the respective service is denied.				

	HTTP/S websites without authorization	**HTTP/S websites with authorization**	**FTP**	**Telnet**
No user in the UserDataBase.xml	✓	Password*	Password*	Password*
User exists in the UserDataBase.xml	✓	Password	Password	Password

✓ = access permitted

Password = access only after authentication

Password* = log-in is not possible because there is no entry in UserDataBase.xml.

Table 3-4 Access control Security Level High

	HTTP/S websites without authorization	**HTTP/S websites with authorization**	**FTP**	**Telnet**
Project exists, but checkbox for HTTP/S, FTP and Telnet not activated in HW Config. Access to the controller via HTTP/SS, FTP and Telnet is locked.				
	X	X	X	X

X = Access locked

State transition from Security Level Low to Normal

After receiving the device, the user creates a project and loads it onto the device. This can be done by using the download functions of the SCOUT, by loading it directly onto the memory card, or via the web page Manage Config.

Whichever method is used, a project download to the device from the point of view of the web server corresponds to a transition from **Security Level Low** to **Security Level Normal.**

Resetting the security level from Normal to Low

If the user forgets to edit the UserDataBase.xml during initial commissioning, it will no longer be possible to access FTP, web services or access-protected pages during use.

In order to be able to subsequently configure the Web server, **Security Level Low** must be restored. Various methods are available for this purpose:

If there is no mechanical access to the memory card or the device, this can be achieved with the SCOUT function "Delete user data on card". After setting up the user administration, the project must be downloaded again.

Alternatives without SCOUT:

Setting the service selector switch to position "8" restores **Security Level Low**. Using this method, the device can always be reset to **Security Level low** by hardware means.

Because only SIMOTION D modules are fitted with a service selector switch, this functionality is implemented on SIMOTION C modules by making an entry in the simotion.ini file. For this, the entry SERVICE_SELECTOR_MODE must be set to value 8.

For SIMOTION P modules, the PSTATE program is provided for this purpose.

Note

SSL certificate

Replace the server certificate of the controller with your own to protect HTTPS access.

See also

Activating communications services in HW Config (Page 20)

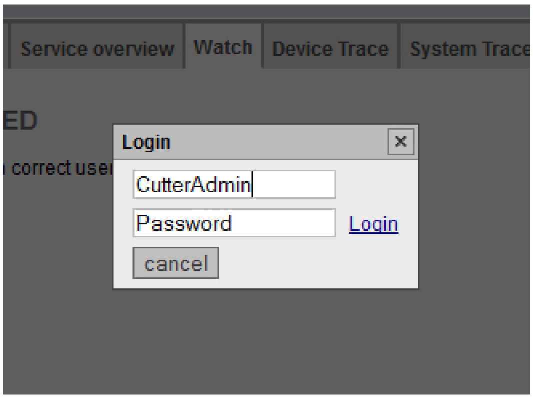
SSL certificates (Page 31)

Creating key files with the script cert.pl (V4.1 and higher) (Page 156)

3.6 User administration

User database UserDataBase.xml

For secure access to the SIMOTION IT pages, users must be created in the user database. Users and groups are stored in file UserDataBase.xml.



CutterAdmin

Password

Figure 3-6 Login dialog

The web page Mange Config > SIMOTION IT > Users & Passwords allows user data to be edited in the browser. Alternatively, the file can also be edited offline and then sent to the control.

Chapter Login administration (Page 110) describes how a user database is set up and edited.

3.7 SSL certificates

Securing HTTPS access

Certificates must be generated and installed to perform encrypted communication between the browser and web server.

The as-delivered state includes a device with a standard root certificate and a private key of the web server provided as a file. These files should be replaced with the your own to increase the security of HTTPS access to the device.

There are two ways of acquiring your own server certificate:

- Create a root certificate (self-signed) and a private key using certificate software (e.g. OpenSSL)
- Purchase a server certificate from a certificate authority

On establishing a connection to the web server, the firmware creates a new server certificate from the root certificate and the private key, if none exists. This is an individual certificate for the IP address of the interface used for communication.

Self-signed certificate

When the user makes a connection via HTTPS with the SIMOTION on which the self-signed certificate was stored, the server sends the server certificate belonging to that interface using the SSL protocol.

Browsers will now display a warning that an attempt is being made to communicate via an untrustworthy certificate.

The user can load and install the root certificate via a link to the browser. From now on, the browser is known to the signing certificate authority and no more warnings appear.

Server certificate of a certificate authority

If a certificate of a certificate authority is preinstalled in the browser, the connection is established without a warning message because the certificates are preinstalled in the browser.

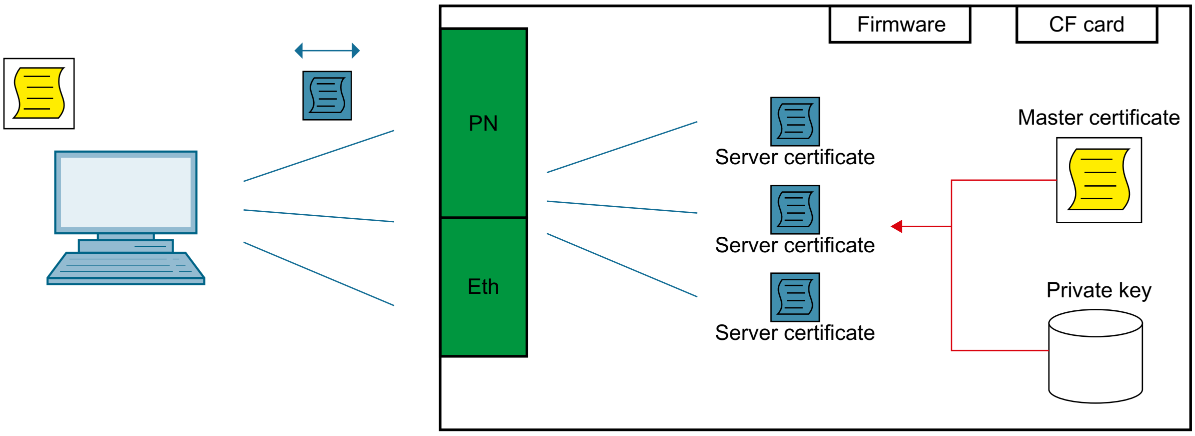


Figure 3-7 Certificate handling concept

See also

Secure Socket Layer (Page 155)

3.8 Setting the language for AlarmS and user-defined diagnostics buffer messages

Any of the SIMOTION SCOUT languages can be used when setting the language for AlarmS and user-defined diagnostics buffer messages.

Language localization

SIMOTION IT uses 4 rules for language selection. it is always the first rule to apply that is used:

1. Configuration constant ForceUserMsgLanguageID

The language can be set with the configuration constant `ForceUserMsgLanguageID`. This variable is set to the corresponding country code (decimal value) for this purpose. The selected language must exist. If it does not, the THX display is used.
You will find more information about the configuration constants and country codes in section *Configuration constants* in the manual *SIMOTION IT Programming and Web Services*. The LCID country codes (Page 179) are listed in the appendix.

2. SIMOTION SCOUT export

Performing a SCOUT export of user-defined AlarmS and diagnostic buffer messages and then uploading (Page 91) this data sets the SIMOTION IT language to the same language as is set in SCOUT.

3. Language of system diagnostics buffer texts

An attempt is made to find the language that matches the installed system diagnostics buffer texts.

4. Other language settings

If no matching language is found among the system diagnostics buffer texts, the system's default language is selected instead.

The language which has been selected is documented in the syslog file.

Operation (software) 4

4.1 SIMOTION IT Diagnostics overview and general functions

4.1.1 Overview

The SIMOTION device administers prefabricated standard diagnostics pages. These pages can be displayed using a generally available browser via Ethernet. You can also create your own HTML pages and integrate servicing and diagnostics information.

Purpose and benefits

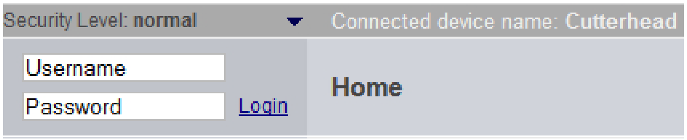
The purpose and benefits of HTML diagnostics pages are as follows:

- Preconfigured diagnostics pages are available to the user for the direct diagnosis of the SIMOTION device.
- Service and diagnostics information of the device can be accessed without manufacturer-specific programs to assist in production monitoring or diagnostics.
- User-defined HTML pages can be integrated.

4.2 SIMOTION IT log-on and log-off

4.2.1 Log on

If the control is in security level **Normal**, it is necessary to log on to access the protected pages of the control.

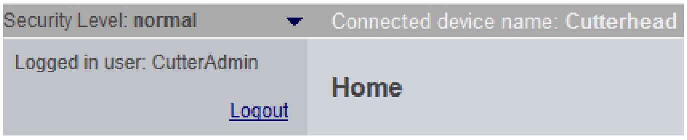


Security Level: normal

Connected device name: Cutterhead

Figure 4-1 Login without registration

Login will only be successful if the associated password has been created in the User administration (Page 110).



Security Level: normal

Connected device name: Cutterhead

Logged in user: CutterAdmin

Figure 4-2 Login with registration

See also

Security concept (Page 26)

4.2.2 Logging off

Logoff from SIMOTION IT is performed via the link **Logout** in the login area.

Note

Exiting the browser without logging off

Exiting the browser without logging off results in the session remaining active on the server for another 30 minutes before it is closed. The technical reason for this behavior is the FormBased Authentication.

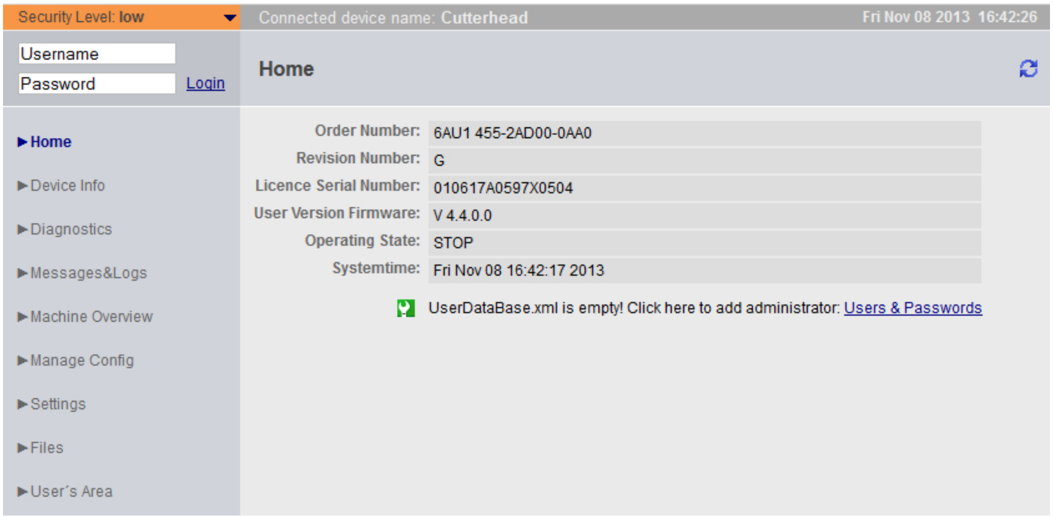
4.3 Standard pages

4.3.1 Home

SIMOTION device data

The following current data of the SIMOTION device is displayed on the home page:

Order Number	Order number of the device
Revision Number	Hardware version
Licence Serial Number	The license key is tied to this serial number.
User Version Firmware	SIMOTION Kernel user version
Operating State	Operating mode of the SIMOTION device (RUN, STOP, STOPU)
Systemtime	Current time-of-day of the SIMOTION device



Order Number: 6AU1 455-2AD00-0AA0
Revision Number: G
Licence Serial Number: 010617A0597X0504
User Version Firmware: V 4.4.0.0
Operating State: STOP
Systemtime: Fri Nov 08 16:42:17 2013

UserDataBase.xml is empty! Click here to add administrator: Users & Passwords

Figure 4-3 Home page

Here, the Home page before a user or password has been created in the user database `UserDataBase.xml` is shown.

An empty user database result produces **Security Level low**. You can reach the page where you create the user and passwords via the link **User & Passwords**. All subsequent screenshots show the SIMOTION IT pages after login of the user CutterAdmin and security level **Security Level normal**. The user CutterAdmin is used in the manual as an example and accordingly must have been created in the user database.

For more information regarding the current device data, refer to the "Device Info (Page 40)" page.

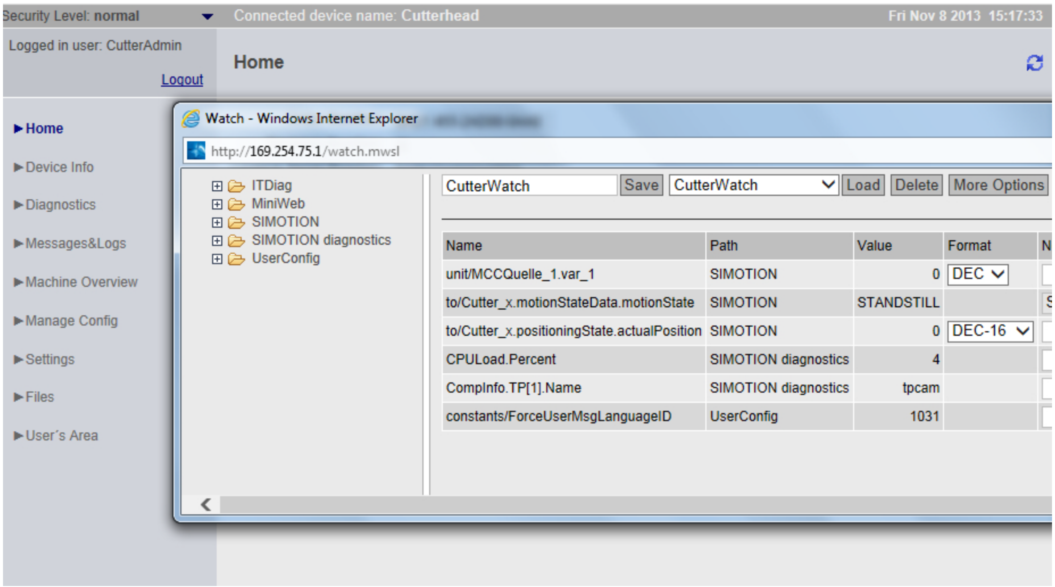
General links

Each SIMOTION IT page includes three general links:

- "Watch" enables you to access the watch function (Page 47).
- "Overview" displays in the service overview (Page 44).
- "Copy Link" copies the URL of the current page to the clipboard.

Watch Link

The Watch link provides fast access to the Watch page in a separate browser window.

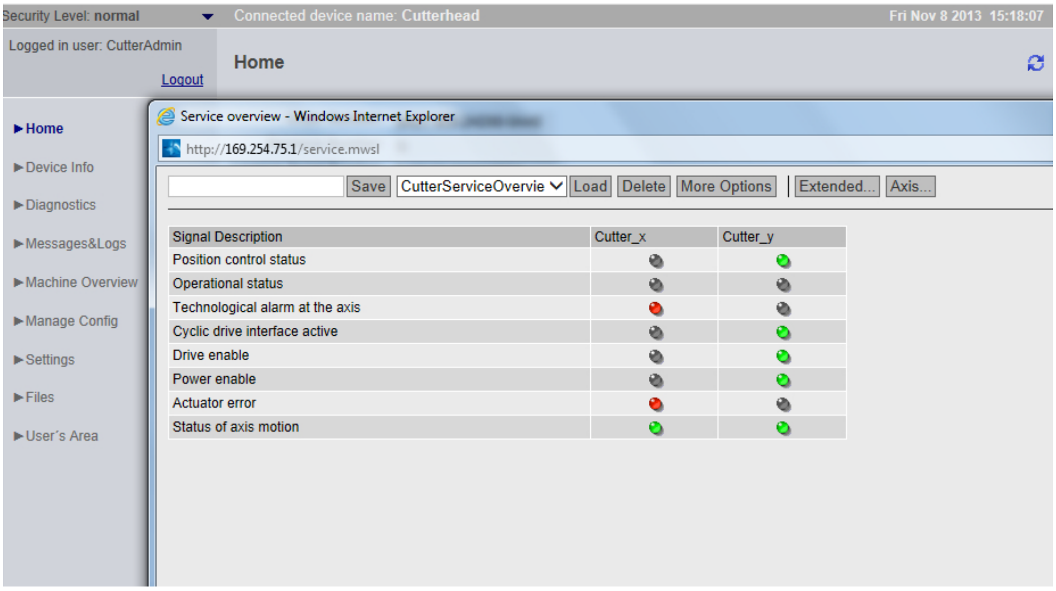


Name	Path	Value	Format	N
unit/MCCQuelle_1.var_1	SIMOTION	0	DEC	
to/Cutter_x.motionStateData.motionState	SIMOTION	STANDSTILL		S
to/Cutter_x.positioningState.actualPosition	SIMOTION	0	DEC-16	
CPULoad.Percent	SIMOTION diagnostics	4		
CompInfo.TP[1].Name	SIMOTION diagnostics	tpcam		
constants/ForceUserMsgLanguageID	UserConfig	1031		

Figure 4-4 Watch Link

Overview Link

The Overview link calls the Overview page in a separate browser window.

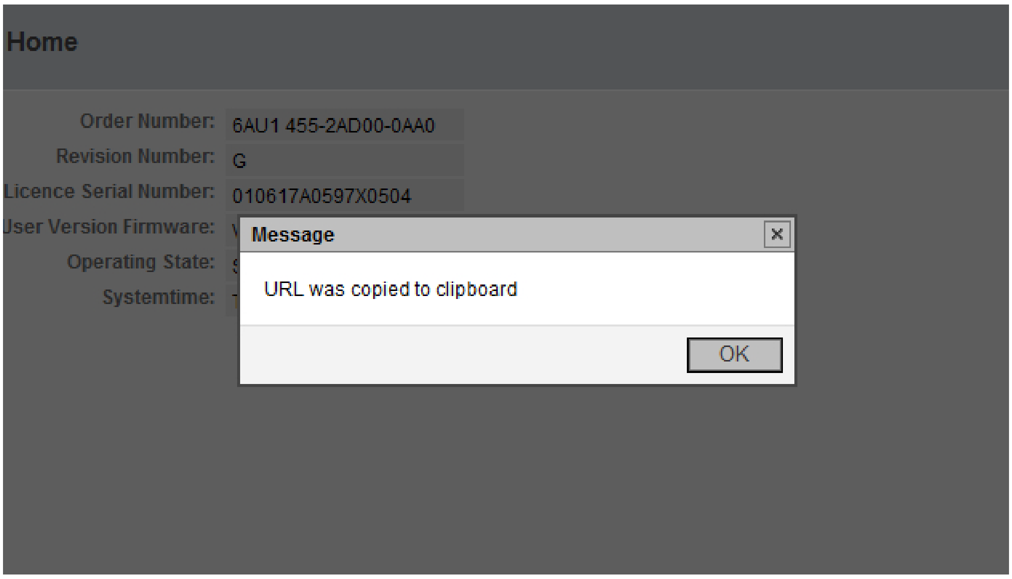


Signal Description	Cutter_x	Cutter_y
Position control status	⚫	🟢
Operational status	⚫	⚫
Technological alarm at the axis	🔴	⚫
Cyclic drive interface active	⚫	🟢
Drive enable	⚫	🟢
Power enable	⚫	🟢
Actuator error	🔴	⚫
Status of axis motion	🟢	🟢

Figure 4-5 Overview Link

Copy Link

Copy Link copies the URL of the current page to the clipboard.



Order Number: 6AU1 455-2AD00-0AA0
Revision Number: G
Licence Serial Number: 010617A0597X0504
User Version Firmware: V
Operating State: S
Systemtime: T

URL was copied to clipboard

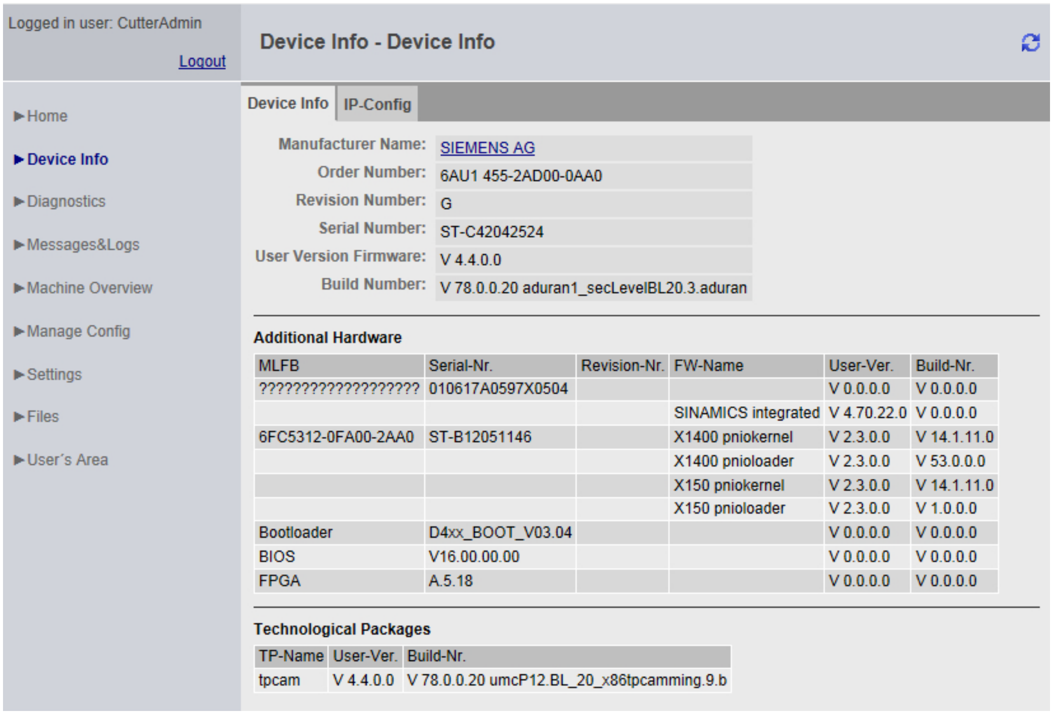
Figure 4-6 CopyLink Browser message

4.3.2 Device Info

Hardware and firmware information

The following current hardware and firmware information of the SIMOTION device is displayed on the **Device Info** page:

Manufacturer Name	Siemens AG
Order Number	Order number of the device
Revision Number	Hardware version
Serial Number	Serial number of the SIMOTION device
User Version Firmware	SIMOTION Kernel user version
Build Number	Internal version number
Additional Hardware	Installed components of the SIMOTION device including: order number, serial number, revision number, firmware name, user version number, internal version number
Technological Packages	Loaded technology packages including: Package name, user version number, internal version number



Device Info - Device Info

Manufacturer Name:	SIEMENS AG
Order Number:	6AU1 455-2AD00-0AA0
Revision Number:	G
Serial Number:	ST-C42042524
User Version Firmware:	V 4.4.0.0
Build Number:	V 78.0.0.20 aduran1_secLevelBL20.3.aduran

Additional Hardware

MLFB	Serial-Nr.	Revision-Nr.	FW-Name	User-Ver.	Build-Nr.
??????????????????	010617A0597X0504			V 0.0.0.0	V 0.0.0.0
			SINAMICS integrated	V 4.70.22.0	V 0.0.0.0
6FC5312-0FA00-2AA0	ST-B12051146		X1400 pniokernel	V 2.3.0.0	V 14.1.11.0
			X1400 pnioloader	V 2.3.0.0	V 53.0.0.0
			X150 pniokernel	V 2.3.0.0	V 14.1.11.0
			X150 pnioloader	V 2.3.0.0	V 1.0.0.0
Bootloader	D4xx_BOOT_V03.04			V 0.0.0.0	V 0.0.0.0
BIOS	V16.00.00.00			V 0.0.0.0	V 0.0.0.0
FPGA	A.5.18			V 0.0.0.0	V 0.0.0.0

Technological Packages

TP-Name	User-Ver.	Build-Nr.
tpcam	V 4.4.0.0	V 78.0.0.20 umcP12.BL_20_x86tpcamming.9.b

Figure 4-7 Device Info

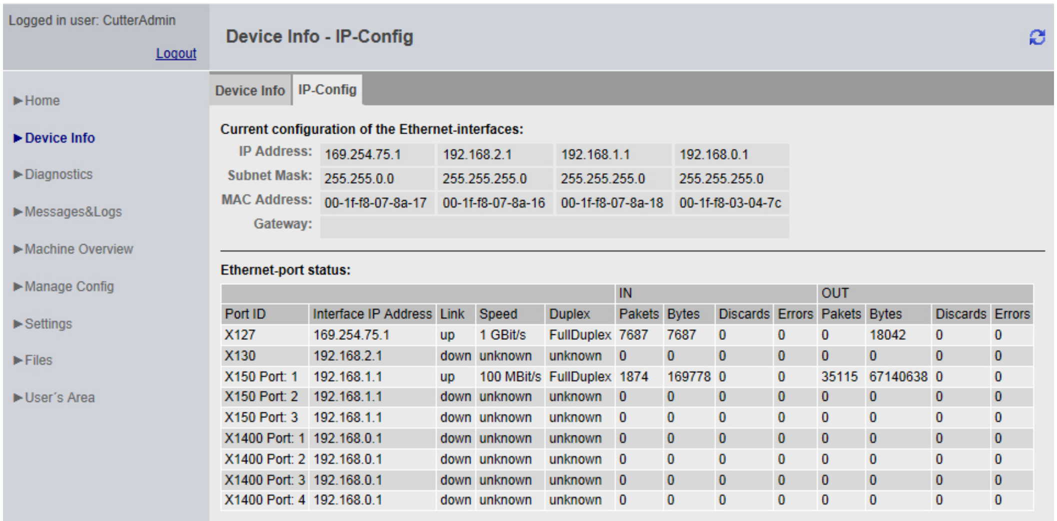
Here, the Device Info page is shown after the example user has successfully logged in CutterAdmin.

4.3.2.1 IP Config

Data of the SIMOTION device Ethernet interface

The following current interface data of the SIMOTION device is displayed on the **IP-Config** page:

IP Address	Address of the interface
Subnet Mask	Subnet mask of the interface
MAC Address	Address of the network card
Gateway	Default gateway of the interface The corresponding information is always displayed in the first column. It is not necessarily directly related to the IP address of the column and may even have been configured for the other interfaces.
Ethernet-port status:	Overview of Ethernet ports. The port speed and communication type are output for active ports.



Device Info - IP-Config

Current configuration of the Ethernet-interfaces:

IP Address:	169.254.75.1	192.168.2.1	192.168.1.1	192.168.0.1
Subnet Mask:	255.255.0.0	255.255.255.0	255.255.255.0	255.255.255.0
MAC Address:	00-1f-f8-07-8a-17	00-1f-f8-07-8a-16	00-1f-f8-07-8a-18	00-1f-f8-03-04-7c
Gateway:				

Ethernet-port status:

					IN				OUT			
Port ID	Interface IP Address	Link	Speed	Duplex	Pakets	Bytes	Discards	Errors	Pakets	Bytes	Discards	Errors
X127	169.254.75.1	up	1 GBit/s	FullDuplex	7687	7687	0	0	0	18042	0	0
X130	192.168.2.1	down	unknown	unknown	0	0	0	0	0	0	0	0
X150 Port: 1	192.168.1.1	up	100 MBit/s	FullDuplex	1874	169778	0	0	35115	67140638	0	0
X150 Port: 2	192.168.1.1	down	unknown	unknown	0	0	0	0	0	0	0	0
X150 Port: 3	192.168.1.1	down	unknown	unknown	0	0	0	0	0	0	0	0
X1400 Port: 1	192.168.0.1	down	unknown	unknown	0	0	0	0	0	0	0	0
X1400 Port: 2	192.168.0.1	down	unknown	unknown	0	0	0	0	0	0	0	0
X1400 Port: 3	192.168.0.1	down	unknown	unknown	0	0	0	0	0	0	0	0
X1400 Port: 4	192.168.0.1	down	unknown	unknown	0	0	0	0	0	0	0	0

Figure 4-8 IP Config

Port ID	Name of the Ethernet or Profinet port as stated on the hardware housing.
Interface IP Address	IP address of the interface
Link	Switching property of the port
Speed	Communications speed of the port

Duplex	Communications type of the port
Pakets - IN	Number of packets received at this port.
Bytes - IN	Number of octets received at this port.
Discards - IN	Number of received packets rejected for internal system reasons (e.g. due to system overload).
Errors - IN	Number of received packets not processed by higher protocol layers because of a detected error (e.g. transmission/reception fault of block, collisions)
Pakets - OUT	Number of packets sent at this port.
Bytes - OUT	Number of octets sent at this port.
Discards - OUT	Number of transmission requests for packets that were rejected. Packets that were rejected even though no errors that would have prevented transmission were detected are also counted.
Errors - OUT	Number of packets that were not sent due to an error.

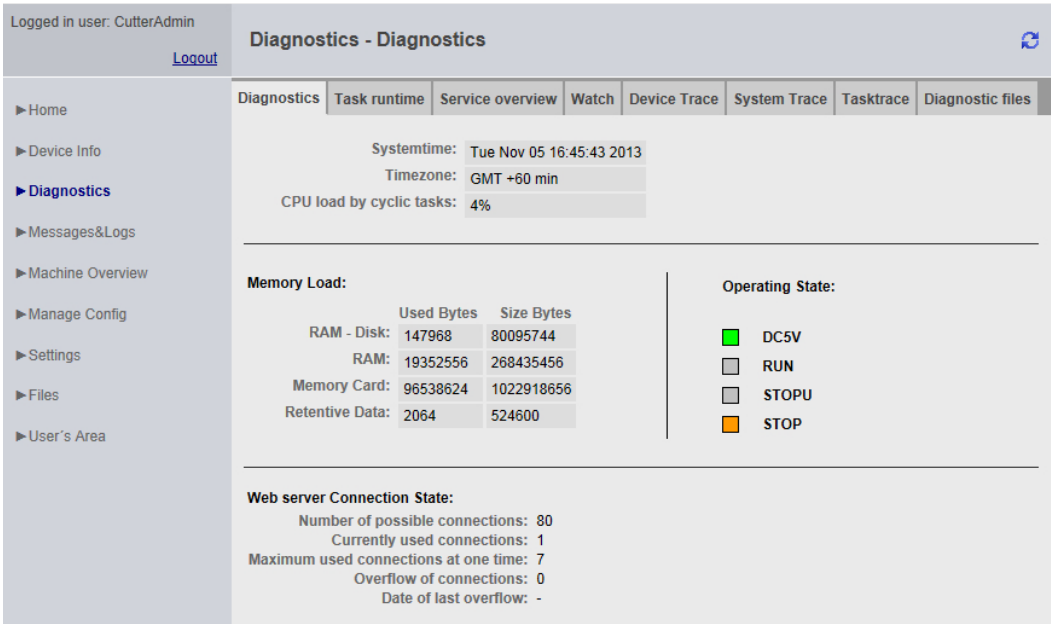
4.3.3 Diagnostics

Overview of the general state of the SIMOTION device

The following states of the SIMOTION device are displayed on the **Diagnostics** page:

Systemtime	Current time-of-day of the SIMOTION device
Timezone	Current difference between the Systemtime and GMT in minutes
CPU Load by cyclic Tasks	Processor time of servo and IPO levels as a percentage of the total processor time
Memory Load	Size and allocation of the memory, RAM disk, memory card, and non-volatile memory in bytes
Operating State	Current operating mode of the SIMOTION device
Web server Connection State	Information about the current connection status of the web server.

Select the tabs on the page to access more detailed information.



Systemtime: Tue Nov 05 16:45:43 2013
Timezone: GMT +60 min
CPU load by cyclic tasks: 4%

Memory Load:

	Used Bytes	Size Bytes
RAM - Disk:	147968	80095744
RAM:	19352556	268435456
Memory Card:	96538624	1022918656
Retentive Data:	2064	524600

Operating State:

🟩	DC5V
□	RUN
□	STOPU
🟧	STOP

Web server Connection State:

Number of possible connections: 80
Currently used connections: 1
Maximum used connections at one time: 7
Overflow of connections: 0
Date of last overflow: -

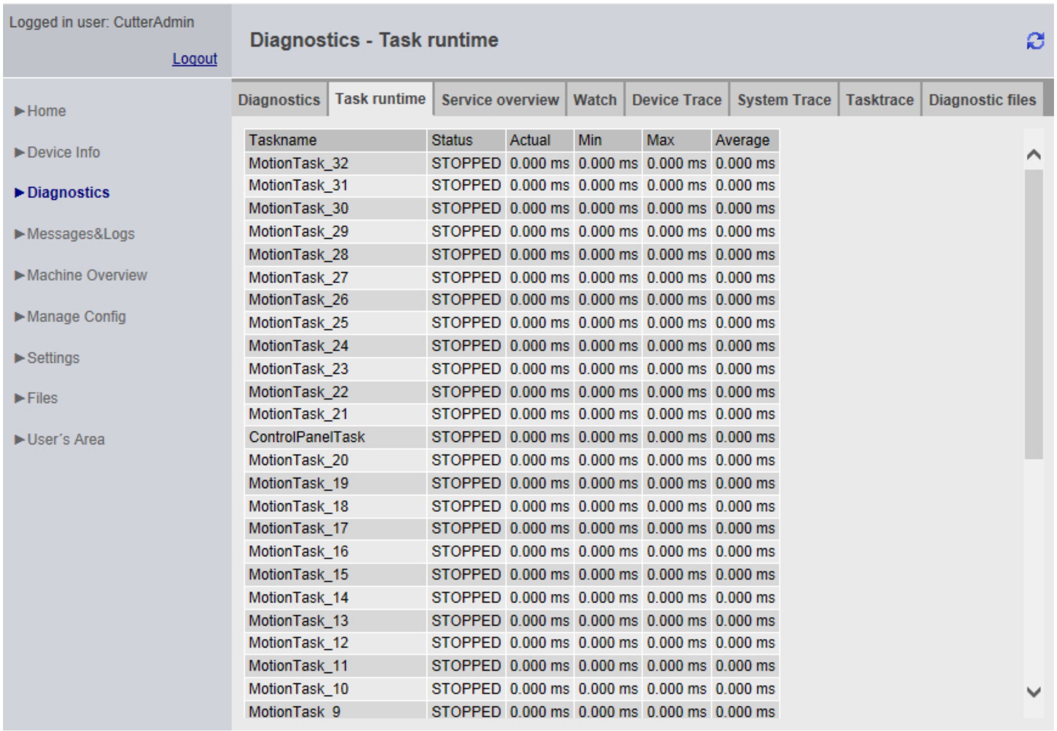
Figure 4-9 Diagnostics

4.3.3.1 Task runtime

Information on task runtimes and states

On the **Task runtime** page (opened via **Diagnostics > Task runtime**), you can view the following information:

Taskname	Name of the task
Status	Current status of the task
Actual	Current runtime of the task in ms
Min	Minimum runtime of the task in ms
Max	Maximum runtime of the task in ms
Average	Average runtime of the task in ms



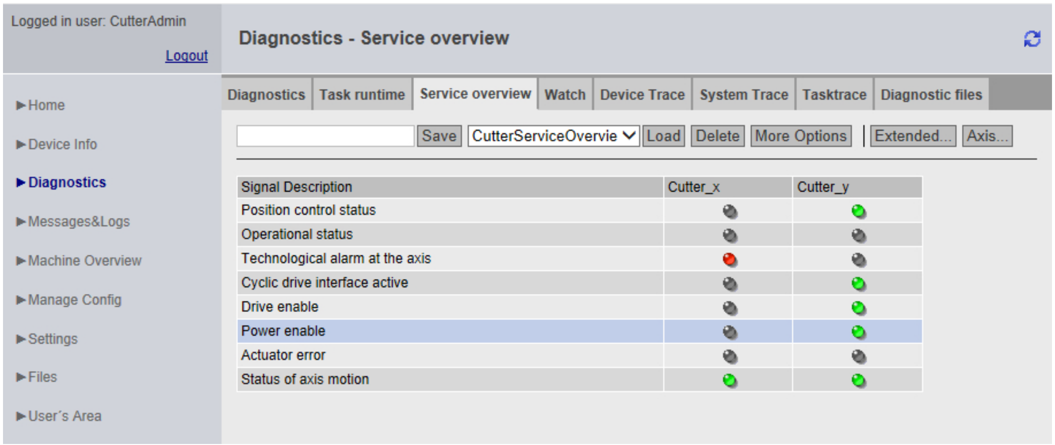
Taskname	Status	Actual	Min	Max	Average
MotionTask_32	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_31	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_30	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_29	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_28	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_27	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_26	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_25	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_24	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_23	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_22	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_21	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
ControlPanelTask	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_20	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_19	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_18	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_17	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_16	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_15	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_14	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_13	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_12	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_11	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_10	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_9	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms

Figure 4-10 Task Runtime

4.3.3.2 Service overview

Service overview

SIMOTION SCOUT provides an overview screen that displays the state of the axes available in the project. The web server provides a corresponding page.



CutterServiceOvervie

Signal Description	Cutter_x	Cutter_y
Position control status	⚫	🟢
Operational status	⚫	⚫
Technological alarm at the axis	🔴	⚫
Cyclic drive interface active	⚫	🟢
Drive enable	⚫	🟢
Power enable	⚫	🟢
Actuator error	⚫	⚫
Status of axis motion	🟢	🟢

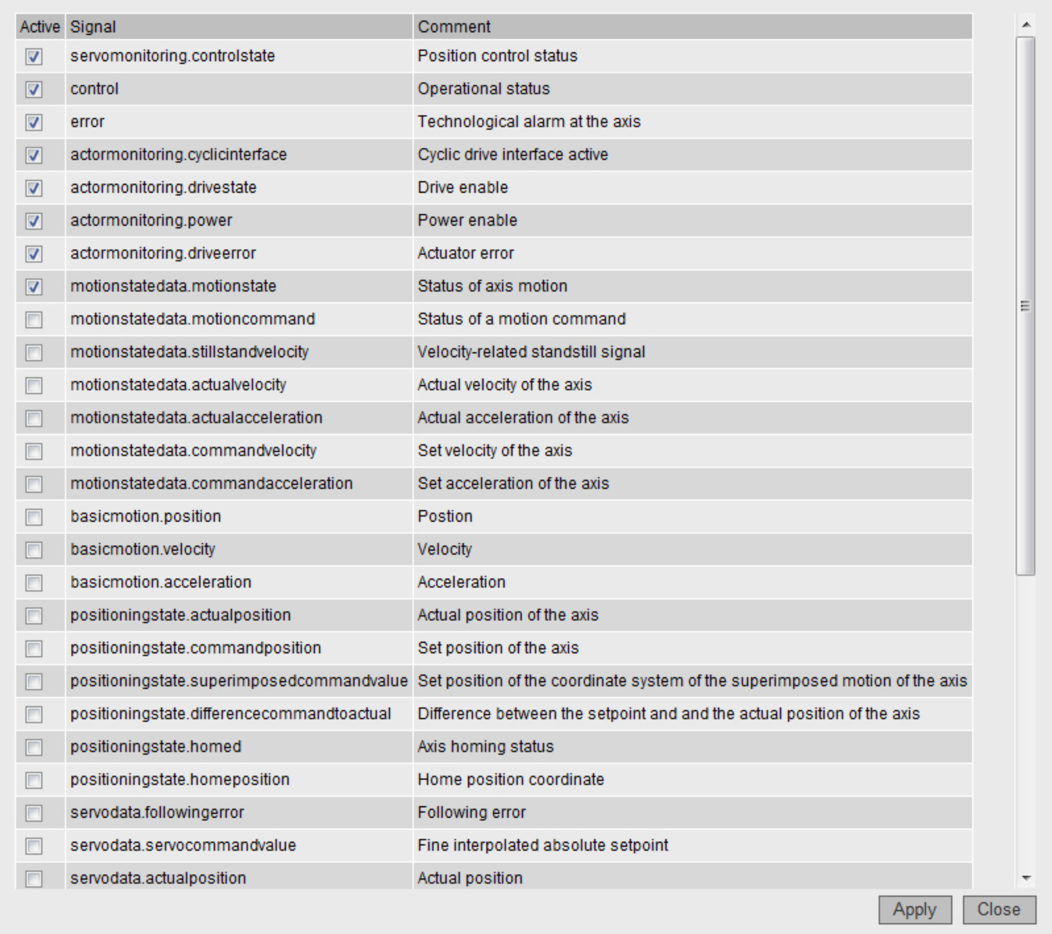
Figure 4-11 Service overview

The columns in the table represent each of the axes. Clicking the **Axis** button reveals a selection of all the available axes, allowing you to choose the ones you require.

You can use the **Save** button to save the current setting in the device. A name for this must be entered in the input field to the left of the **Save** button.

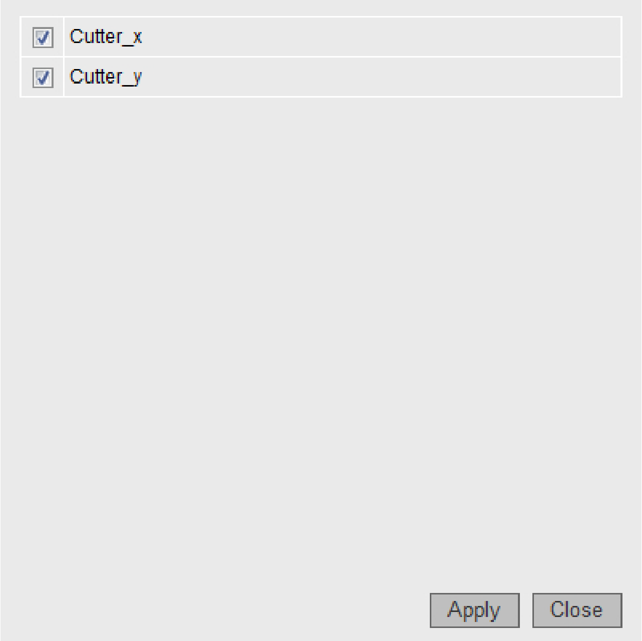
You can use the **Load** button to load a setting and delete it using the **Delete** button.

The **Extended...** button opens a window in which the required system variables can be selected.



Active	Signal	Comment
☑	servomonitoring.controlstate	Position control status
☑	control	Operational status
☑	error	Technological alarm at the axis
☑	actormonitoring.cyclicinterface	Cyclic drive interface active
☑	actormonitoring.drivestate	Drive enable
☑	actormonitoring.power	Power enable
☑	actormonitoring.driveerror	Actuator error
☑	motionstatedata.motionstate	Status of axis motion
□	motionstatedata.motioncommand	Status of a motion command
□	motionstatedata.stillstandvelocity	Velocity-related standstill signal
□	motionstatedata.actualvelocity	Actual velocity of the axis
□	motionstatedata.actualacceleration	Actual acceleration of the axis
□	motionstatedata.commandvelocity	Set velocity of the axis
□	motionstatedata.commandacceleration	Set acceleration of the axis
□	basicmotion.position	Postion
□	basicmotion.velocity	Velocity
□	basicmotion.acceleration	Acceleration
□	positioningstate.actualposition	Actual position of the axis
□	positioningstate.commandposition	Set position of the axis
□	positioningstate.superimposedcommandvalue	Set position of the coordinate system of the superimposed motion of the axis
□	positioningstate.differencecommandtoactual	Difference between the setpoint and and the actual position of the axis
□	positioningstate.homed	Axis homing status
□	positioningstate.homeposition	Home position coordinate
□	servodata.followingerror	Following error
□	servodata.servocommandvalue	Fine interpolated absolute setpoint
□	servodata.actualposition	Actual position

Figure 4-12 **Extended...** button: Selection of variables

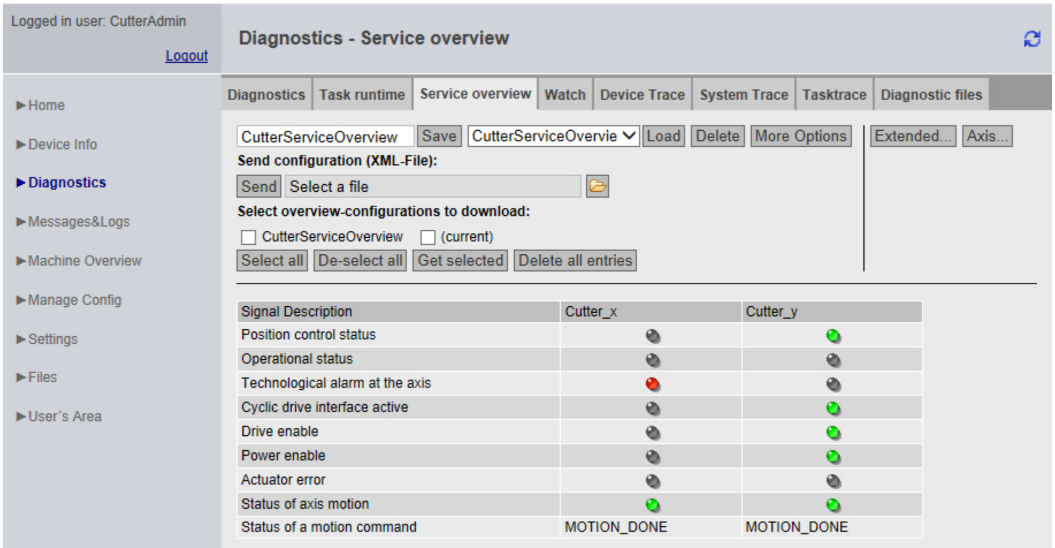


☑ Cutter_x

☑ Cutter_y

Figure 4-13 **Axis...** button: Selecting the axes

More Options



Signal Description	Cutter_x	Cutter_y
Position control status	●	🟢
Operational status	●	●
Technological alarm at the axis	🔴	●
Cyclic drive interface active	●	🟢
Drive enable	●	🟢
Power enable	●	🟢
Actuator error	●	●
Status of axis motion	🟢	🟢
Status of a motion command	MOTION_DONE	MOTION_DONE

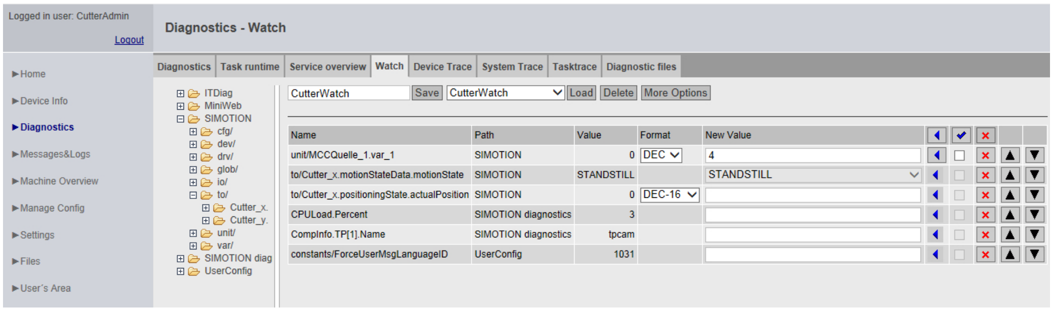
Figure 4-14 Service overview More Options

The **More Options** button extends the upper screen area to display additional functions. On the Service Overview page, additional buttons for selecting signals are displayed.

4.3.3.3 Watch

Watch table

This page combines a variable browser and a watch table. The variables are entered in the watch table with the aid of the browser.



CutterWatch | CutterWatch

Name	Path	Value	Format	New Value
unit/MCCQuelle_1.var_1	SIMOTION	0	DEC	4
to/Cutter_x.motionStateData.motionState	SIMOTION	STANDSTILL		STANDSTILL
to/Cutter_x.positioningState.actualPosition	SIMOTION	0	DEC-16	
CPULoad.Percent	SIMOTION diagnostics	3		
CompInfo.TP[1].Name	SIMOTION diagnostics	tpcam		
constants/ForceUserMsgLanguageID	UserConfig	1031		

Figure 4-15 Watch table

For monitoring variables, the web server provides a watch table and a symbol browser. The symbol browser provides the option of browsing the entire variable management area of a SIMOTION control. The watch table and the symbol browser are displayed in a tree topology on the left-hand side. The selected variables are displayed on their right and can be edited for the watch function.

Only users who have logged on can access this page. See Log-in administration (Page 110)

In order to monitor unit variables, the "Permit OPC-XML" option must have been activated in the compiler settings for the associated unit. See Making unit variables available (Page 153)

The format column allows you to change the display format in the case of integer variables.

- DEC for decimal display (default).
- HEX for hexadecimal display.
- BIN for binary display.

All control values are interpreted according to this setting.

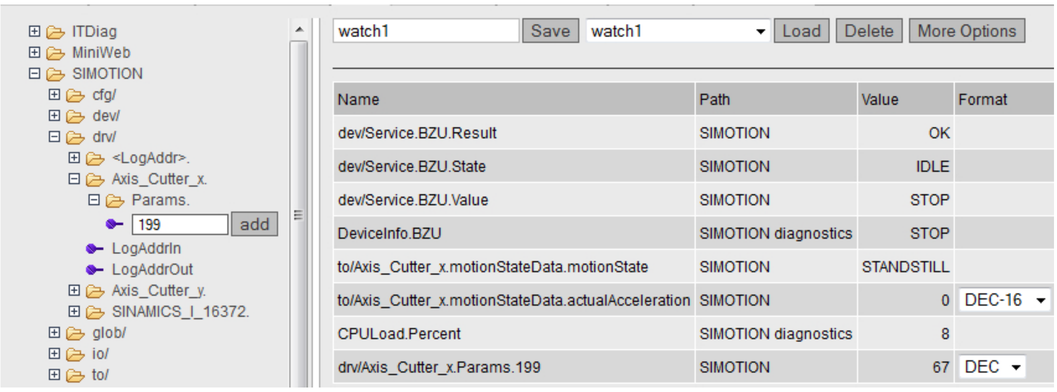
Table 4-1 Display formats for floating-point numbers

Format	Lowest value	Highest value	EXP notation
DEC-10	0.000000001	9999999999	*.*********E+-*
DEC-16	0.000000000000001	9999999999999999	*.***************E+-*
DEC-20	0.0000000000000000001	99999999999999999999	*.***************E+-*
DEC n.3	Three decimal places are displayed or EXP format if the value < 0.001 or > 1e+21		
EXP	*.*********E+-*		

Accessing the drive parameters

The drive parameters are accessed via a tree topology. The parameters are selected using the same method as when accessing variables via the variable provider. See Variable providers (Page 126)

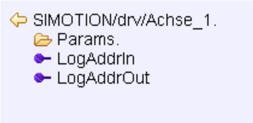
Parameters are displayed as a number without a preceding 'p' or 'r'. For example, parameter r0002 becomes 0002.



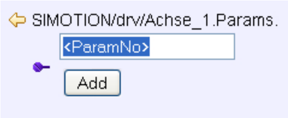
Name	Path	Value	Format
dev/Service.BZU.Result	SIMOTION	OK	
dev/Service.BZU.State	SIMOTION	IDLE	
dev/Service.BZU.Value	SIMOTION	STOP	
DeviceInfo.BZU	SIMOTION diagnostics	STOP	
to/Axis_Cutter_x.motionStateData.motionState	SIMOTION	STANDSTILL	
to/Axis_Cutter_x.motionStateData.actualAcceleration	SIMOTION	0	DEC-16
CPULoad.Percent	SIMOTION diagnostics	8	
drv/Axis_Cutter_x.Params.199	SIMOTION	67	DEC

There are three options for accessing drive parameters:

1. Axis technology object

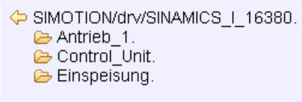


Selecting a technology object

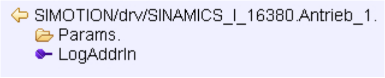


Selecting a drive parameter

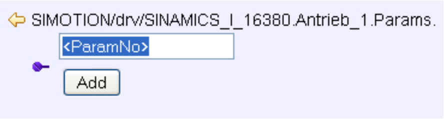
2. Drive object addressing



Selecting a drive object (the name is generated from the diagnostics address)



Selecting a drive

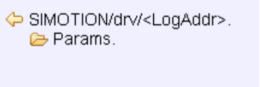


SIMOTION/drv/SINAMICS_I_16380.Antrieb_1.Params.

<ParamNo>

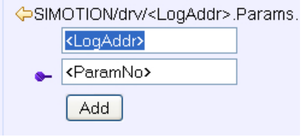
Figure 4-16 Selecting a DO parameter

3. Logical address



SIMOTION/drv/<LogAddr>.
Params.

Figure 4-17 Selecting a logical address



SIMOTION/drv/<LogAddr>.Params.

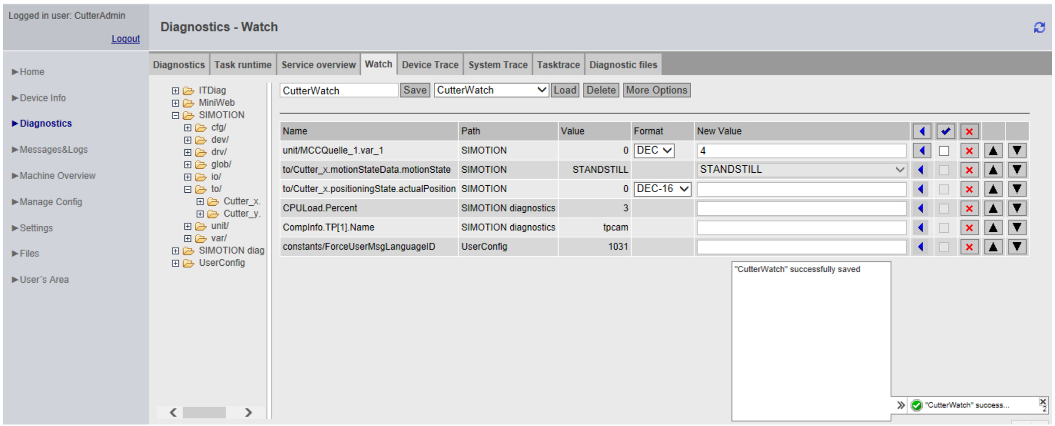
<LogAddr>

<ParamNo>

Selecting a drive parameter and a logical address

Message system

The message system of SIMOTION IT shows additional information as pop-up messages at the bottom right-hand edge of the page.



Logged in user: CutterAdmin

Diagnostics - Watch

CutterWatch

CutterWatch

Name	Path	Value	Format	New Value
unit/MCCQuelle_1.var_1	SIMOTION	0	DEC	4
to/Cutter_x.motionStateData.motionState	SIMOTION	STANDSTILL		STANDSTILL
to/Cutter_x.positioningState.actualPosition	SIMOTION	0	DEC-16	
CPULoad.Percent	SIMOTION diagnostics	3		
CompInfo.TP[1].Name	SIMOTION diagnostics	tpcam		
constants/ForceUserMsgLanguageID	UserConfig	1031		

"CutterWatch" successfully saved

"CutterWatch" success...

Figure 4-18 Message system example

The message system displays additional information. In this example, successful storage of the Watch settings is displayed as "watch1." Processing is not interrupted when a message is displayed.

See also

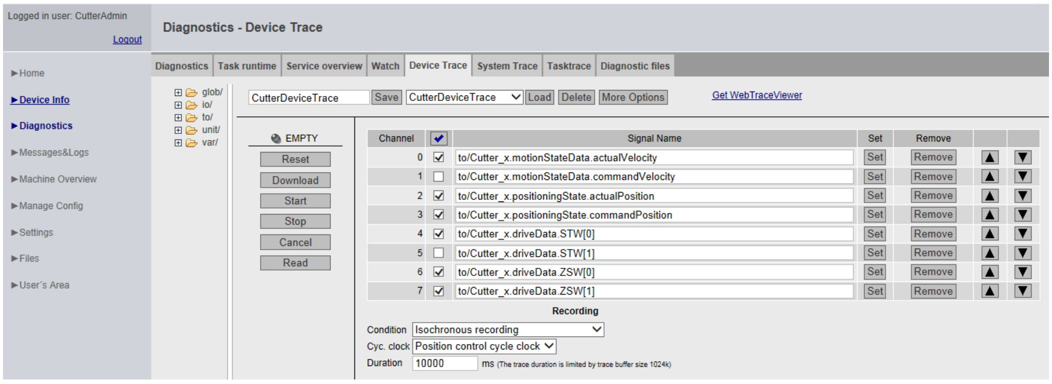
Service overview (Page 44)

4.3.3.4 Device Trace

Setting up a Device Trace

The SIMOTION control provides the user with the option of setting up a device trace via a web service.

Version 4.2 and higher provides not only the device trace described in this section, but also a distributed trace (Page 54) (System Trace).



CutterDeviceTrace

CutterDeviceTrace

Channel	☑	Signal Name	Set	Remove		
0	☑	to/Cutter_x.motionStateData.actualVelocity	Set	Remove	▲	▼
1	□	to/Cutter_x.motionStateData.commandVelocity	Set	Remove	▲	▼
2	☑	to/Cutter_x.positioningState.actualPosition	Set	Remove	▲	▼
3	☑	to/Cutter_x.positioningState.commandPosition	Set	Remove	▲	▼
4	☑	to/Cutter_x.driveData.STW[0]	Set	Remove	▲	▼
5	□	to/Cutter_x.driveData.STW[1]	Set	Remove	▲	▼
6	☑	to/Cutter_x.driveData.ZSW[0]	Set	Remove	▲	▼
7	☑	to/Cutter_x.driveData.ZSW[1]	Set	Remove	▲	▼

Recording

Condition: Isochronous recording

Cyc. clock: Position control cycle clock

Duration: 10000 ms (The trace duration is limited by trace buffer size 1024k)

Figure 4-19 Device Trace

Procedure for creating and executing a Device Trace:

- Select the **Device Trace** radio button
- Select the required signal from the provider list (glob, io, to, unit or var)
- Click the **Set** button to set the selected symbol as the required signal
- Set the recording and trigger conditions
- **Download** – Load the settings into the controller
- **Start** – Starts the trace
- **Stop** – Stops the trace (only required for a manual trace)
- **Read** – Load the trace results to the PC in the form of a WTRC file. The WTRC file is then deleted on the device.
- View the WTRC file using the WebTraceViewer

- **Cancel** – Deletes the settings from the control
- **Reset** – Deletes the settings from the web page

The **Read** button is used to generate a file with the extension WTRC , which contains the up-to-date trace data. The file can be saved or viewed with the WebTraceViewer program.

Clicking the **More Options** button expands the upper area of the screen to include options for saving the device trace settings on a PC and subsequently reloading them to the controller.

Only users who have logged on can access this page. See Log-in administration (Page 110)

Note

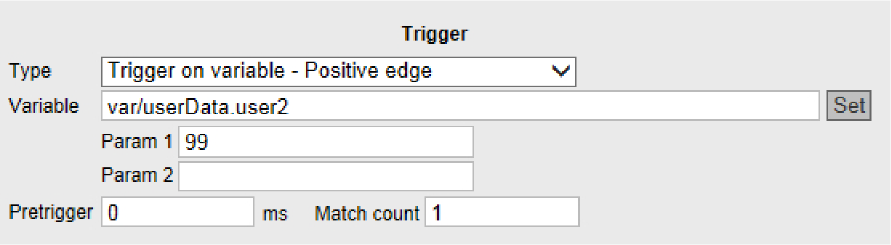
Only a limited amount of memory, arranged as a ring buffer, is available for the Trace. 512 KB is available for SIMOTION C, SIMOTION D410-2, and 1024 KB is available for all other SIMOTION modules.

Trace modes

The device trace can be run in two modes:

1. Isochronous recording (recording immediately)
   The trace starts immediately and runs until the recording time set under Duration is reached.
2. Isochronous recording (recording immediately)
   The trace starts immediately and runs until it is stopped by the operator. The trace buffer then contains data which was recorded for the time set in Duration before stop was triggered.
3. Isochronous recording – triggered (recording triggered)
   The trace starts when a trigger event occurs and stops when a parameterizable time expires or when the trace buffer is full.

Trigger



Trigger

Type: Trigger on variable - Positive edge

Variable: var/userData.user2

Param 1: 99

Param 2:

Pretrigger: 0 ms

Match count: 1

Figure 4-20 Device trace trigger

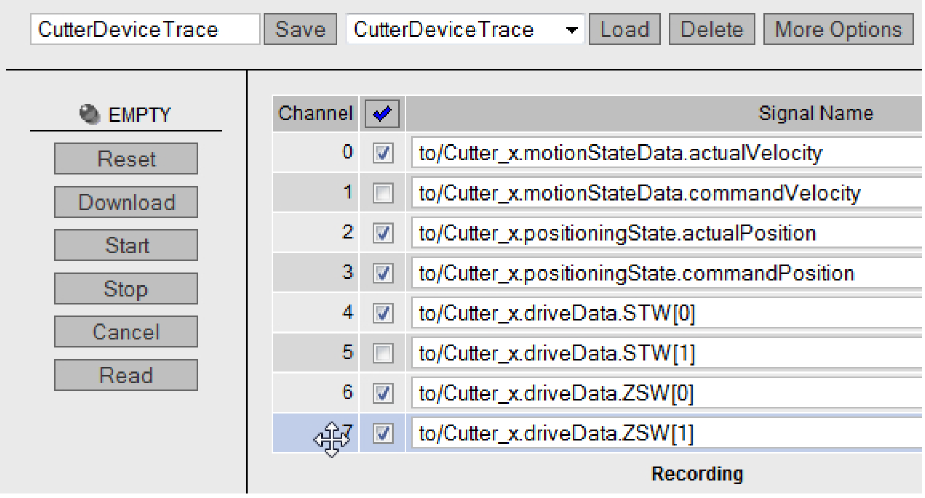
You can find a description of the recording settings and trigger conditions in the System Trace (Page 54) section.

Saving and loading a trace configuration

You can save a configuration under a name on the device by clicking the **Save** button and load it again using the **Load** button. You can find a more detailed description of the **More Options** functionality in the Service Overview (Page 44) section.

Moving table rows

Using drag and drop you can move the table rows containing the signals. This functionality is also available in similar tables on the Watch and System Trace page.



Channel	☑	Signal Name
0	☑	to/Cutter_x.motionStateData.actualVelocity
1	☐	to/Cutter_x.motionStateData.commandVelocity
2	☑	to/Cutter_x.positioningState.actualPosition
3	☑	to/Cutter_x.positioningState.commandPosition
4	☑	to/Cutter_x.driveData.STW[0]
5	☐	to/Cutter_x.driveData.STW[1]
6	☑	to/Cutter_x.driveData.ZSW[0]
7	☑	to/Cutter_x.driveData.ZSW[1]

Figure 4-21 Dragging and dropping table rows

Select the required table row. Keep the left mouse button pressed and move the row to the desired position.

WebTraceViewer

The WebTraceViewer PC program enables the trace data to be displayed. The **GetWebTraceViewer** link can be used to save the WebTraceViewer on the PC. This link is not available with SIMOTION C modules. Alternatively, you can copy the WebTraceViewer from the Addon DVD.

This program is able to graphically display the data saved in a WTRC file.

With SIMOTION V4.4 and higher, you can also load and display WTRC files in SIMOTION SCOUT.

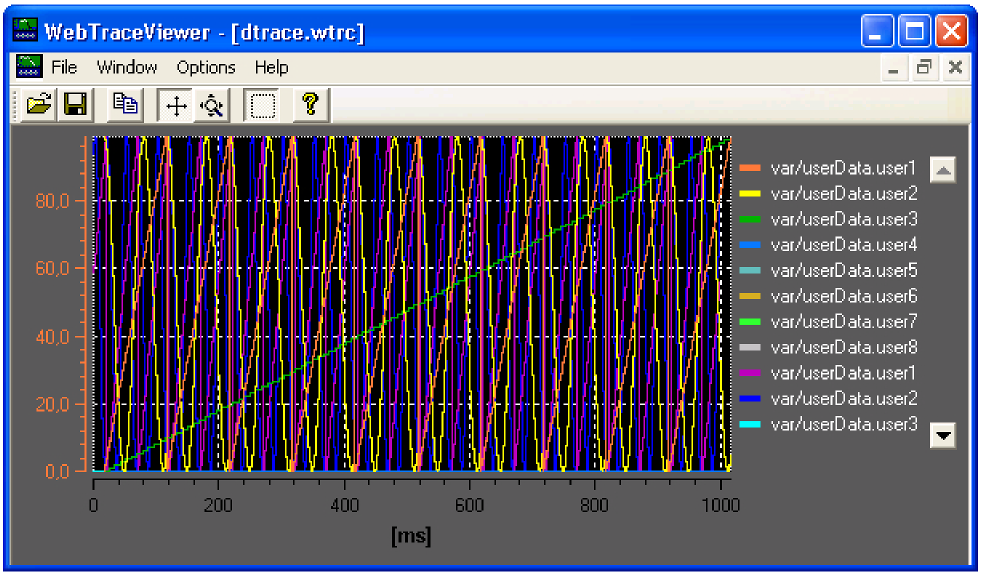


Figure 4-22 WebTraceViewer

Button functions

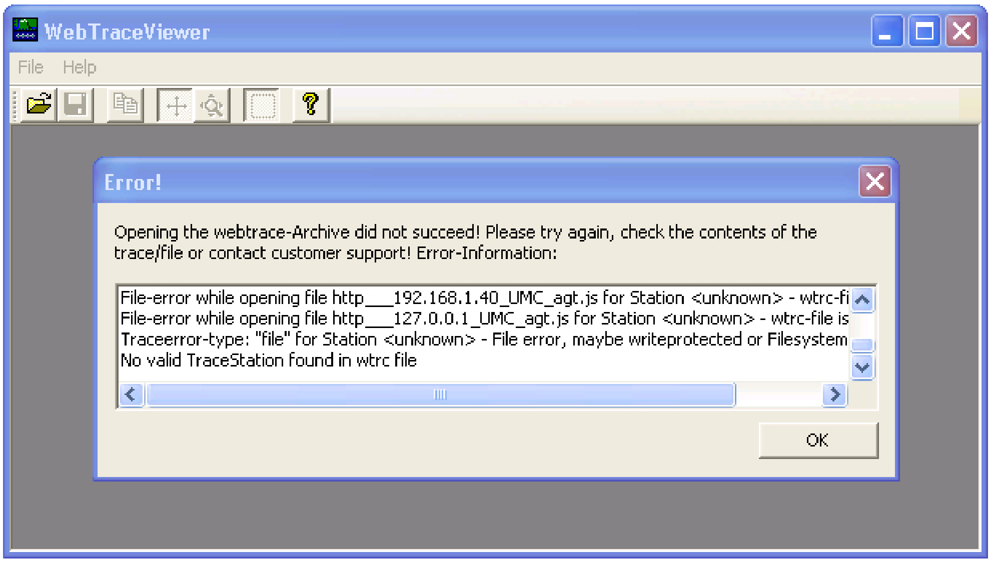
1. Open file: Enables you to open WTRC files.
2. Save file: Enables you to save WTRC files.
3. Copy: Copies the content of the current WTRC window to the clipboard in bitmap format. This enables the graphic to be copied to a word processing program, for example.
4. Scroll mode: Enables you to shift the visible area of the graphic using the mouse.
5. Zoom mode: Enables you to expand and compress the graphic using the mouse.
6. Selection mode: If this button is activated, only a rectangular area of the graphic can be selected. Buttons 4 and 5 can then no longer be used.

CSV export

The **File Export** menu command allows you to save the trace data in CSV format so you can import it into a spreadsheet, for example.

Defective WTRC files

If the WebTraceViewer imports a defective file, it provides information about the error.



Opening the webtrace-Archive did not succeed! Please try again, check the contents of the trace/file or contact customer support! Error-Information:

```
File-error while opening file http___192.168.1.40_UMC_agt.js for Station <unknown> - wtrc-fi
File-error while opening file http___127.0.0.1_UMC_agt.js for Station <unknown> - wtrc-file is
Traceerror-type: "file" for Station <unknown> - File error, maybe writeprotected or Filesystem
No valid TraceStation found in wtrc file
```

Figure 4-23 WebTraceViewer with faulty WTRC file

Note

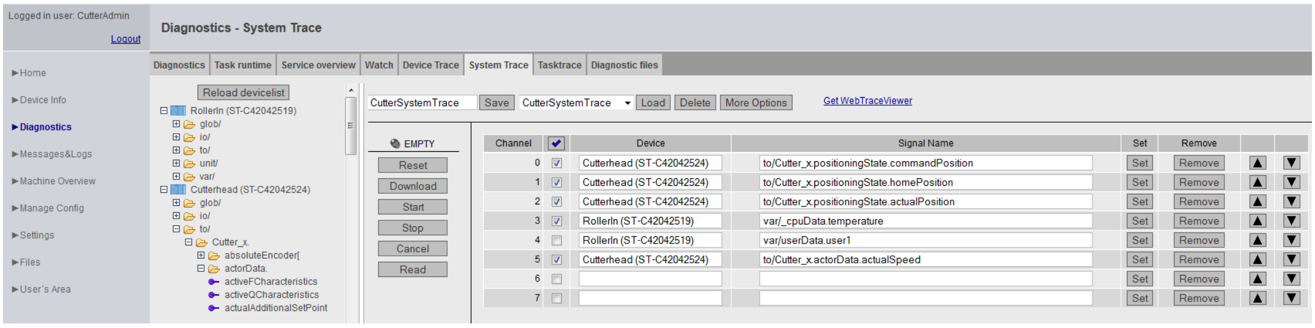
The WebTraceViewer requires the "MS Visual C++ 2008 Redistributable Package" or an installed MS Visual Studio 2008 for program execution.

The "MS Visual C++ 2008 Redistributable Package" is available for downloading from the Microsoft website. It can also be found on the SIMOTION SCOUT Installation DVD "VOL1\Disk1\Setup\vcredist_2008".

4.3.3.5 System Trace

Setting up and executing a System Trace

The system trace is available as of SIMOTION Version 4.2. The system trace can be used to record a trace involving multiple devices.



Channel	☑	Device	Signal Name	Set	Remove		
0	☑	Cutterhead (ST-C42042524)	to/Cutter_x.positioningState.commandPosition	Set	Remove	▲	▼
1	☑	Cutterhead (ST-C42042524)	to/Cutter_x.positioningState.homePosition	Set	Remove	▲	▼
2	☑	Cutterhead (ST-C42042524)	to/Cutter_x.positioningState.actualPosition	Set	Remove	▲	▼
3	☑	RollerIn (ST-C42042519)	var/_cpuData.temperature	Set	Remove	▲	▼
4	☐	RollerIn (ST-C42042519)	var/userData.user1	Set	Remove	▲	▼
5	☑	Cutterhead (ST-C42042524)	to/Cutter_x.actorData.actualSpeed	Set	Remove	▲	▼
6	☐			Set	Remove	▲	▼
7	☐			Set	Remove	▲	▼

Figure 4-24 System trace (partial view)

Requirements for the system trace:

- It is essential that the CPUs communicate via PROFINET.
- There must be an isochronous connection between the CPUs.
- Direct data exchange (peer-to-peer communication) must be configured.
- The PROFINET Sync Master must be a SIMOTION device.

Procedure for creating and executing a System Trace:

- Select the **System Trace** radio button
- Select the required signal from the provider device list (glob, io, to, unit or var)
- The marked icon is placed on the signal in question by pressing the Set button, double-clicking, or by drag and drop.
- Set the recording and trigger conditions
- **Download** – Load the settings into the controller
- **Start** – Start the system trace
- **Stop** – Stop the system trace (only necessary for manual trace)
- **Read** – Loads the trace results to the PC in the form of a WTRC file. The WTRC file is then deleted on the device.
- View the WTRC file using the WebTraceViewer PC program
- **Cancel** – Deletes the settings from the control
- **Reset** – Deletes the settings from the web page

Prerequisites

The devices must be connected and synchronized via PROFINET IO for time synchronization of the distributed trace to function correctly.

Quantities

Number of devices

- 128 signals on up to 128 CPUs are possible. Up to 32 signals per CPU are possible.

Number of triggers

- Just one trigger is possible for each device. A total of 4 triggers are possible for the entire configuration. Depending on the utilization of the devices, the number of different possible devices can vary. As a recommendation, no more than 10 different devices should be used at the same time.

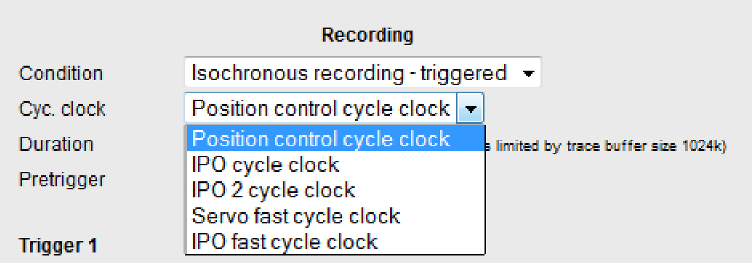
Up to 128 signals can be displayed simultaneously in the WebTraceViewer. By contrast, only 8 signals can be displayed simultaneously in SCOUT.

Once the signals have been selected, the desired recording and trigger conditions must then be assigned.

Trace modes

The system trace can only be run in 'triggered' mode. The trace starts when a trigger event occurs and stops when a parameterizable time expires or when the trace buffer is full.

Recording settings



Recording

Condition: Isochronous recording - triggered

Cyc. clock: Position control cycle clock

Duration

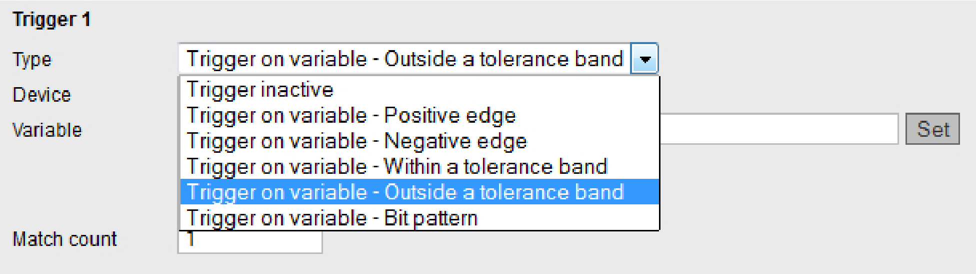
Pretrigger

Trigger 1

Figure 4-25 Example: Recording basic cycle clock setting

- Condition: Measured value acquisition
- Cyc. Clock: Basic clock cycle
- Duration: Recording in a ring buffer. 512 KB memory (SIMOTION C, SIMOTION D410-2) and 1024 KB (all others)
- Pretrigger = Time in ms, when the trigger is activated, this "run-in" is included in the recording

Trigger conditions



Trigger 1

Type: Trigger on variable - Outside a tolerance band

Device

Variable

Match count: 1

Trigger inactive
Trigger on variable - Positive edge
Trigger on variable - Negative edge
Trigger on variable - Within a tolerance band
Trigger on variable - Outside a tolerance band
Trigger on variable - Bit pattern
Set

Figure 4-26 Example: Trigger setting

Designation	Description	Operand 1	Operand 2
Positive Edge	Rising edge Triggered if variable increases.	-	-
Negative Edge	Falling edge Triggered if variable decreases.	-	-

Designation	Description	Operand 1	Operand 2
Within a tolerance band	Within a value range Triggered if variable is within the specified interval.	Lower limit of the interval	Upper limit of the interval
Outside a tolerance band	Outside a value range Triggered if variable is outside the specified interval.	Lower limit of the interval	Upper limit of the interval
Bit pattern	The bit pattern triggers if the relevant bit is 1 both in the variable and in the bit pattern.	Bit pattern	-

Overview of trigger conditions

Initialization

The trace variables and trigger conditions are transmitted to the devices concerned in order to initialize the trace. If the initialization has been completed without errors on at least one device, the trace can start.

Note

Deleting a trace up to Version 4.3

A SCOUT trace is not deleted by the SIMOTION IT Diagnostics. A SIMOTION IT Diagnostics trace is not deleted by SCOUT.

Note

Downloading a trace

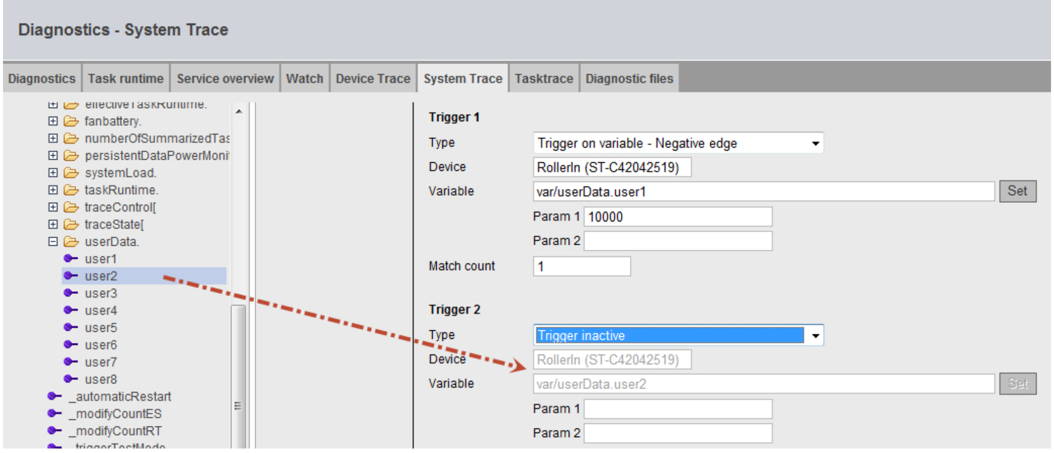
If a SCOUT Trace exists on the device, a SIMOTION IT diagnostics trace cannot be loaded.

Viewing the trace

The trace data can be displayed on the PC using the WebTraceViewer PC program

Drag-and-drop

Variables can easily be moved into the trigger conditions using the drag and drop function.



Trigger 1

Type: Trigger on variable - Negative edge

Device: RollerIn (ST-C42042519)

Variable: var/userData.user1

Param 1: 10000

Param 2:

Match count: 1

Trigger 2

Type: Trigger inactive

Device: RollerIn (ST-C42042519)

Variable: var/userData.user2

Param 1:

Param 2:

Figure 4-27 System Trace drag and drop

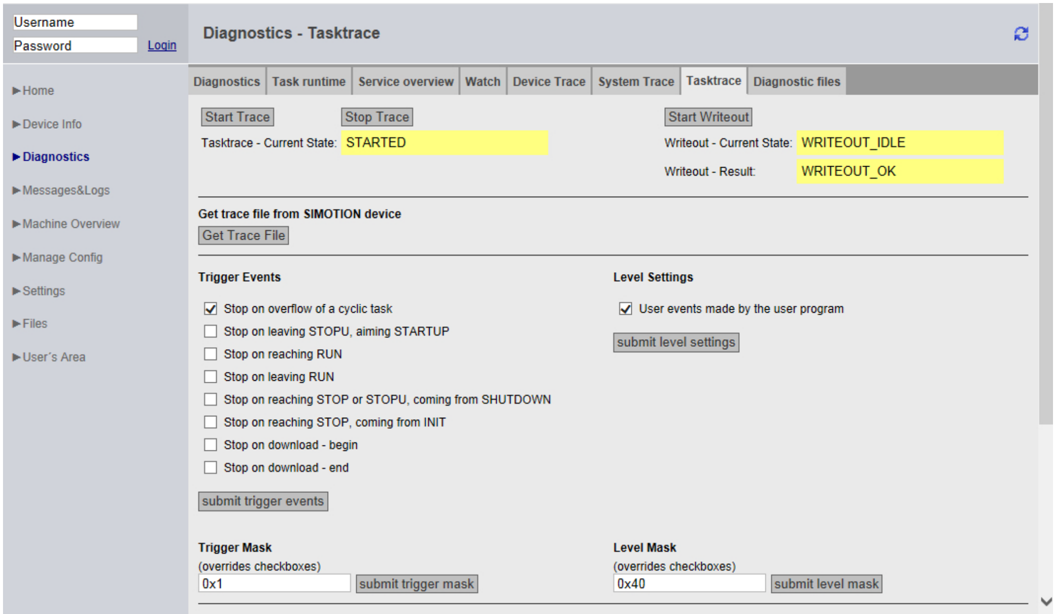
See also

Device Trace (Page 50)

4.3.3.6 Tasktrace

Tasktrace

This page enables you to set up and control the SIMOTION Tasktrace (including trigger conditions).



Tasktrace - Current State: STARTED

Writeout - Current State: WRITEOUT_IDLE

Writeout - Result: WRITEOUT_OK

Get trace file from SIMOTION device

Trigger Events

- ☑ Stop on overflow of a cyclic task
- □ Stop on leaving STOPU, aiming STARTUP
- □ Stop on reaching RUN
- □ Stop on leaving RUN
- □ Stop on reaching STOP or STOPU, coming from SHUTDOWN
- □ Stop on reaching STOP, coming from INIT
- □ Stop on download - begin
- □ Stop on download - end

Level Settings

- ☑ User events made by the user program

Trigger Mask
(overrides checkboxes)
0x1

Level Mask
(overrides checkboxes)
0x40

Figure 4-28 Tasktrace

The task trace provides a diagnostics option during runtime which can be used to obtain reliable information about the processes in the individual tasks (e.g. task change).

The trace recording is continuously written to a ring buffer.

Once underway, a trace recording can be stopped manually or held conditionally by a trigger event. The recording can then be loaded to the PC and displayed with the Task Profiler by pressing the **Get Trace File** button.

Start Trace

The **Start Trace** button starts the task trace with the settings that have been made previously and have been transferred to the device using **Submit**.

Stop Trace

You can stop the trace manually using the **Stop Trace** button.

The state of the trace is displayed in the field **Tasktrace - Current State:**.

Start Writeout

The **Start Writeout** button writes the content of the trace buffer to the file "/USER/SIMOTION/SYSLOG/TASKTRACE/TTRACE.JEN" on the device.

The state of the write process is displayed in the fields **Writeout - Current State:** and **Writeout - Result:** .

Get Trace File

Click the **Get Trace File** button to load the TTrace.jen file to the PC and use the TaskProfiler program to display it. The setup of the TaskProfiler can be found on the installation DVD in the add-on directory.

Java Runtime Version 1.6 or higher is required to use the program.

Trigger Events

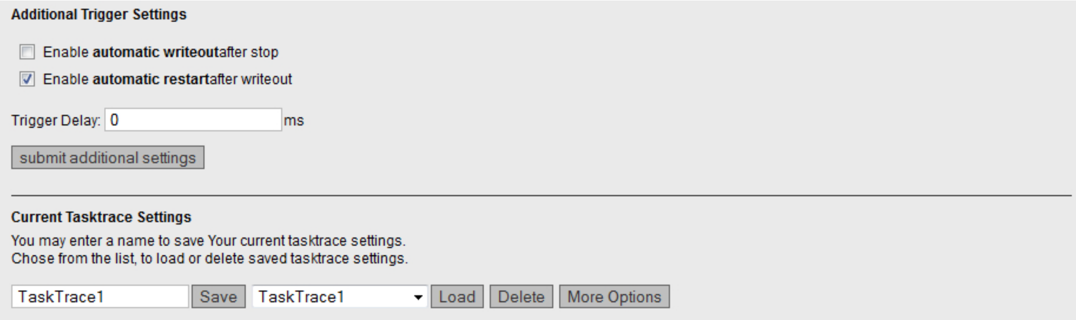
You can select and combine the **Trigger Events** as you wish using various checkboxes. The **submit trigger events** button transfers the selection to the device.

Trigger Mask

The **Trigger Mask** input field enables the expert to input **Trigger Events** as coded numbers. The **submit trigger mask** button transfers the input to the device and overwrites all previous inputs.

Level Settings / Level Mask

You can use these settings to determine which events are entered in the task trace.



Additional Trigger Settings

☐ Enable **automatic writeout**after stop

☑ Enable **automatic restart**after writeout

Trigger Delay: 0 ms

Current Tasktrace Settings

You may enter a name to save Your current tasktrace settings.
Chose from the list, to load or delete saved tasktrace settings.

TaskTrace1

TaskTrace1

Figure 4-29 Tasktrace Additional Settings

Additional Trigger Settings

These settings enable you to back up a trace automatically.

- **Enable automatic writeout after stop**: The trace data is automatically backed up after the occurrence of a trigger event.
- **Enable automatic restart after writeout**: The trace is restarted after backing up the trace data.

Click **Trigger Delay** to set the time during which the trace remains active after a trigger condition occurs.

Current Tasktrace Settings

You can back up, load or delete a setting here.

Saving the trace settings

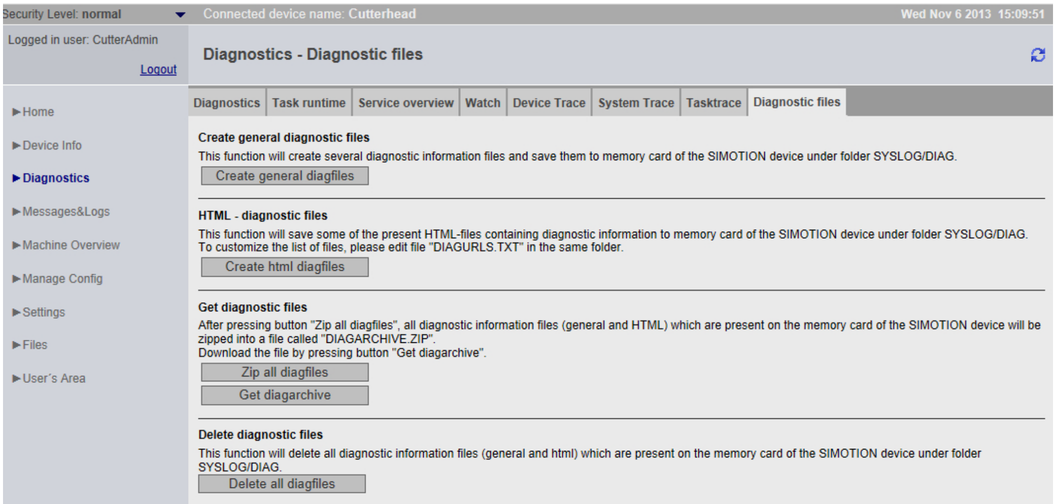
The current trace settings can be saved in the XML file "/USER/SIMOTION/HMI/FILES/PERSIST/TTRACE.XML" on the storage medium of the control. This file is evaluated during power-up. As a result, it is also possible to activate the trace of system function calls from the web interface. In addition, the web server allows you to delete this file.

4.3.3.7 Diagnostic files

Backing up diagnostic pages of the web server

You can use this page to back up general diagnostic data and individual HTML pages of SIMOTION IT .

The standard HTML pages of the web server contain valuable information for analyzing problems that can occur during operation of the SIMOTION control.



Security Level: **normal** | Connected device name: **Cutterhead** | **Wed Nov 6 2013 15:09:51**

Logged in user: CutterAdmin

Logout

Diagnostics - Diagnostic files

Create general diagnostic files

This function will create several diagnostic information files and save them to memory card of the SIMOTION device under folder SYSLOG/DIAG.

HTML - diagnostic files

This function will save some of the present HTML-files containing diagnostic information to memory card of the SIMOTION device under folder SYSLOG/DIAG.
To customize the list of files, please edit file "DIAGURLS.TXT" in the same folder.

Get diagnostic files

After pressing button "Zip all diagfiles", all diagnostic information files (general and HTML) which are present on the memory card of the SIMOTION device will be zipped into a file called "DIAGARCHIVE.ZIP".
Download the file by pressing button "Get diagarchive".

Delete diagnostic files

This function will delete all diagnostic information files (general and html) which are present on the memory card of the SIMOTION device under folder SYSLOG/DIAG.

Figure 4-30 Diagnostic files

Create general diagnostic files

This function saves diagnostic data for Support.

SIMOTION device	Storage medium	Path
D, C	CF Card/MMC	\USER\SIMOTION\HMI\SYSLOG\DIAG
P350	Hard disk	F:\Simotion\user\Card\USER\SIMOTION\HMI\SYSLOG \DIAG
P320	CF card	D:\Card\USER\SIMOTION\HMI\SYSLOG\DIAG

The use of this function corresponds, for example, to actuating the service selector switch on the SIMOTION D control.
HTML files used for diagnostics purposes are not saved.

HTML - diagnostic files
A selection of relevant diagnostic pages are backed up on the data medium as HTML pages. You can use the DIAGURLS.TXT (Page 178) file to control which HTML pages will be backed up.

Zip all diagfiles
The files previously generated by clicking the buttons **Create general diagnostic files** and **HTML diagnostic files** are zipped. If no files have been created, the zip file will be empty.

Get diagarchive
Download of the ZIP file generated with the **Zip all diagfiles** button.

Delete all diagfiles
Deletes all diagnostic files present in directory ...\USER\SIMOTION\HMI\SYSLOG\DIAG. The directory itself is retained.

4.3.4 Messages&Logs

4.3.4.1 Diag buffer

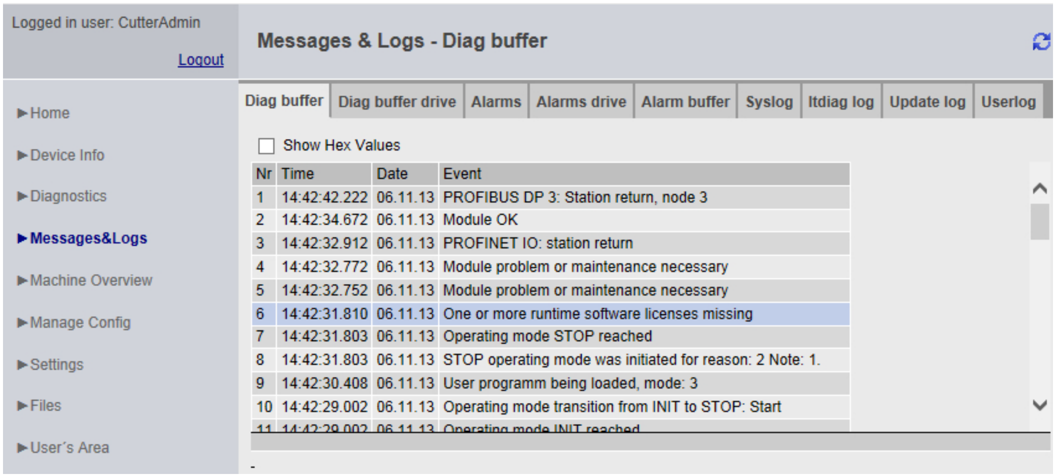
Diagnostic buffer information

On the **Diag buffer** page (opened via **Messages&Logs > Diag buffer**), you can view the latest content of the controller's diagnostic buffer.

Time	Time of the event
Date	Date of the event
Event	Displays the event as text. If the DGBUFTXT.EDB language file is missing, it will be displayed in hexadecimal notation.

Note

The text is displayed in English by default. To display the event text in a different language, you must transfer the relevant language versions of the DGBUFTXT-XX.EDB, DGEXTXT.EDB and TOALARM.ADB files to the .../USER/SIMOTION/HMICFG directory on the SIMOTION control memory card. See DiagBuffer group (Page 141) and Alarms (Page 64).



Messages & Logs - Diag buffer

□ Show Hex Values

Nr	Time	Date	Event
1	14:42:42.222	06.11.13	PROFIBUS DP 3: Station return, node 3
2	14:42:34.672	06.11.13	Module OK
3	14:42:32.912	06.11.13	PROFINET IO: station return
4	14:42:32.772	06.11.13	Module problem or maintenance necessary
5	14:42:32.752	06.11.13	Module problem or maintenance necessary
6	14:42:31.810	06.11.13	One or more runtime software licenses missing
7	14:42:31.803	06.11.13	Operating mode STOP reached
8	14:42:31.803	06.11.13	STOP operating mode was initiated for reason: 2 Note: 1.
9	14:42:30.408	06.11.13	User programm being loaded, mode: 3
10	14:42:29.002	06.11.13	Operating mode transition from INIT to STOP: Start
11	14:42:29.002	06.11.13	Operating mode INIT reached

-

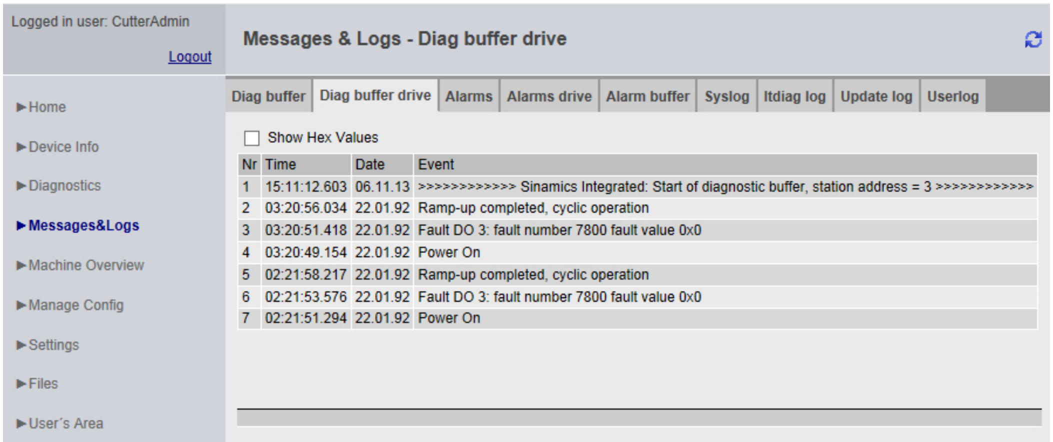
Figure 4-31 Diag buffer

4.3.4.2 Diag buffer drive

Representation of the drive diagnostics buffer

Just as there is a SIMOTION diagnostics buffer, there is also a diagnostics buffer for the integrated drives.

Time	Time of the event
Date	Date of the event
Event	Displays the event as text.



Messages & Logs - Diag buffer drive

□ Show Hex Values

Nr	Time	Date	Event
1	15:11:12.603	06.11.13	>>>>>>>>>>>> Sinamics Integrated: Start of diagnostic buffer, station address = 3 >>>>>>>>>>>>
2	03:20:56.034	22.01.92	Ramp-up completed, cyclic operation
3	03:20:51.418	22.01.92	Fault DO 3: fault number 7800 fault value 0x0
4	03:20:49.154	22.01.92	Power On
5	02:21:58.217	22.01.92	Ramp-up completed, cyclic operation
6	02:21:53.576	22.01.92	Fault DO 3: fault number 7800 fault value 0x0
7	02:21:51.294	22.01.92	Power On

Figure 4-32 Display of the diagnostics buffer for the integrated drives

The diagnostics buffer of a CX (Controller Extension) module is displayed in this way.

4.3.4.3 Alarms

Information about alarms

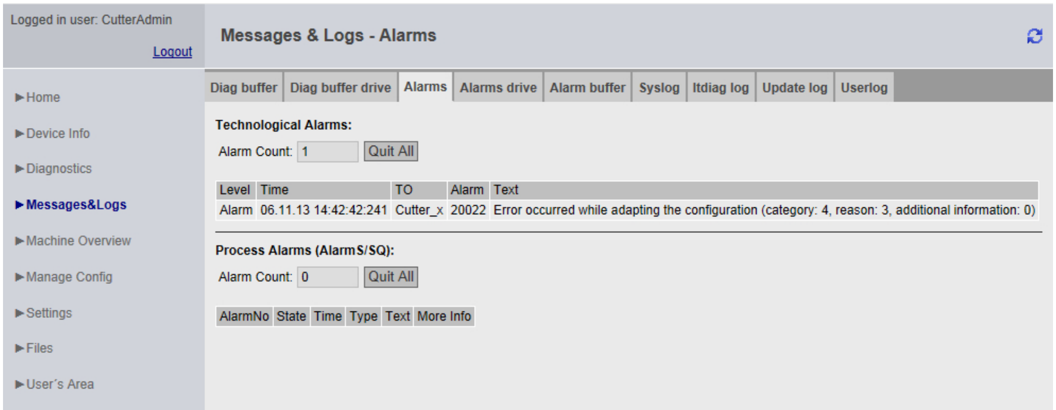
The alarm and alarmS/SQ messages of the device are displayed on the **Alarms** page.

Table 4-2 Technological Alarms

Level	Category of the alarm
Time	Time of the alarm
TO	Technology object that triggered the alarm
Nr	Alarm number
Text	Displays the alarm message as text

Table 4-3 Process Alarms (AlarmS/SQ)

AlarmNo	AlarmS/SQ number
State	AlarmS/SQ status
Time	Time at which the alarmS/SQ occurred
Type	Type of alarmS/SQ
Text	Displays the alarm message as text
More Info	Additional information



Technological Alarms:

Alarm Count: 1 Quit All

Level	Time	TO	Alarm	Text
Alarm	06.11.13 14:42:42:241	Cutter_x	20022	Error occurred while adapting the configuration (category: 4, reason: 3, additional information: 0)

Process Alarms (AlarmS/SQ):

Alarm Count: 0 Quit All

AlarmNo	State	Time	Type	Text	More Info

Figure 4-33 Alarms

The **Quit All** button allows you to close all alarms requiring acknowledgment.

Language setting for alarm texts

Alarm texts are displayed in English by default. To display the alarm texts in a different language, you must transfer the TOALARM.ADB file in the relevant language to the SIMOTION control memory card.

Only one language can be saved in SIMOTION at a time.

Procedure

1. Open the \AddOn\4_Accessories\SIMOTION_IT\4_Alarm_Messages\V4.2\ directory on the SIMOTION SCOUT Add-Ons DVD. For the language you can choose between ger (German) and eng (English), ita (Italian), fra (French). You will find the TOALARM.ADB file in the corresponding directory.
2. Insert the SIMOTION memory card in a reader/writer.
3. Copy the TOALARM.ADB file to the \USER\SIMOTION\HMICFG directory. You must create the directory if it does not already exist.
4. Insert the memory card in the SIMOTION device again.

P350/P320 procedure

1. Shut down the SIMOTION P.
2. Open the \AddOn\4_Accessories\SIMOTION_IT\4_Alarm_Messages\V4.2\ directory on the SIMOTION SCOUT Add-Ons DVD. For the language you can choose between ger (German) and eng (English), ita (Italian), fra (French). You will find the TOALARM.ADB file in the corresponding directory.
3. Copy the TOALARM.ADB file to the F:\SIMOTION\USER\CARD\USER\SIMOTION \HMICFG directory (for the default installation P350) or the D:\CARD\USER\SIMOTION \HMICFG directory (for the default installation P320).
4. Start the SIMOTION P.

4.3.4.4 Alarms drive

Drive faults and warnings

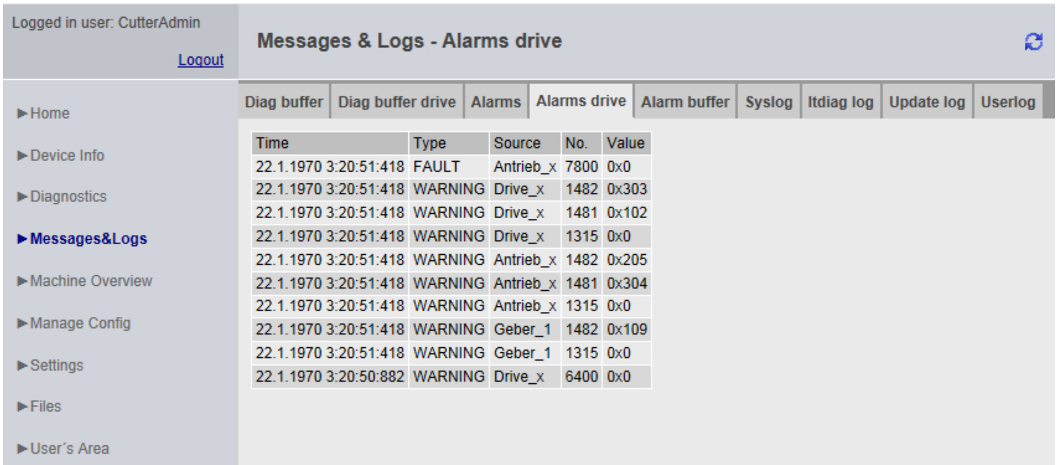
Similar to the technological alarms of the control, a page containing fault and warning messages of the drive is also available. Because alarm texts for drive alarms are currently not available, the display is at this stage only in numerical format.

The following are displayed:

Time	Fault time
Type	Error type
Source	DO name
No.	Fault code
Value	Fault value

If DOs (Drive Objects) are present in the device by name, they are also output by name.

The representation is in HEX (no alarm texts are output).



Time	Type	Source	No.	Value
22.1.1970 3:20:51:418	FAULT	Antrieb_x	7800	0x0
22.1.1970 3:20:51:418	WARNING	Drive_x	1482	0x303
22.1.1970 3:20:51:418	WARNING	Drive_x	1481	0x102
22.1.1970 3:20:51:418	WARNING	Drive_x	1315	0x0
22.1.1970 3:20:51:418	WARNING	Antrieb_x	1482	0x205
22.1.1970 3:20:51:418	WARNING	Antrieb_x	1481	0x304
22.1.1970 3:20:51:418	WARNING	Antrieb_x	1315	0x0
22.1.1970 3:20:51:418	WARNING	Geber_1	1482	0x109
22.1.1970 3:20:51:418	WARNING	Geber_1	1315	0x0
22.1.1970 3:20:50:882	WARNING	Drive_x	6400	0x0

Figure 4-34 DriveAlarms

The drive alarms for the controller extension CX32/CX32-2 can also be displayed.

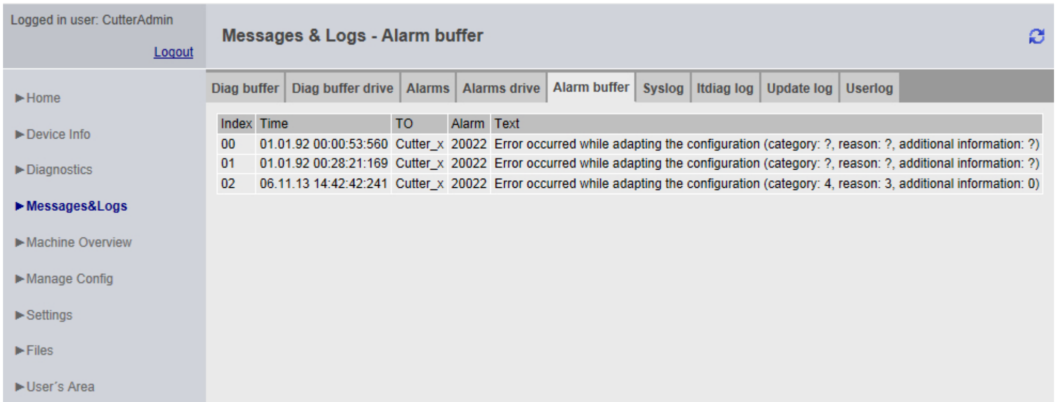
4.3.4.5 Alarm buffer

Contents of the alarm buffer

On the **Alarm buffer** page, you can view the following information:

Index	Numbering of entry
Time	Time of the alarm
TO	Instance of the technology object

Alarm	Alarm number
Text	



Index	Time	TO	Alarm	Text
00	01.01.92 00:00:53:560	Cutter_x	20022	Error occurred while adapting the configuration (category: ?, reason: ?, additional information: ?)
01	01.01.92 00:28:21:169	Cutter_x	20022	Error occurred while adapting the configuration (category: ?, reason: ?, additional information: ?)
02	06.11.13 14:42:42:241	Cutter_x	20022	Error occurred while adapting the configuration (category: 4, reason: 3, additional information: 0)

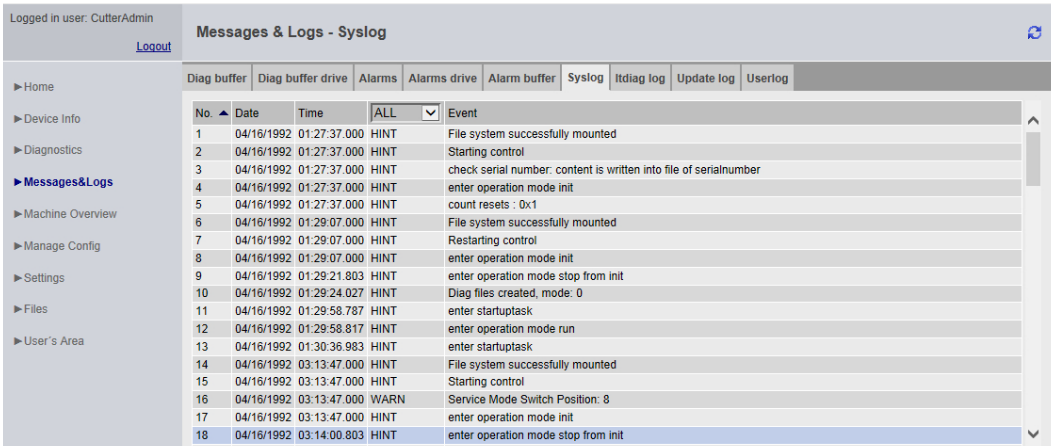
Figure 4-35 Display of the alarm buffer

In contrast to the **Alarms** page, which shows the alarms that are currently pending, the **Alarm buffer** page shows a history of all the alarms.

4.3.4.6 Syslog

Syslog

The **Syslog** page displays the syslog file for the relevant device.



No. ▲	Date	Time	ALL	Event
1	04/16/1992	01:27:37.000	HINT	File system successfully mounted
2	04/16/1992	01:27:37.000	HINT	Starting control
3	04/16/1992	01:27:37.000	HINT	check serial number: content is written into file of serialnumber
4	04/16/1992	01:27:37.000	HINT	enter operation mode init
5	04/16/1992	01:27:37.000	HINT	count resets : 0x1
6	04/16/1992	01:29:07.000	HINT	File system successfully mounted
7	04/16/1992	01:29:07.000	HINT	Restarting control
8	04/16/1992	01:29:07.000	HINT	enter operation mode init
9	04/16/1992	01:29:21.803	HINT	enter operation mode stop from init
10	04/16/1992	01:29:24.027	HINT	Diag files created, mode: 0
11	04/16/1992	01:29:58.787	HINT	enter startuptask
12	04/16/1992	01:29:58.817	HINT	enter operation mode run
13	04/16/1992	01:30:36.983	HINT	enter startuptask
14	04/16/1992	03:13:47.000	HINT	File system successfully mounted
15	04/16/1992	03:13:47.000	HINT	Starting control
16	04/16/1992	03:13:47.000	WARN	Service Mode Switch Position: 8
17	04/16/1992	03:13:47.000	HINT	enter operation mode init
18	04/16/1992	03:14:00.803	HINT	enter operation mode stop from init

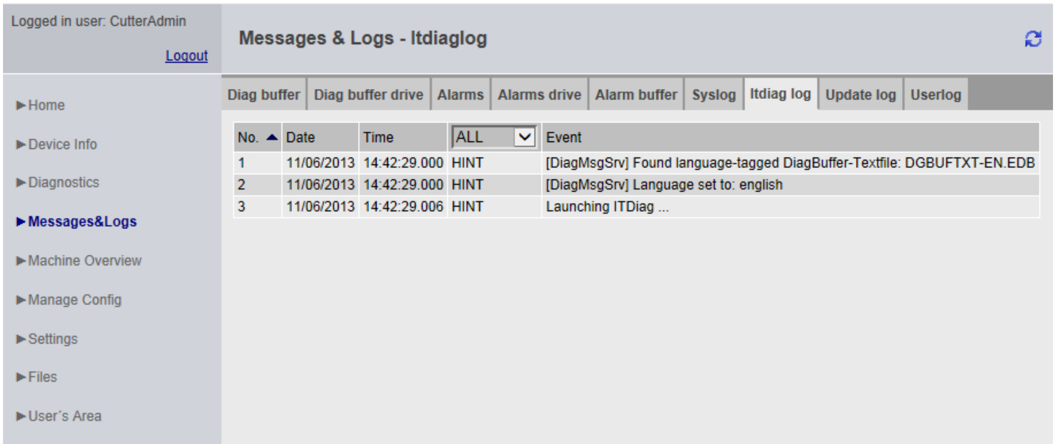
Figure 4-36 Syslog

This file is maintained by the system. Events that are important for diagnostic purposes are documented, such as RAM2ROM. When you start the page, all events are displayed. On the title page of the table, you can limit the display by deselecting **ALL**.

4.3.4.7 Itdiag log

Itdiag log

The messages from SIMOTION IT are output on the **Itdiag log** page.



No. ▲	Date	Time	ALL	Event
1	11/06/2013	14:42:29.000	HINT	[DiagMsgSrv] Found language-tagged DiagBuffer-Textfile: DGBUFTXT-EN.EDB
2	11/06/2013	14:42:29.000	HINT	[DiagMsgSrv] Language set to: english
3	11/06/2013	14:42:29.006	HINT	Launching ITDiag ...

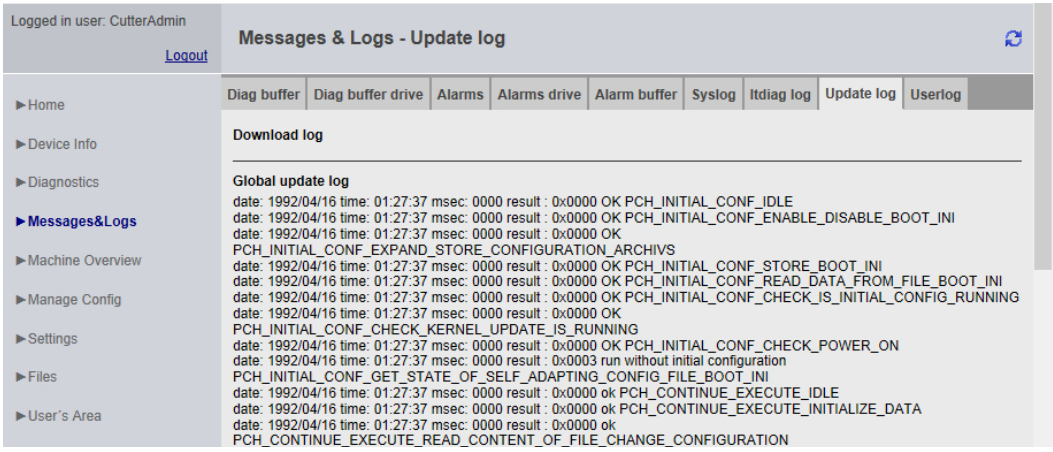
Figure 4-37 Itdiag log

SIMOTION IT-specific log outputs are displayed on this page.

4.3.4.8 Update log

Update log

The download and upload messages are displayed on the **Update log** page.



Download log

Global update log

```
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 OK PCH_INITIAL_CONF_IDLE
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 OK PCH_INITIAL_CONF_ENABLE_DISABLE_BOOT_INI
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 OK
PCH_INITIAL_CONF_EXPAND_STORE_CONFIGURATION_ARCHIVS
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 OK PCH_INITIAL_CONF_STORE_BOOT_INI
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 OK PCH_INITIAL_CONF_READ_DATA_FROM_FILE_BOOT_INI
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 OK PCH_INITIAL_CONF_CHECK_IS_INITIAL_CONFIG_RUNNING
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 OK
PCH_INITIAL_CONF_CHECK_KERNEL_UPDATE_IS_RUNNING
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 OK PCH_INITIAL_CONF_CHECK_POWER_ON
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0003 run without initial configuration
PCH_INITIAL_CONF_GET_STATE_OF_SELF_ADAPTING_CONFIG_FILE_BOOT_INI
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 ok PCH_CONTINUE_EXECUTE_IDLE
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 ok PCH_CONTINUE_EXECUTE_INITIALIZE_DATA
date: 1992/04/16 time: 01:27:37 msec: 0000 result : 0x0000 ok
PCH_CONTINUE_EXECUTE_READ_CONTENT_OF_FILE_CHANGE_CONFIGURATION
```

Figure 4-38 Update log

Messages that are generated during the project update are displayed on the Update log page.

4.3.4.9 Userlog

Userlog

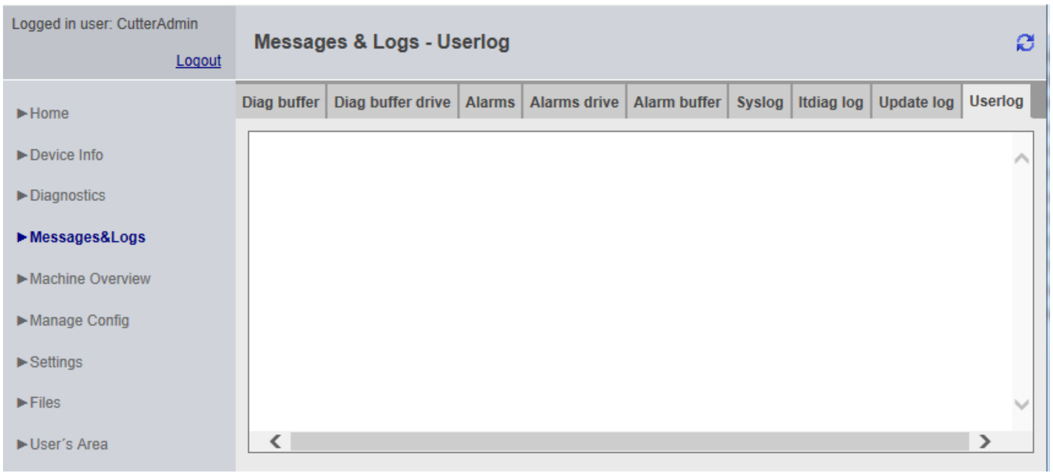


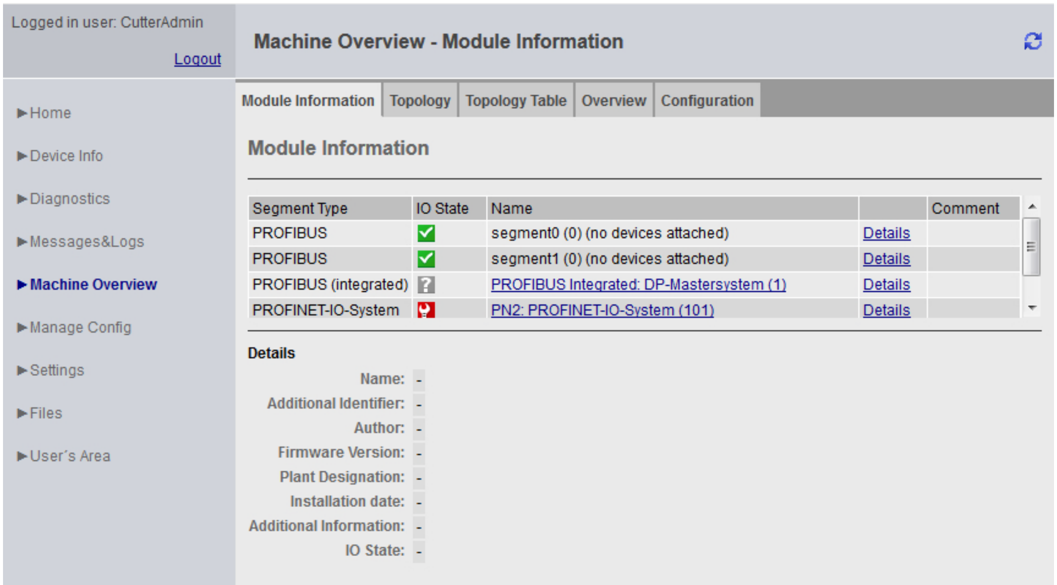
Figure 4-39 Userlog

The Userlog shows free texts entered by users in SIMOTION SCOUT (**Device Diagnostics** > **Userlog**). The texts are saved in a file on the memory medium of the control and displayed on the web page (in read-only format).

4.3.5 Machine Overview

4.3.5.1 Module information

Overview of configured modules



Machine Overview - Module Information

Module Information

Segment Type	IO State	Name		Comment
PROFIBUS	✓	segment0 (0) (no devices attached)	Details	
PROFIBUS	✓	segment1 (0) (no devices attached)	Details	
PROFIBUS (integrated)	?	PROFIBUS Integrated: DP-Mastersystem (1)	Details	
PROFINET-IO-System	🔧	PN2: PROFINET-IO-System (101)	Details	

Details

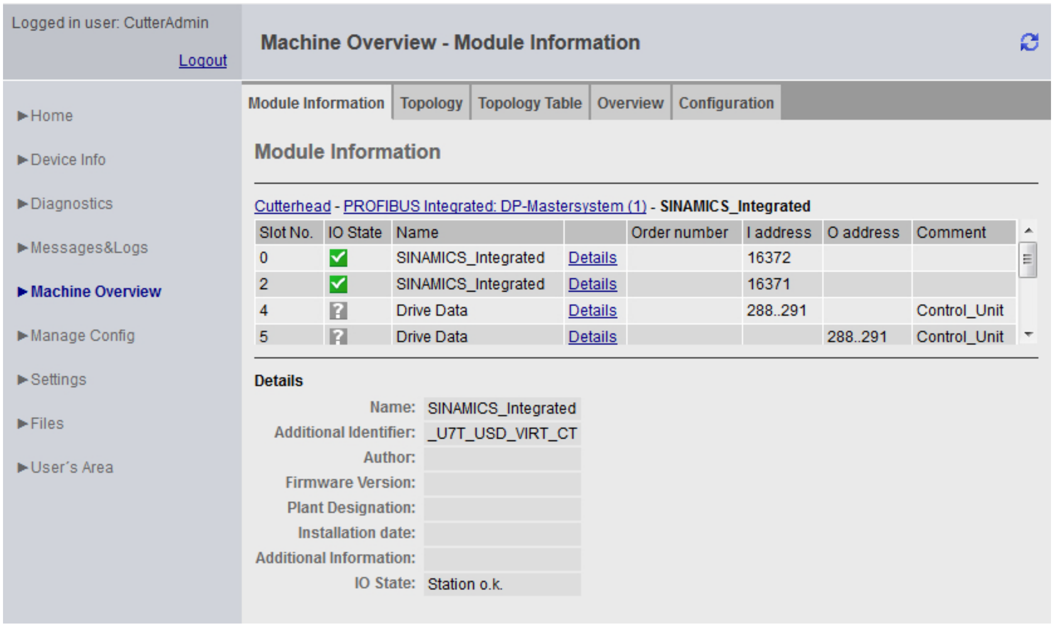
Name: -
Additional Identifier: -
Author: -
Firmware Version: -
Plant Designation: -
Installation date: -
Additional Information: -
IO State: -

Figure 4-40 Module information

Overview of all modules configured on the machinery. Starting from the segment, you can navigate hierarchically to the element and call up information about it.

Note

For a correct representation of the information contained in the pages of the **Machine Overview**, it is necessary to load an HW Config in SIMOTION IT. The loaded HW Config must match the loaded SCOUT project, otherwise incorrect information is displayed.
See Configuration (Page 74)



Module Information

Cutterhead - PROFIBUS Integrated: DP-Mastersystem (1) - SINAMICS_Integrated

Slot No.	IO State	Name		Order number	I address	O address	Comment
0	✓	SINAMICS_Integrated	Details		16372		
2	✓	SINAMICS_Integrated	Details		16371		
4	?	Drive Data	Details		288..291		Control_Unit
5	?	Drive Data	Details			288..291	Control_Unit

Details

Name:	SINAMICS_Integrated
Additional Identifier:	_U7T_USD_VIRT_CT
Author:	
Firmware Version:	
Plant Designation:	
Installation date:	
Additional Information:	
IO State:	Station o.k.

Figure 4-41 Module information - detail information

The hierarchy is always as follows: Segment > Device > Slot > Subslot (if present). Elements without subelements are not clickable.

Clicking on the segment displays all of the devices in the segment (PROFIBUS Integrated: DP-Mastersystem (1)).

Clicking on **Details** displays further information at the bottom (SINAMICS_Integrated).

Links allow you to jump back to the previously selected elements (breadcrumbs).

4.3.5.2 Topology

Overview of the configured topology

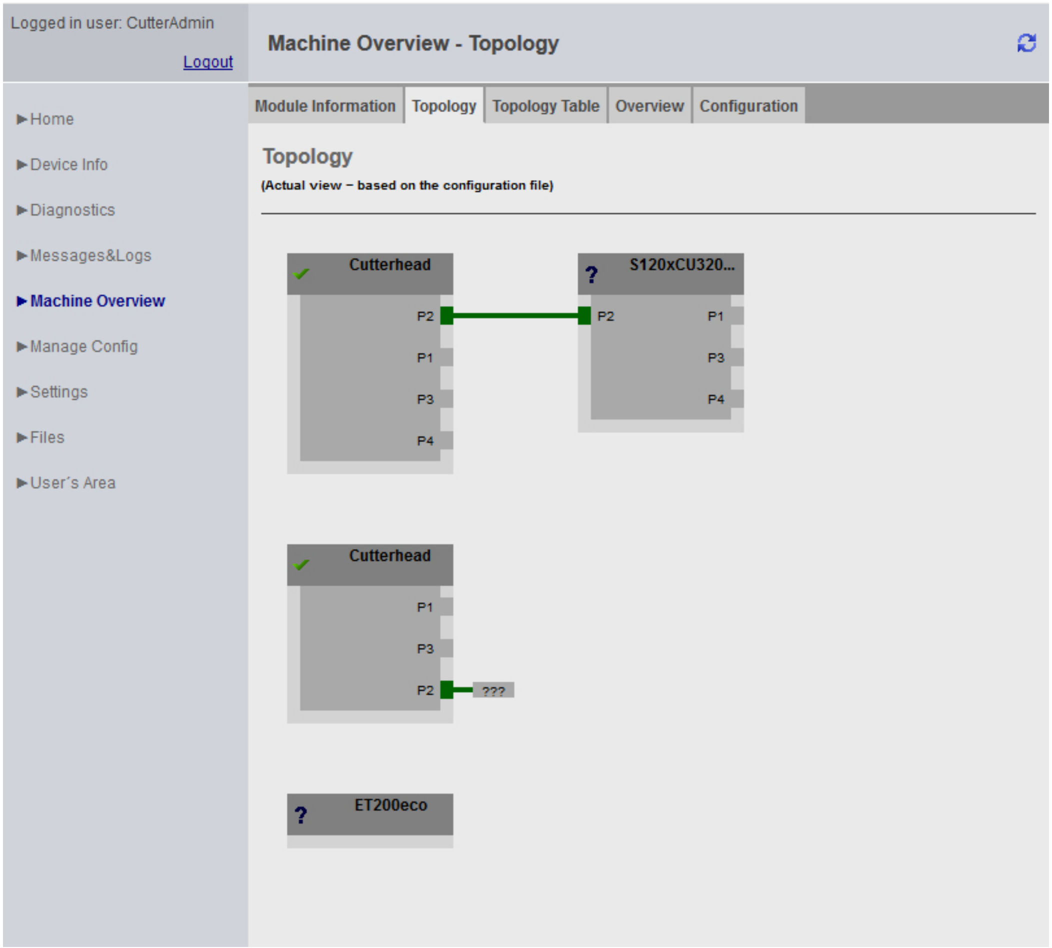


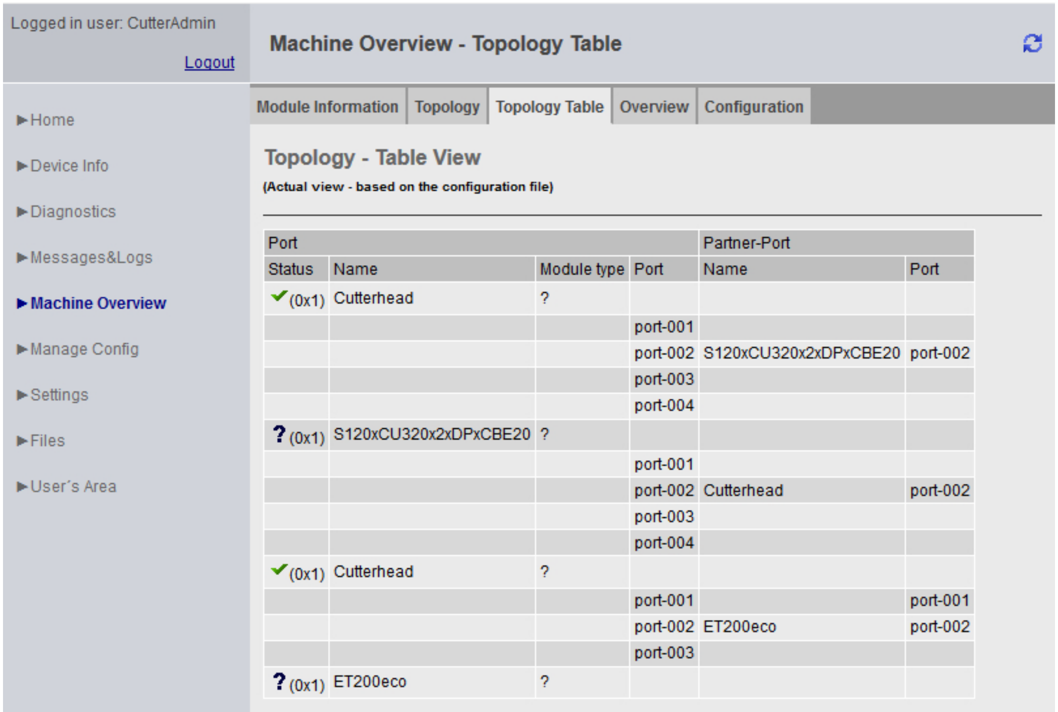
Figure 4-42 Topology of the device

The configured topology of a device is depicted on this page. Inaccessible nodes are highlighted in red.

The topology display shows how the nodes must be wired.

4.3.5.3 Topology table

Tabular overview of the configured topology



Machine Overview - Topology Table

Topology - Table View

(Actual view - based on the configuration file)

Port				Partner-Port	
Status	Name	Module type	Port	Name	Port
✓(0x1)	Cutterhead	?			
			port-001		
			port-002	S120xCU320x2xDPxCBE20	port-002
			port-003		
			port-004		
? (0x1)	S120xCU320x2xDPxCBE20	?			
			port-001		
			port-002	Cutterhead	port-002
			port-003		
			port-004		
✓(0x1)	Cutterhead	?			
			port-001		port-001
			port-002	ET200eco	port-002
			port-003		
? (0x1)	ET200eco	?			

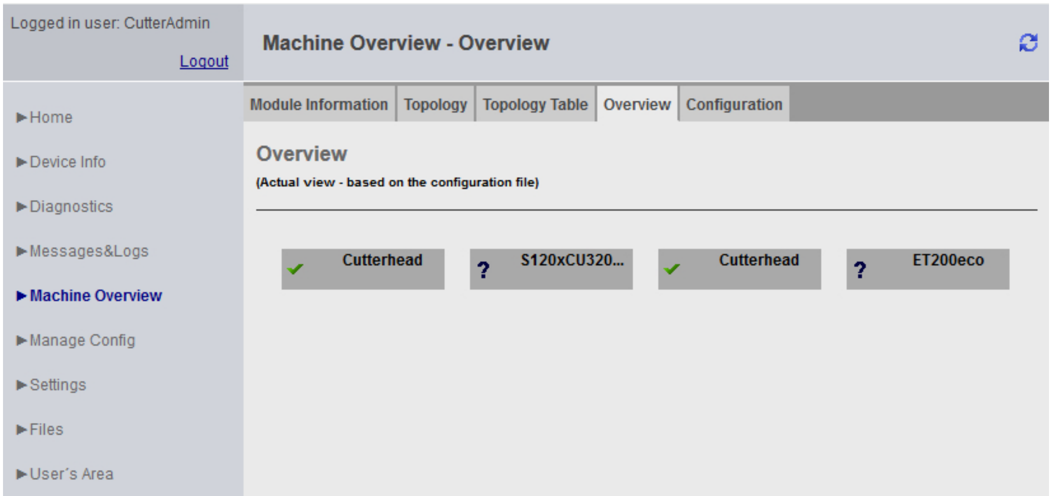
Figure 4-43 Tabular topology table

This page offers a quick overview of the wiring in text form.

The information displayed corresponds to that of the topology (Page 72) page.

4.3.5.4 Overview

Overview of all modules configured on the network



Logged in user: CutterAdmin

Machine Overview - Overview

Overview

(Actual view - based on the configuration file)

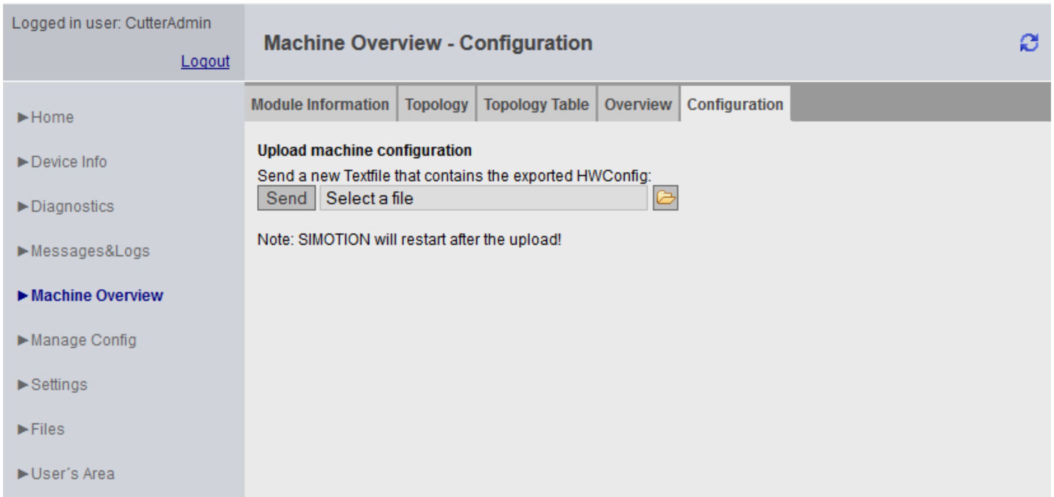
Figure 4-44 Overview

This overview displays all modules configured on the network without topology information. This overview is primarily intended for very large projects.

Inaccessible or failed nodes are shown in red.

4.3.5.5 Configuration

Downloading a configuration



Logged in user: CutterAdmin

Machine Overview - Configuration

Upload machine configuration

Send a new Textfile that contains the exported HWConfig:

Note: SIMOTION will restart after the upload!

Figure 4-45 Configuration

Downloading HW Config information into SIMOTION IT

An HW Config export file must be loaded in SIMOTION IT. The texts and designations of the installed modules are only present once this has been done. The control must be in STOP mode for this purpose.

The HW Config export file and the loaded SCOUT project must match, otherwise incorrect information is displayed.

Exporting in HW Config

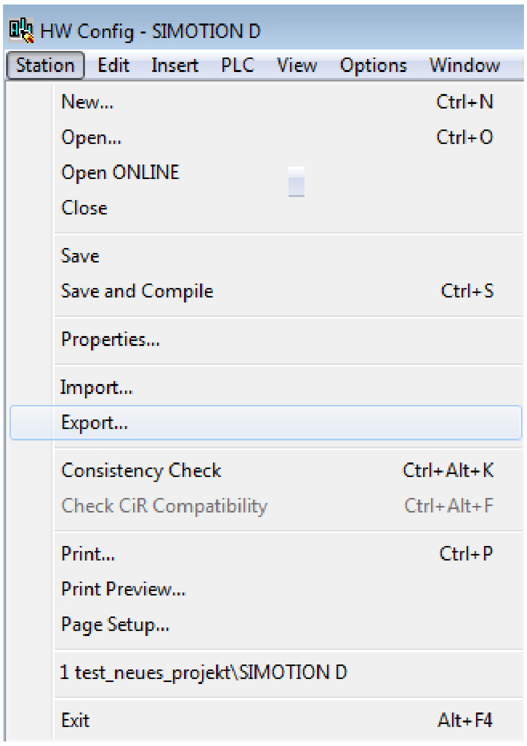


Figure 4-46 HW Config export

- Open HW Config
- Menu **Station Export**
- Save the file.
- The control must be in STOP mode.
- Load the resulting file using the form on the SIMOTION IT page.
- The SIMOTION control subsequently performs a restart.

The file can then be found on the card in the directory /USER/SIMOTION/HMICFG/ HWCONFIG.CFG.

Alternatively, you can also directly copy the file to the card using a card reader.

⚠ WARNING

HW Config export file and SCOUT project

The HW Config export file and the loaded SCOUT project must match, otherwise incorrect information is displayed.

- If the HW Config is changed, the file must be reloaded.

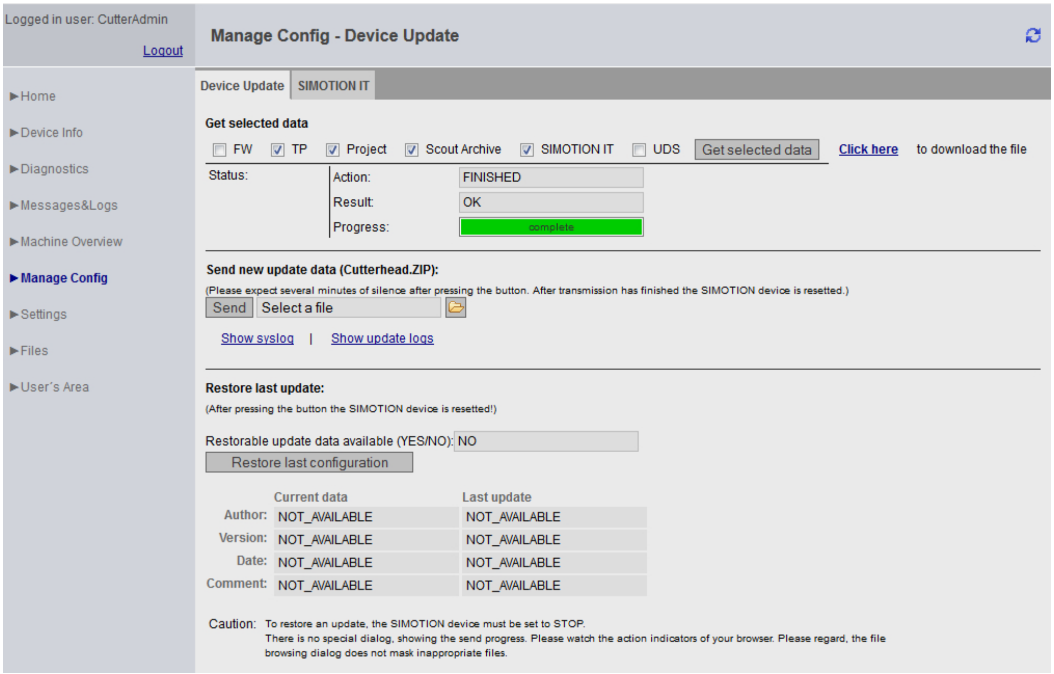
4.3.6 Manage Config

4.3.6.1 Device update

Device update of the device

This page enables a device update to be loaded, and selected data to be saved to the PC from the device.

If several update archives have been written to the control one after the other, you have the option of restoring a previous configuration.



Logged in user: CutterAdmin

Manage Config - Device Update

Get selected data

☐ FW ☑ TP ☑ Project ☑ Scout Archive ☑ SIMOTION IT ☐ UDS Get selected data Click here to download the file

Status:

Action:	FINISHED
Result:	OK
Progress:	complete

Send new update data (Cutterhead.ZIP):

(Please expect several minutes of silence after pressing the button. After transmission has finished the SIMOTION device is resetted.)

Send Select a file

Restore last update:

(After pressing the button the SIMOTION device is resetted!)

Restorable update data available (YES/NO): NO

	Current data	Last update
Author:	NOT_AVAILABLE	NOT_AVAILABLE
Version:	NOT_AVAILABLE	NOT_AVAILABLE
Date:	NOT_AVAILABLE	NOT_AVAILABLE
Comment:	NOT_AVAILABLE	NOT_AVAILABLE

Caution: To restore an update, the SIMOTION device must be set to STOP.
There is no special dialog, showing the send progress. Please watch the action indicators of your browser. Please regard, the file browsing dialog does not mask inappropriate files.

Figure 4-47 Manage Config

- **Get selected data** transfers the currently active device data to the PC. The backed-up data is in a form that allows it to be reimported to the device.
  - **FW** (firmware)
  - **TP** (technology packages)
  - **Project** (current project)
  - **Scout Archive** (including Scout backup)
  - **SIMOTION IT** (SIMOTION IT configuration)
  - **UDS** (including the **Unit Data Sets**)

Note

Transmission duration

If the capacity utilization of the control is very high at the cyclic levels, this operation may take some time. In individual cases, transmission times may be longer than 30 minutes.

- **Send new update data** transfers a file generated with the Devices Update Tool to the device. This process can take several minutes and restarts the device.

Note

No other SIMOTION IT pages must be called during the update. A progress bar shows how the update is progressing. Cancellation of the update is logged in syslog.

- **Restore last update** reactivates the last version of the device data of the preceding software update.

You will find more information on this topic in the "Updating SIMOTION Devices" operating instructions.

⚠ DANGER

Control must be put into the STOP state.

To send or download a project or firmware, the control must be switched to STOP mode.

Type and contents of the file are not checked during transmission.

If an invalid configuration is used, the USER directory must be deleted from the memory card.

Note

SIMOTION P

The SIMOTION P control does not support firmware download.

Note

Memory

If low-capacity cards (32 MB/64 MB) are used, problems may be encountered during the update due to insufficient memory space.

The amount of memory space required is determined by the size of the existing configuration plus that of the update.

Depending on the file involved, the SIMOTION control automatically executes the following actions when the "Send update data" button is clicked:

- WebCfg.xml
  Restart of the web server.
  Note: All OPC XML DA subscriptions are lost.
- MyProject.ZIP
  Saving of the new project together with the Ethernet configuration on the (virtual) memory card and activation of the new project with a SIMOTION control restart.
- XXXXXXFW.ZIP
  Saving of the firmware on the memory card and activation of the new firmware with a SIMOTION control restart.

Only users who have logged on can access this page. See Log-in administration (Page 110)

Use of older configuration data

Older configuration data that was created with the SIMOTION SCOUT function **Load to File System** can continue to be imported using SIMOTION IT.

The ZIP file generated by SCOUT as part of this process can be transferred to the device using **Send update data**.

4.3.6.2 Updating the firmware to V4.4

When updating the firmware to Version 4.4, an attempt is made to convert the configuration file WebCfg.xml to the new format. A UserDataBase.xml is created and filled with the old WebCfg.xml.

The original file is renamed to WebCfg.xml.deprecated.

This conversion might fail for the following reasons:

1. The version of the WebCfg.xml is for firmware before V4.2, which cannot be updated.
2. An error occurred during an attempt to apply individual user settings.
3. The user administration UserDataBase.xml contains an invalid entry. If the user 'simotion' and the password 'simotion' are found, conversion will be canceled. An error message indicating this will then be placed in the diagnostic buffer.

If this error occurs, the configuration files have to be corrected manually.

4.3.6.3 Converting firmware from V4.4 to V4.3

When converting a module of SIMOTION V4.4 back down to firmware V4.3, the configuration file WebCfg.xml has to be converted because the formats are incompatible.

Control behavior

If the conversion archive does not contain WebCfg.xml, a check is made to see whether directory USER/SIMOTION/HMICFG contains a file WebCfg.xml.deprecated. The file is then restored.

If the file WebCfg.xml.deprecated does not exist, the WebCfg.xml file for SIMOTION V4.4 is deleted. The first time the module starts up with firmware SIMOTION V4.3, the associated Default WebCfg.xml is created.

4.3.6.4 Upgrading firmware prior to V4.2

A firmware update involving versions lower than Version 4.2 can result in the following: An old WebCfg.xml is retained on the device and and causes empty diagnostic pages to be displayed.

Option for avoiding this problem:

- Explicit deleting of WebCfg.xml in the /USER/SIMOTION/HMICFG directory.

After the next reset, a new WebCfg.xml is generated by the device. The old WebCfg.xml should be backed up first so that settings can be transferred from the old configuration to the new WebCfg.xml .

See also

Device update (Page 76)

4.3.6.5 Upgrading firmware from V4.1 to V4.2

When upgrading the firmware from Version 4.1 to Version 4.2 or higher, WebCfg.xml must always be deleted. If WebCfg.xml is not deleted, the web pages will be incorrectly displayed.

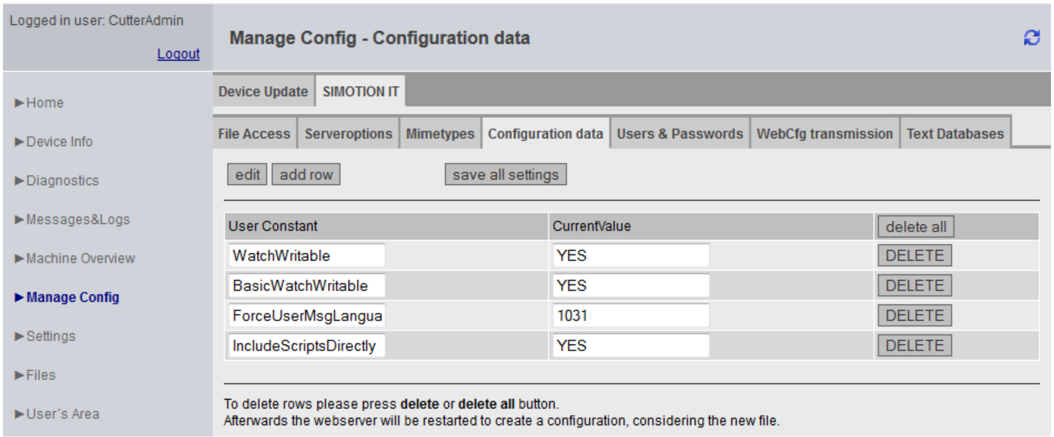
Note

When upgrading from V4.2 to V4.3 or higher, this restriction is no longer valid. WebCfg.xml then no longer has to be deleted.

4.3.6.6 Editing function

Editing functions of the SIMOTION IT Standard pages

The WebCfg.xml and UserDataBase.xml configuration files can be edited on some standard pages via the browser. The editing functions are always structured in the same way and are explained in this section.



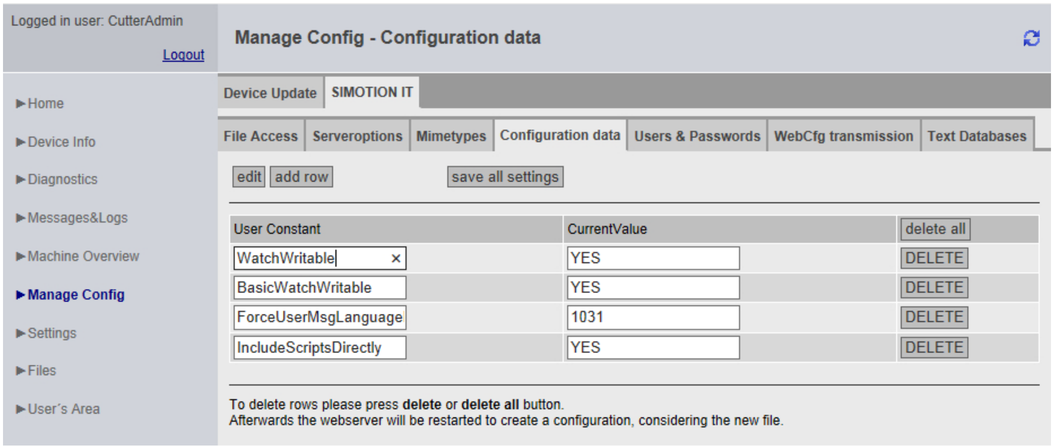
User Constant	CurrentValue	delete all
WatchWritable	YES	DELETE
BasicWatchWritable	YES	DELETE
ForceUserMsgLangua	1031	DELETE
IncludeScriptsDirectly	YES	DELETE

To delete rows please press **delete** or **delete all** button.
Afterwards the webserver will be restarted to create a configuration, considering the new file.

Figure 4-48 Editing functions

The **add row** button inserts one line.

To edit the line, you first need to click the **EDIT button** in the line. the input fields can then be completed.



User Constant	CurrentValue	delete all
WatchWritable	YES	DELETE
BasicWatchWritable	YES	DELETE
ForceUserMsgLanguage	1031	DELETE
IncludeScriptsDirectly	YES	DELETE

To delete rows please press **delete** or **delete all** button.
Afterwards the webserver will be restarted to create a configuration, considering the new file.

Figure 4-49 Editing functions input field active

The **DELETE button** deletes the inputs in the relevant line but not on the device.

All rows can be deleted with **delete all**.

The **save all settings button** stores all changes made on the controller.

4.3.6.7 SIMOTION IT tab

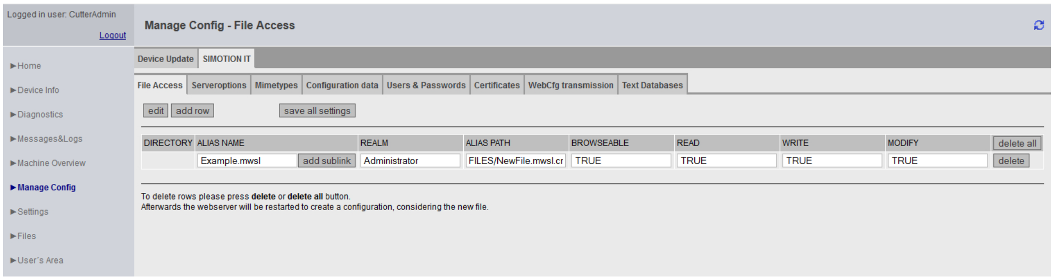
Web pages for making changes to the configuration

The SIMOTION IT tab summarizes the web pages that are used for configuring SIMOTION IT pages.

All changes under**Users & Passwords** are written to file UserDataBase.xml. All other tabs cause changes to the WebCfg.xml. As an alternative to editing using the web pages, changes can be made directly in these XML files.

4.3.6.8 SIMOTION IT File Access

Editing file and directory accesses



DIRECTORY	ALIAS NAME	REALM	ALIAS PATH	BROWSEABLE	READ	WRITE	MODIFY
	Example.mwsl	Administrator	FILES/NewFile.mwsl.cr	TRUE	TRUE	TRUE	TRUE

To delete rows please press **delete** or **delete all** button.
Afterwards the webserver will be restarted to create a configuration, considering the new file.

Figure 4-50 SIMOTION IT File Access

The tab File Access allows editing of file and directory accesses.

Attributes	Type	Example
ALIAS NAME	String	Example.mwsl
REALM	String	A group name: Administrator
ALIAS PATH	String	ALIAS="FILES/NewFile.mwsl.cms"
BROWSEABLE	true/false	
READ	String	One or more group names: Administrator,Servicegroup
WRITE	String	One or more group names: Administrator,Servicegroup
MODIFY	String	One or more group names: Anyone

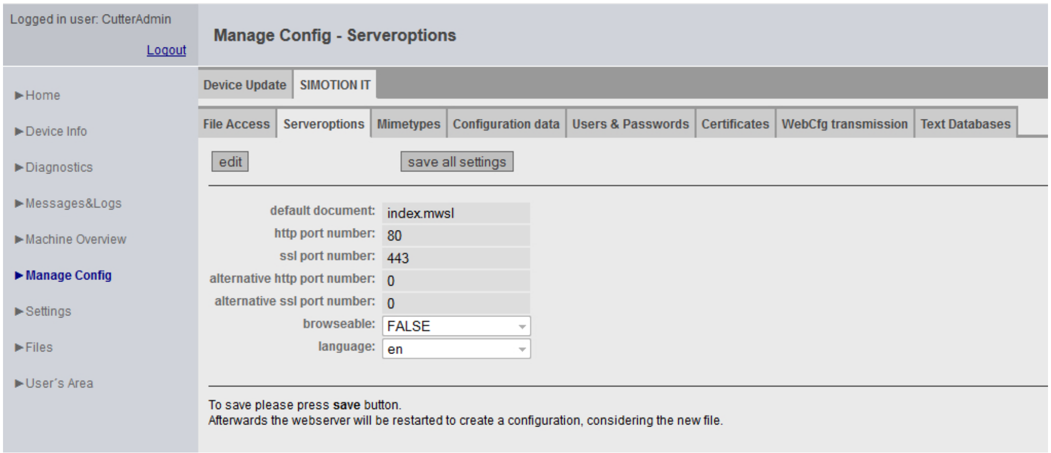
Attribute overview tab File Access

See also

Links to the physical file system (ALIAS) (Page 117)

4.3.6.9 SIMOTION IT Serveroptions

Basic settings



default document: index.mwsl
http port number: 80
ssl port number: 443
alternative http port number: 0
alternative ssl port number: 0
browseable: FALSE
language: en

To save please press **save** button.
Afterwards the webserver will be restarted to create a configuration, considering the new file.

Figure 4-51 SIMOTION IT server options

This tab enables you to set basic parameters for the web server.

This page is used to make various settings for the `<SERVEROPTIONS>`– tag in WebCfg.xml

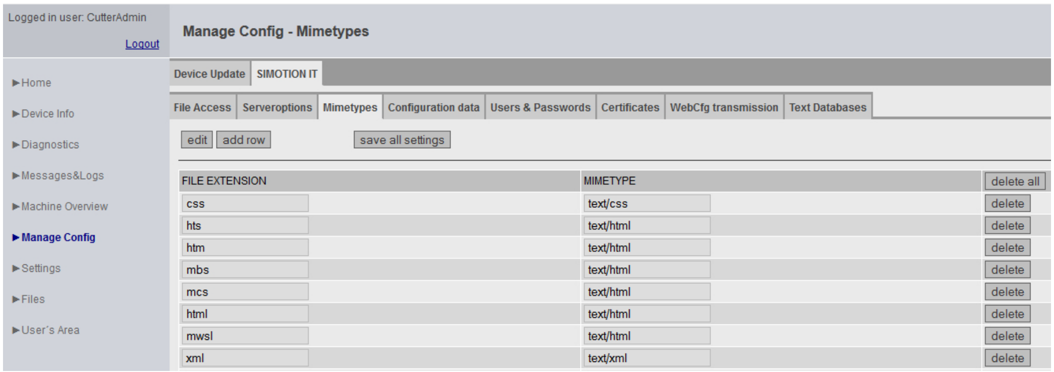
- DEFAULTDOCUMENT (Page 173) enables you to change the home page. The default setting is INDEX.MWSL
- PORTNUMBER (Page 175) defines the TCP/IP port for outputting the web server pages. The default setting is port 80 (http).
- SSLPORTNUMBER (Page 176) defines the TCP/IP port for outputting the web server pages in encrypted format. The default setting is port 443 (https).

Non-changeable information

- BROWSEABLE (Page 171) shows the directory display setting.
- LANGUAGE shows the language setting.

4.3.6.10 SIMOTION IT Mimetypes

MIME types



FILE EXTENSION	MIMETYPE	delete all
css	text/css	delete
hts	text/html	delete
htm	text/html	delete
mbs	text/html	delete
mcs	text/html	delete
html	text/html	delete
mwsl	text/html	delete
xml	text/xml	delete

Figure 4-52 SIMOTION IT Mimetypes

A MIME type can be linked to a file extension on this tab.

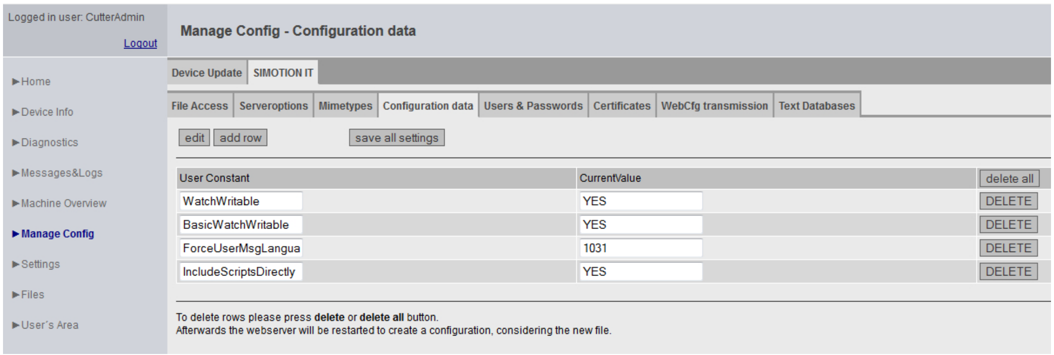
The MIME type is used to signal to the browser, by means of the HTTP header, what type of data is being transmitted.

See also

<MIME_TYPES> (Page 173)

4.3.6.11 SIMOTION IT Configuration data

Configuration of user-defined constants



User Constant	CurrentValue	delete all
WatchWritable	YES	DELETE
BasicWatchWritable	YES	DELETE
ForceUserMsgLangua	1031	DELETE
IncludeScriptsDirectly	YES	DELETE

To delete rows please press **delete** or **delete all** button.
Afterwards the webserver will be restarted to create a configuration, considering the new file.

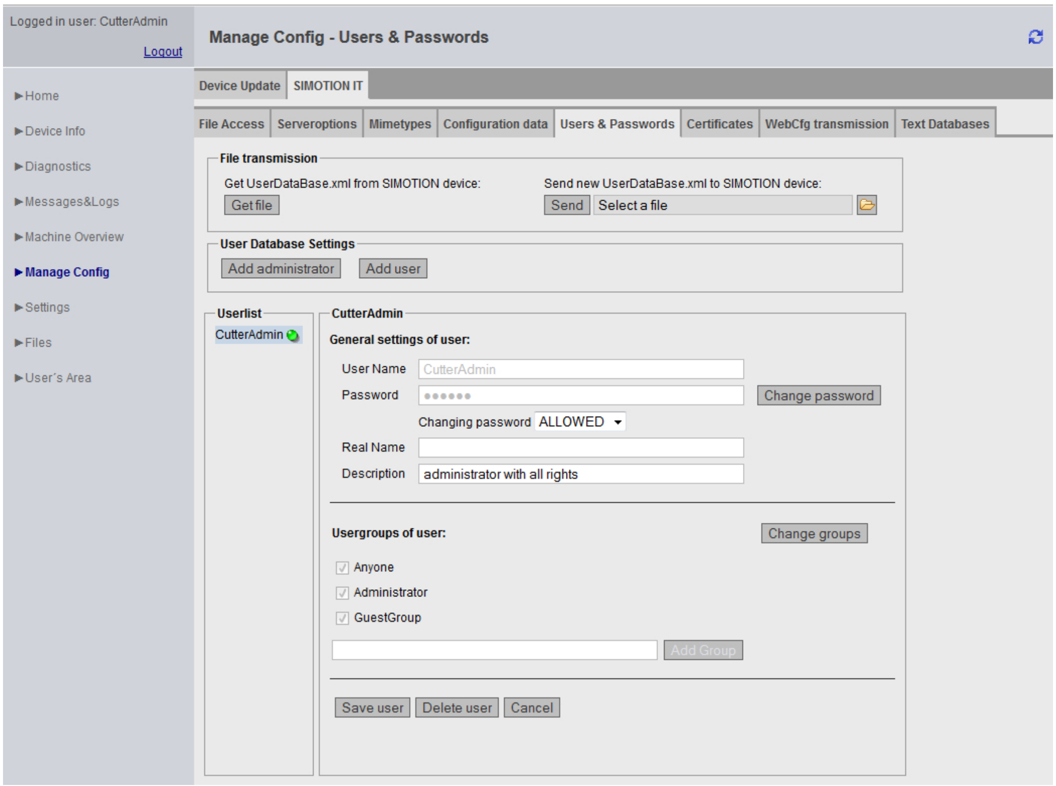
Figure 4-53 SIMOTION IT Configuration data

This page enables you to create and edit configuration constants.

4.3.6.12 SIMOTION IT Users & Passwords

User database

The Users & Passwords page enables you to manage users. Passwords, group rights, and access rights can be assigned to users here.



Logged in user: CutterAdmin

Manage Config - Users & Passwords

Get UserDataBase.xml from SIMOTION device:

Send new UserDataBase.xml to SIMOTION device:

General settings of user:

User Name: CutterAdmin

Password: ●●●●●●

Changing password: ALLOWED

Real Name:

Description: administrator with all rights

Usergroups of user:

☑ Anyone
☑ Administrator
☑ GuestGroup

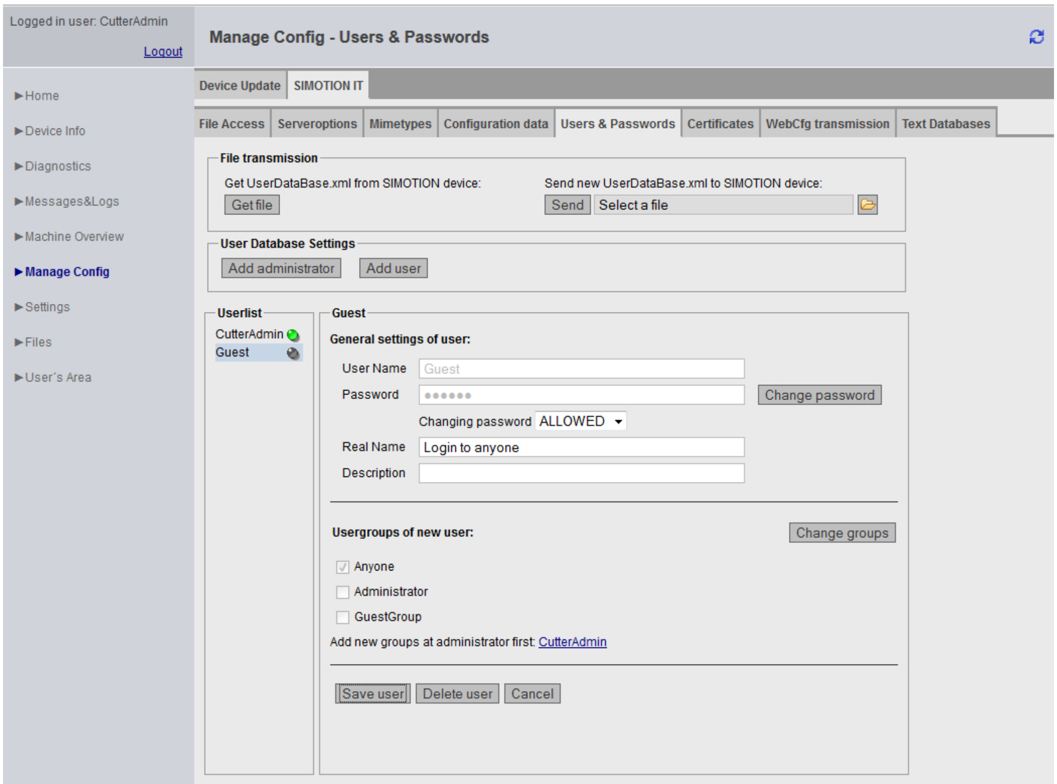
Figure 4-54 User database

File transmission

You can make a local backup of UserDataBase.xml of the control with **Get file**. You can load a UserDataBase.xml onto the control with **Send**.

Adding users

You can create administrators with the **Add administrator** button and users with the **Add user** button.



Logged in user: CutterAdmin

Manage Config - Users & Passwords

File transmission

Get UserDataBase.xml from SIMOTION device:

Send new UserDataBase.xml to SIMOTION device:

User Database Settings

Userlist

CutterAdmin

Guest

Guest

General settings of user:

User Name: Guest

Password: ●●●●●●

Changing password: ALLOWED

Real Name: Login to anyone

Description:

Usergroups of new user:

☑ Anyone

□ Administrator

□ GuestGroup

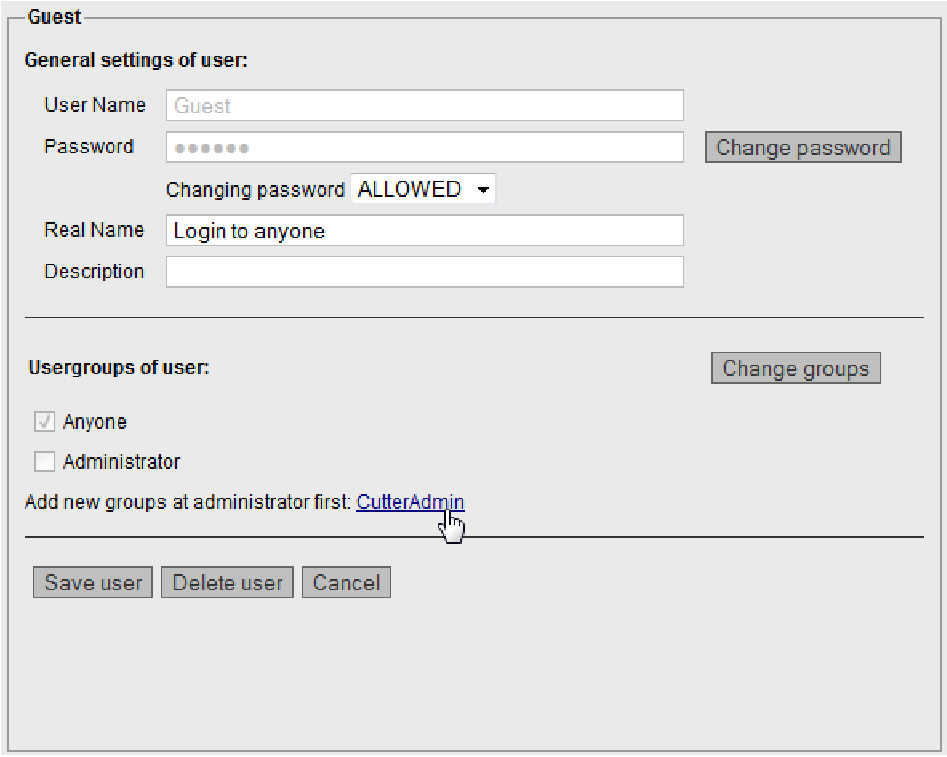
Add new groups at administrator first: CutterAdmin

Figure 4-55   Benutzer Guest

This screenshot shows the situation after adding a user Guest who only belongs to the Anyone group.

Setting up a new group

A new group is only set up once the administrator has been assigned membership of that group. The CutterAdmin link in the above example opens the dialog box with the settings of the administrator CutterAdmin.



Guest

General settings of user:

User Name: Guest

Password: ●●●●●●

Changing password: ALLOWED

Real Name: Login to anyone

Description:

Usergroups of user:

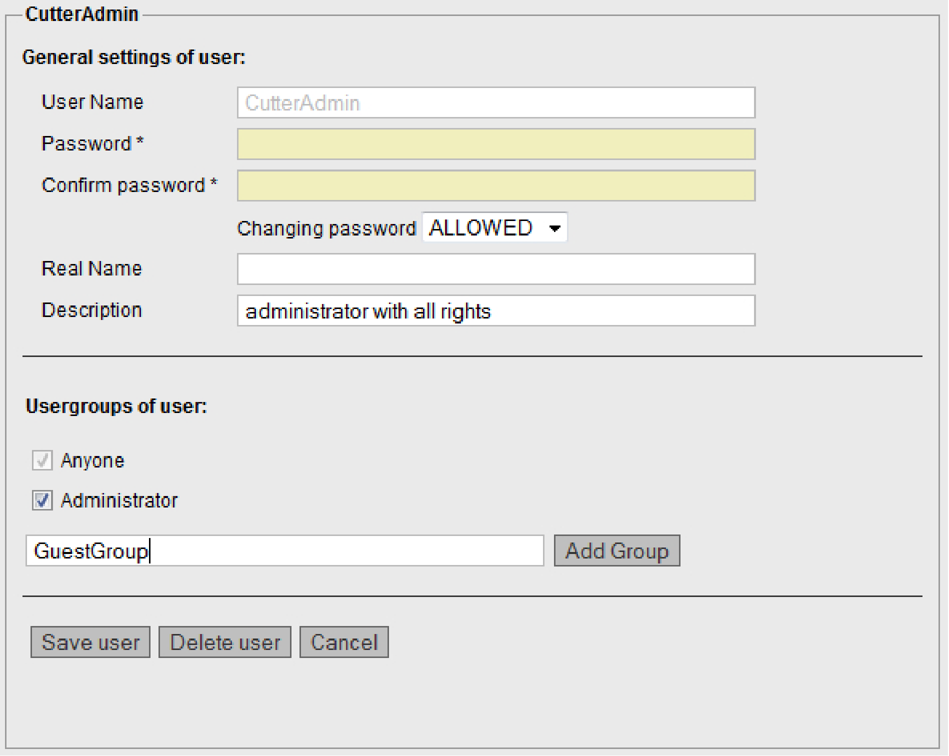
☑ Anyone

☐ Administrator

Add new groups at administrator first: CutterAdmin

Figure 4-56 Creating a new group: Opening the administrator

Now the administrator can set up a new group with the **Add Group** button.



CutterAdmin

General settings of user:

User Name: CutterAdmin

Password *

Confirm password *

Changing password: ALLOWED

Real Name

Description: administrator with all rights

Usergroups of user:

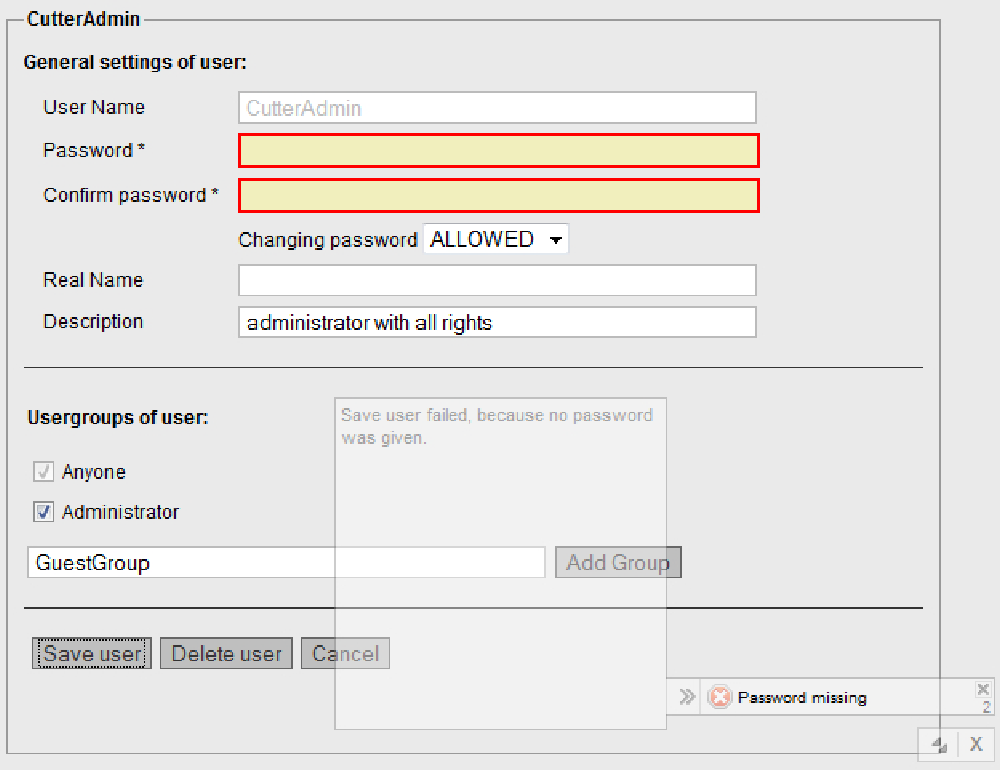
☑ Anyone

☑ Administrator

GuestGroup

Figure 4-57 Creating a new group: Administrator creates the group

The new group GuestGroup can now be entered.



CutterAdmin

General settings of user:

User Name	CutterAdmin
Password *	
Confirm password *	
	Changing password ALLOWED
Real Name	
Description	administrator with all rights

Usergroups of user:

☑ Anyone

☑ Administrator

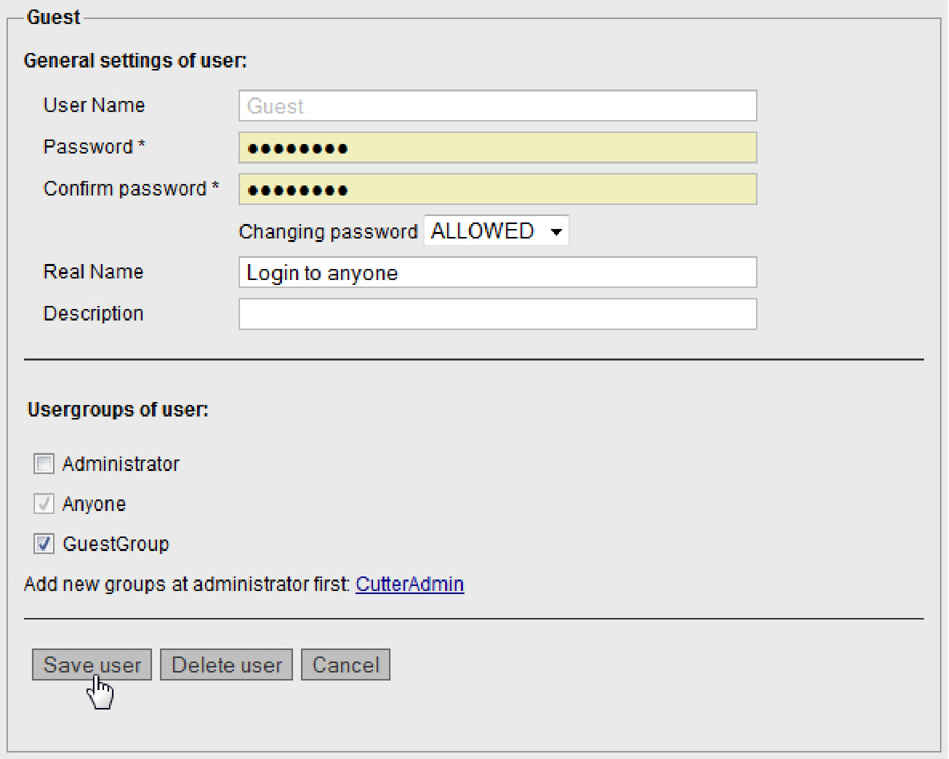
GuestGroup

Save user failed, because no password was given.

Password missing

Figure 4-58 Creating a new group: Administrator password required

A new group can only be saved if the user is logged on as an administrator.



Guest

General settings of user:

User Name: Guest

Password *: ••••••••

Confirm password *: ••••••••

Changing password: ALLOWED

Real Name: Login to anyone

Description:

Usergroups of user:

□ Administrator

☑ Anyone

☑ GuestGroup

Add new groups at administrator first: CutterAdmin

Figure 4-59 Creating a new group: Assigning a new group

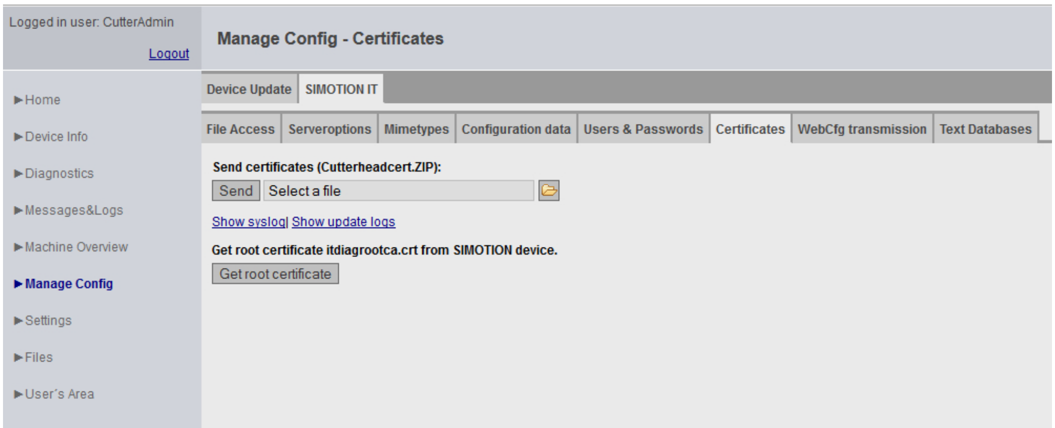
Once the new group has been created, the group GuestGroup can be assigned to the user.

See also

Log-in administration (Page 110)

4.3.6.13 SIMOTION IT Certificates

Uploading and downloading certificates



Logged in user: CutterAdmin

Manage Config - Certificates

Send certificates (Cutterheadcert.ZIP):

Get root certificate itdiagrootca.crt from SIMOTION device.

Figure 4-60 Certificates

The Certificates page enables certificates to be transferred to the controller. The ZIP file must have the same directory structure as is created when generating certificates with OpenSSL.

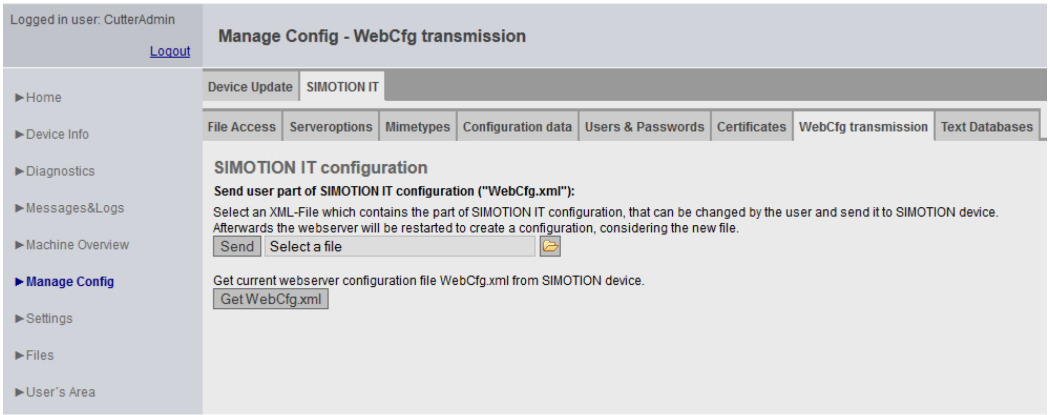
The Get root certificate button fetches the root certificate from the controller.

See also

Encryption methods (Page 155)

4.3.6.14 SIMOTION IT WebCfg Transmission

Transferring configurations to the device



Logged in user: CutterAdmin

Manage Config - WebCfg transmission

SIMOTION IT configuration

Send user part of SIMOTION IT configuration ("WebCfg.xml"):

Select an XML-File which contains the part of SIMOTION IT configuration, that can be changed by the user and send it to SIMOTION device. Afterwards the webserver will be restarted to create a configuration, considering the new file.

Get current webserver configuration file WebCfg.xml from SIMOTION device.

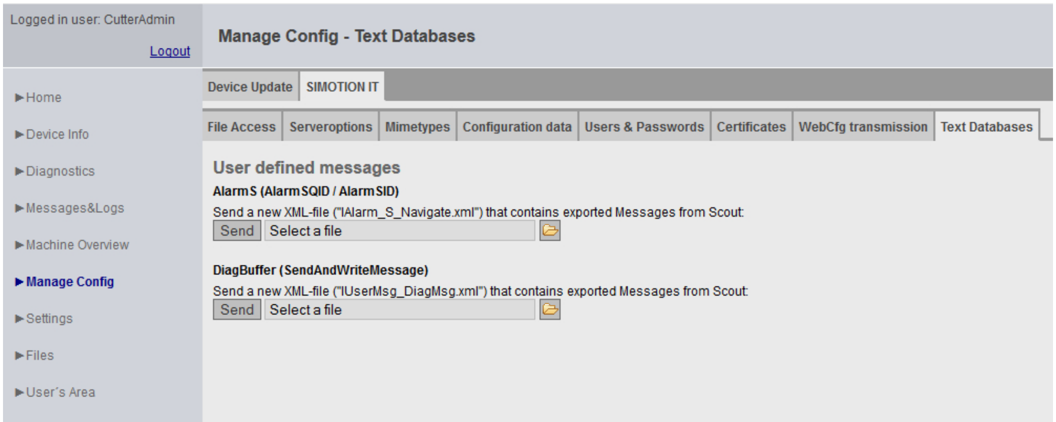
Figure 4-61 WebCfg transmission

The configuration data can be sent to or received by the device via this page.

The **Send** button is used to transfer a locally edited WebCfg.xml to the device. As soon as the new WebCfg.xml has been sent, the web server reboots and takes account of the new file.

4.3.6.15 SIMOTION IT Text Databases

Transmission of user-defined messages from SIMOTION SCOUT to the device



User defined messages

AlarmS (AlarmSQID / AlarmSID)

Send a new XML-file ("IAlarm_S_Navigate.xml") that contains exported Messages from Scout:

DiagBuffer (SendAndWriteMessage)

Send a new XML-file ("IUserMsg_DiagMsg.xml") that contains exported Messages from Scout:

Figure 4-62 Text Databases

On this page, SIMOTION IT provides the option to transfer user-defined AlarmS and DiagBuffer messages, which have previously been exported into SIMOTION SCOUT, to the device.

For AlarmS, select the IAlarm_S_Navigate.xml file, and for DiagBuffer, select the IUserMsg_Navigate.xml file of a SIMOTION SCOUT language export. It is possible to select different languages for AlarmS and DiagBuffer messages.

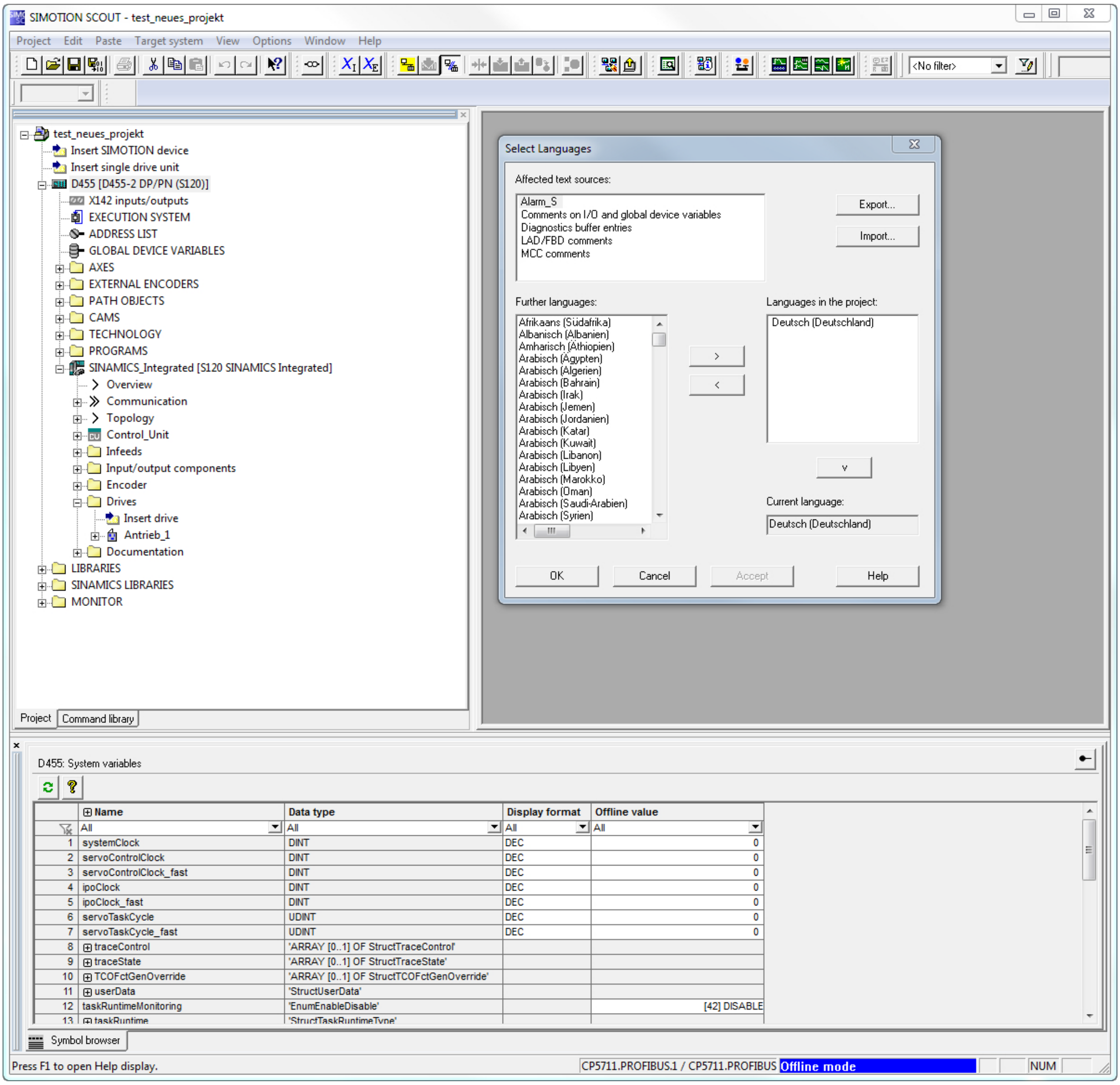
Once the files have been transferred to the device, the messages exist in two files:

- dgusralarm.edb
- dgusrtxt.edb

in the /USER/SIMOTION/HMICFG directory. These files can be transferred to other controllers.

Language export from SIMOTION SCOUT

In SIMOTION SCOUT, menu commands **Project > Language-dependent texts** and **Project > Messages** enable export of user-defined messages.



Select Languages

Affected text sources:

Alarm_S
Comments on I/O and global device variables
Diagnostics buffer entries
LAD/FBD comments
MCC comments

Further languages:

Afrikaans (Südafrika)
Albanisch (Albanien)
Amharisch (Äthiopien)
Arabisch (Ägypten)
Arabisch (Algerien)
Arabisch (Bahrain)
Arabisch (Irak)
Arabisch (Jemen)
Arabisch (Jordanien)
Arabisch (Katar)
Arabisch (Kuwait)
Arabisch (Libanon)
Arabisch (Libyen)
Arabisch (Marokko)
Arabisch (Oman)
Arabisch (Saudi-Arabien)
Arabisch (Syrien)

Languages in the project:

Deutsch (Deutschland)

Current language:

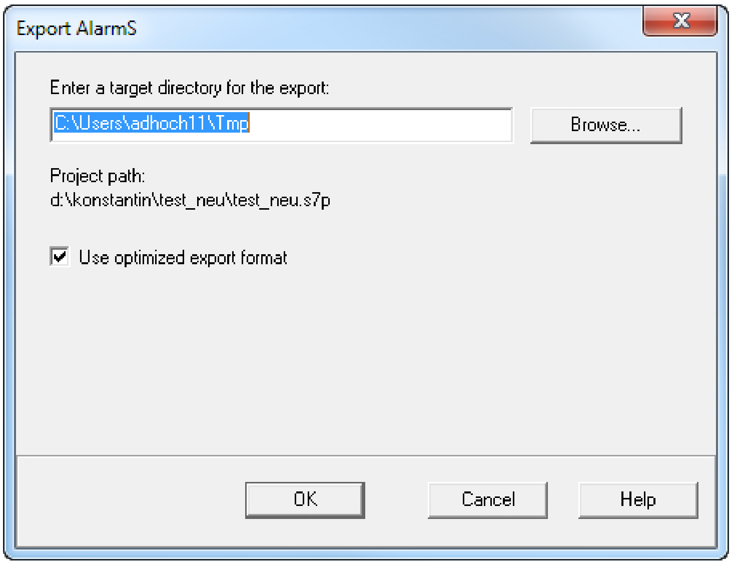
Deutsch (Deutschland)

D455: System variables

	Name	Data type	Display format	Offline value
	All	All	All	All
1	systemClock	DINT	DEC	0
2	servoControlClock	DINT	DEC	0
3	servoControlClock_fast	DINT	DEC	0
4	ipoClock	DINT	DEC	0
5	ipoClock_fast	DINT	DEC	0
6	servoTaskCycle	UDINT	DEC	0
7	servoTaskCycle_fast	UDINT	DEC	0
8	⊞ traceControl	'ARRAY [0..1] OF StructTraceControl'		
9	⊞ traceState	'ARRAY [0..1] OF StructTraceState'		
10	⊞ TCOFctGenOverride	'ARRAY [0..1] OF StructTCOFctGenOverride'		
11	⊞ userData	'StructUserData'		
12	taskRuntimeMonitoring	'EnumEnableDisable'		[42] DISABLE
13	⊞ taskRuntime	'StructTaskRuntimeType'		

Press F1 to open Help display. CP5711.PROFIBUS.1 / CP5711.PROFIBUS Offline mode

Figure 4-63 SIMOTION SCOUT language export language selection



Enter a target directory for the export:
C:\Users\adhoch11\Tmp

Project path:
d:\konstantin\test_neu\test_neu.s7p

☑ Use optimized export format

Figure 4-64 SIMOTION SCOUT language export, specification of the target directory

During the export, all user-defined texts in all available languages are exported in XML files. During the upload to the device, only the language preselected in SIMOTION SCOUT is saved.

Every change made in SIMOTION SCOUT requires the texts to be exported and uploaded again.

4.3.7 Settings

This page allows you to change various settings.

Settings for the SIMOTION device can be changed in the **Operation state** and **Time Settings** areas.

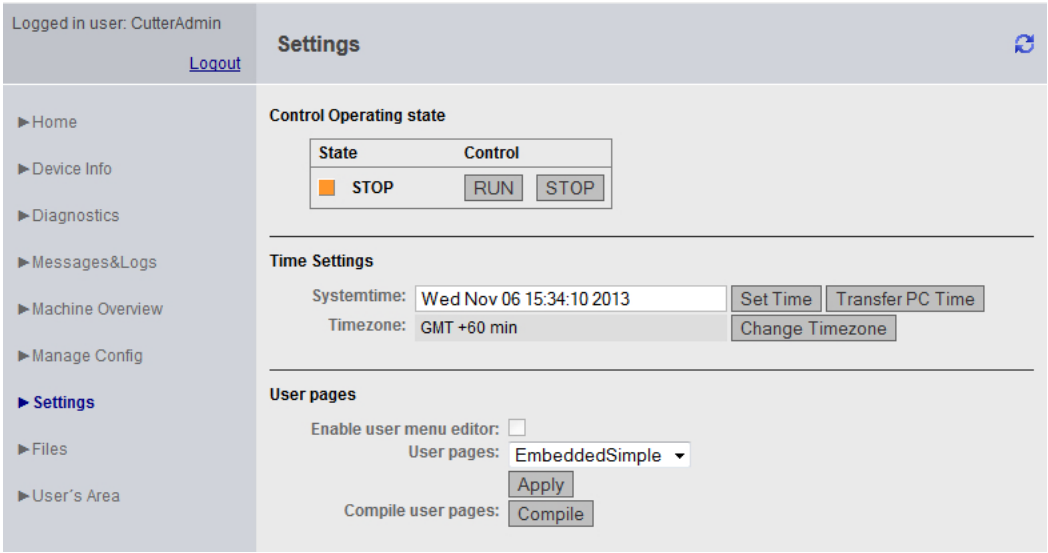
In the **User Pages** area, you can change how user-defined pages and the **SIMOTION IT** menu editor appear.

⚠ WARNING

Danger to life as a result of incorrect or modified parameterization

As a result of incorrect parameterization, machines can malfunction, which in turn can lead to injuries or death.

- Protect the parameterization (parameter assignments) against unauthorized access.
- The Settings page is password-protected. See Login administration (Page 110)



Logged in user: CutterAdmin

Settings

Control Operating state

State	Control
🟧 STOP	RUN STOP

Time Settings

Systemtime: Wed Nov 06 15:34:10 2013

Timezone: GMT +60 min

User pages

Enable user menu editor: □

User pages: EmbeddedSimple

Compile user pages:

Figure 4-65 Settings

Changing the state of the SIMOTION device

Control Operation state

In the field for the operating mode of the SIMOTION device, the request to change the operating state can be triggered by pressing the RUN, STOPU , or STOP button as appropriate.

The switch on the control has a higher priority than this input, i.e. if this switch is set to STOP , then RUN is not possible.

Note: For the purpose of transmitting a project or firmware, the current operating mode must be set to STOP.

⚠ DANGER

Danger to life posed by uncontrolled changeover between operating states

Uncontrolled changeover between operating states can cause machines to malfunction, which in turn can lead to injuries or death.

- Include the effects of changeover between operating states in the risk analysis

Time Settings

The system time and the time zone for the SIMOTION device are set in minutes, including sign, in the field for the time settings.

Systemtime	Local time-of-day of the SIMOTION device
Timezone	Difference between the Systemtime on site (i.e. local time) and GMT

The system time and the time zone are relevant for the OPC XML DA access.

The OPC XML DA client expects all times sent by the SIMOTION device to be in GMT. However, a SIMOTION device is set to local time (GMT + X); therefore, a time zone must be set for the SIMOTION device.

The **Change Timezone** button opens a list of time zones, from which one time zone can be selected.

For browsers which do not support the list display, the difference must be entered in minutes, with sign, in the range -720 to +780.

The time zone can also be set under **Hardware configuration > Object properties of the CPU > "Ethernet Extended" > OPC XML / diagnostic pages** and then applied by running a download.

User Pages

The **Enable user menu editor** checkbox enables you to activate the menu editor link on the user-defined pages. This option will only take effect once **Embedded** has been selected from the **User Pages** drop-down box.

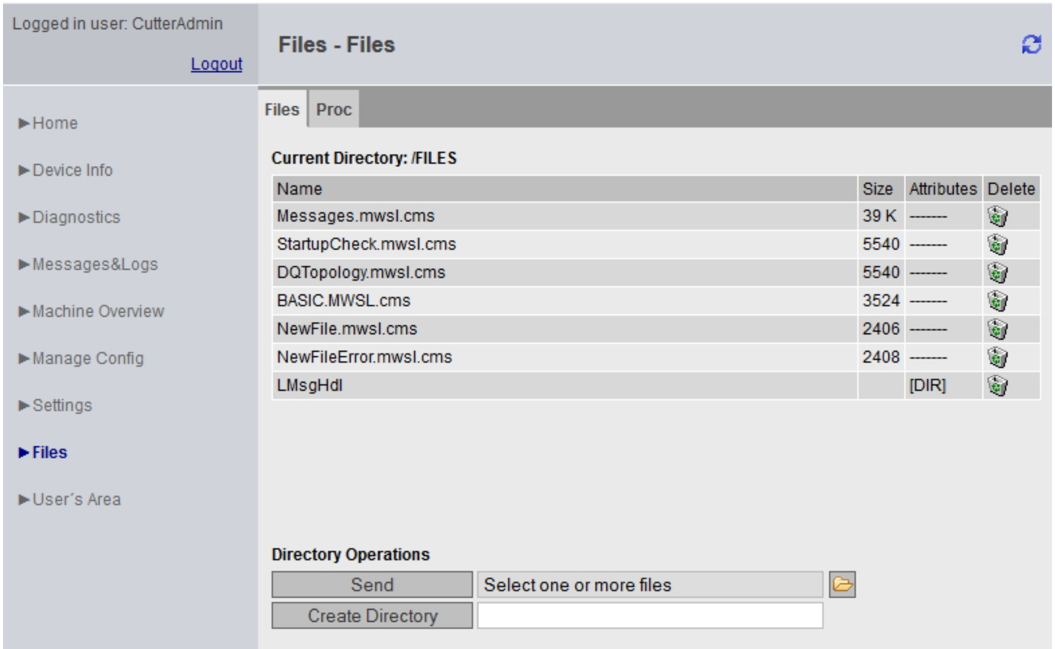
The **User Pages** drop-down box affects how the user-defined pages are displayed. See Manual SIMOTION IT Programming and Web Services*,* Section Embedded user-defined pages.*.*

All MWSL pages on the control can be compiled explicitly with the **Compile** button. This action is required, for example, whenever new MWSL pages are loaded onto the control by FTP.

4.3.8 Files

4.3.8.1 Files

You can create, select, and delete subdirectories on the memory card in the SIMOTION device via the **Files** page. Furthermore, you can save, display, and delete files.



Current Directory: /FILES

Name	Size	Attributes	Delete
Messages.mwsl.cms	39 K	-------	🗑
StartupCheck.mwsl.cms	5540	-------	🗑
DQTopology.mwsl.cms	5540	-------	🗑
BASIC.MWSL.cms	3524	-------	🗑
NewFile.mwsl.cms	2406	-------	🗑
NewFileError.mwsl.cms	2408	-------	🗑
LMsgHdl		[DIR]	🗑

Figure 4-66 Files

File and directory management

The user-specific directories and files are stored in a separate directory. These directories differ depending on the SIMOTION devices. The information in the table refers to a default installation.

SIMOTION device	Path
C, D	\USER\SIMOTION\HMI\FILES
P350	F:\SIMOTION\USER\CARD\USER\SIMOTION \HMI\FILES
P320	D:\Card\USER\SIMOTION\HMI\FILES

To create subdirectories, enter the desired name in the input field and then confirm by clicking the **Create Directory** button.

You can delete files and directories using the Recycle Bin icon 🗑. You must make sure that a directory is empty before deleting it. If the directory contains files, these will have to be deleted first.

Note

Available memory space on the card

You can check the amount of memory available on the card on the diagnostic page in the "Memory Card" line (Diagnostics (Page 42)).

Copying files to the SIMOTION control

The **Send selected file** button enables you to transfer a file from the local file system to the SIMOTION control. You can use the button displaying the folder symbol to select a file from your local file system and click the **Send selected file** button to transfer it to the SIMOTION control.

Note

Overwriting existing files

If you upload a file with the same name as one already saved in the SIMOTION control, the existing file will be overwritten.

Note

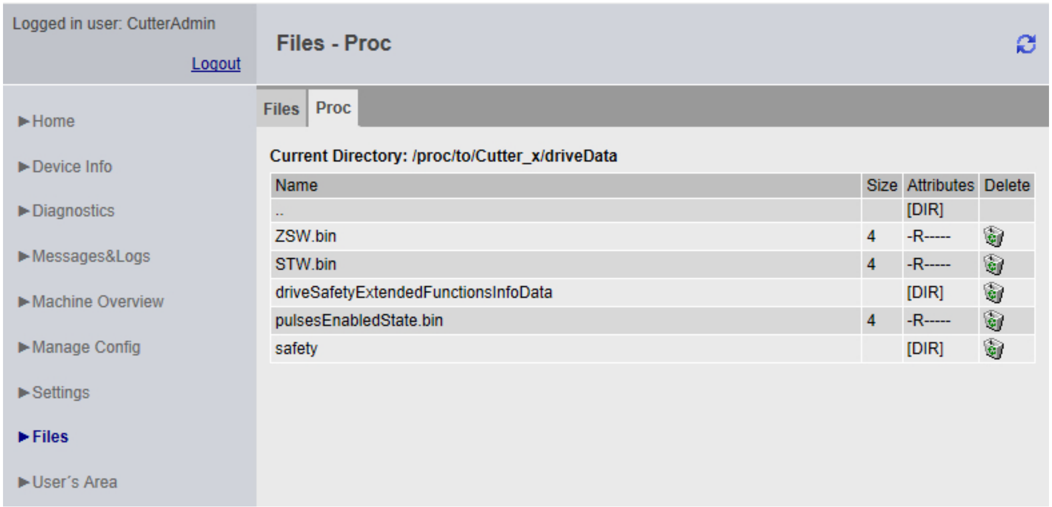
Large files

If files that are larger than the remaining space on the memory card are transferred, a different error message will be displayed depending on the browser used.

Browsers do not check prior to transfer whether there will be sufficient memory space on the card for the file. The server cannot compensate for this browser response.

4.3.8.2 Proc

Accessing the device variables using the Proc file system



Current Directory: /proc/to/Cutter_x/driveData

Name	Size	Attributes	Delete
..		[DIR]	
ZSW.bin	4	-R-----	🗑
STW.bin	4	-R-----	🗑
driveSafetyExtendedFunctionsInfoData		[DIR]	🗑
pulsesEnabledState.bin	4	-R-----	🗑
safety		[DIR]	🗑

Figure 4-67 Proc file system

The Proc file system shows the device variables as a drive in the browser. This enables device variables to be read out via FTP, for example.

Variables are accessed via a path specification and the addition of the extension "bin" to the name of the variable.

Variables	Path
TO configuration data	`/cfg/<toname>/<varname>.bin`
TO system variables	`/to/<toname>/<varname>.bin`
Device system variables	`/var/<varname>.bin`
Program variables	`/unit/<unitname>/<varname>.bin`

Arrays are also accessed via a path.

- Variable: `unit/UnitName.StructName.StructCompSimple`
- Path: `/unit/UnitName/StructName/StructCompSimple.bin`

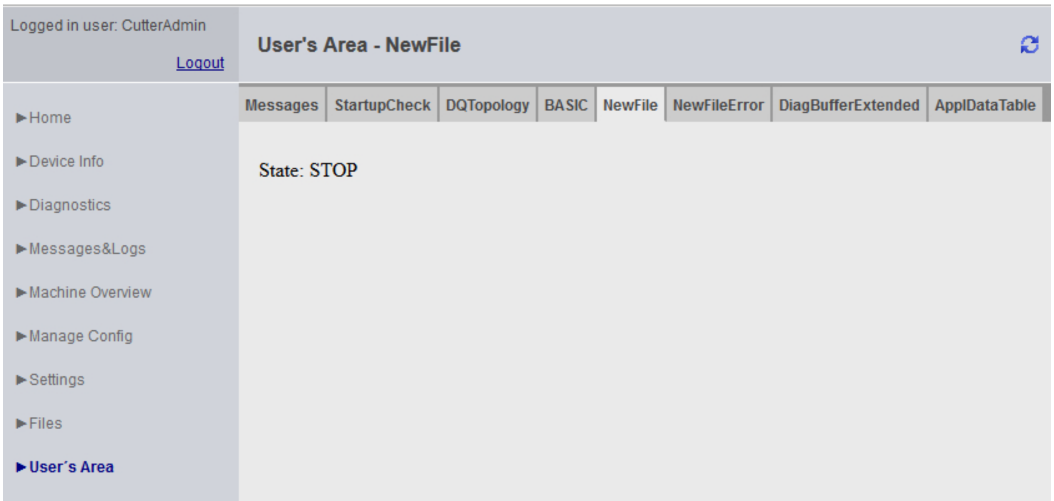
Access to arrays and structures

- Variable: `unit/UnitName.Array[5].StructName.StructCompSimple`
- Path: `/unit/UnitName/Array/5/StructName/StructCompSimple.bin`

The files in the Proc file system comprise the contents of variables in binary format, in the display (endianness) of the controller used.

4.3.9 User's Area

The User's Area displays user-defined pages. The manual *SIMOTION IT Programming and Web Services* describes the creation of user-defined pages.



State: STOP

Figure 4-68 User's Area

4.4 Simplified standard pages

4.4.1 BASIC pages

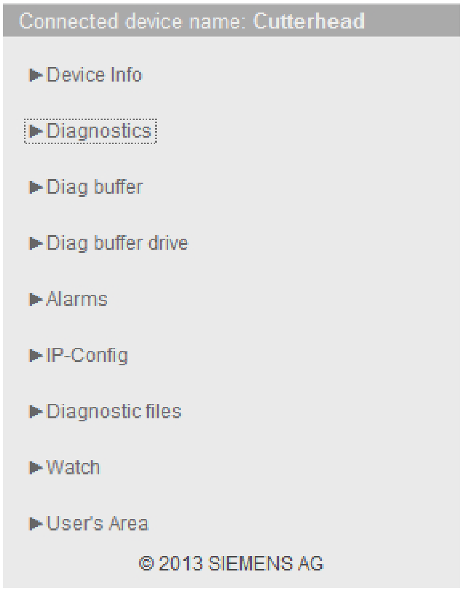
Showing SIMOTION IT Diagnostics pages on devices with small displays

Special pages are provided in Version 4.1.3 and higher for optimal display of SIMOTION IT Diagnostics pages on devices such as cell phones or PDAs.

The following minimum configuration is recommended for the display of the basic SIMOTION IT Diagnostics pages:

- Mobile operating system with installed web browser, which supports the HTML 4 standard
- Minimum screen resolution of 320 x 240 pixels and color display
- Touch screen or stylus-operated device
- JavaScript (ECMA-262) is required if the full scope of functions is to be enjoyed.

You can access these pages via the address http://<IP address>/BASIC



Connected device name: Cutterhead

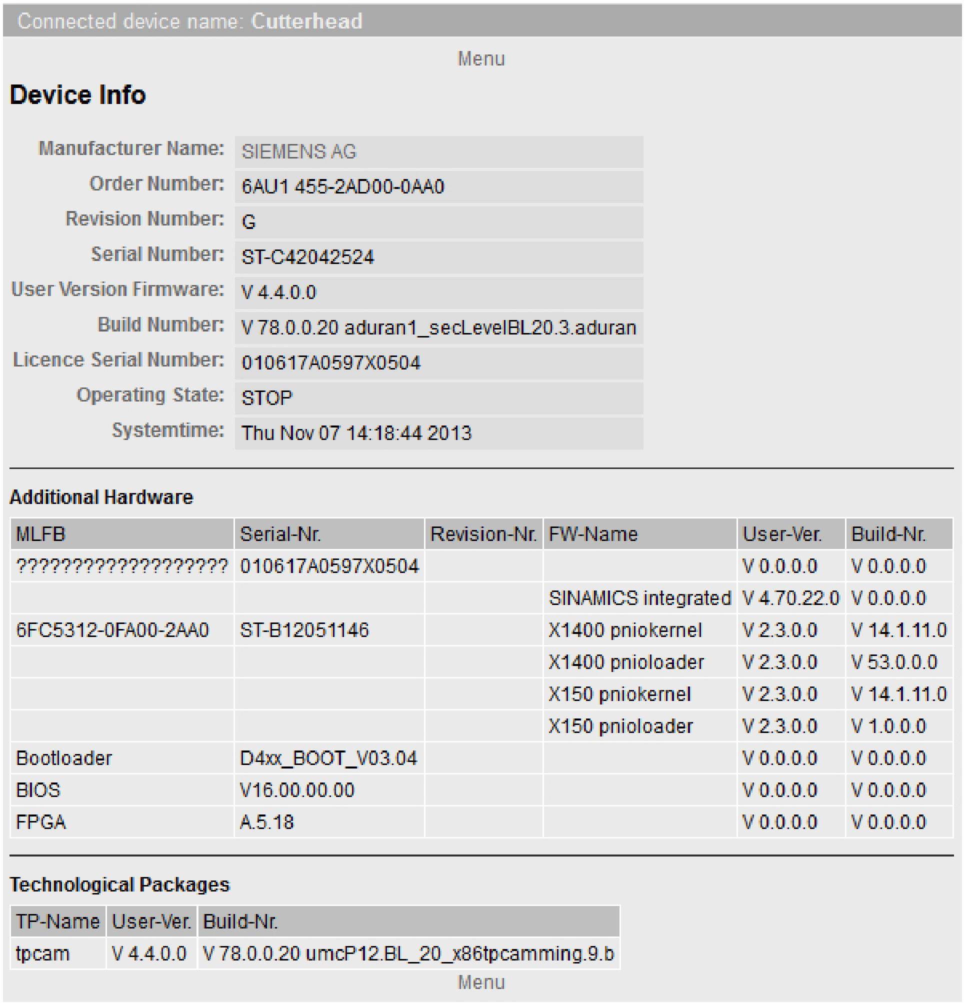
Figure 4-69 Start screen for simplified HTML pages

4.4.2 Device Info

Hardware and firmware information

The following up-to-date hardware and firmware information for the SIMOTION device is displayed on the **Device Info** page:

Manufacturer Name	Siemens AG
Order Number	Order number of the device
Revision Number	Hardware version
Serial Number	Serial number of the SIMOTION device
User Version Firmware	SIMOTION Kernel user version
Build Number	Internal version number
Additional Hardware	Installed components of the SIMOTION device including: order number, serial number, revision number, firmware name, user version number, internal version number
Technological Packages	Loaded technology packages including: Package name, user version number, internal version number



Connected device name: **Cutterhead**

Device Info

Manufacturer Name:	SIEMENS AG
Order Number:	6AU1 455-2AD00-0AA0
Revision Number:	G
Serial Number:	ST-C42042524
User Version Firmware:	V 4.4.0.0
Build Number:	V 78.0.0.20 aduran1_secLevelBL20.3.aduran
Licence Serial Number:	010617A0597X0504
Operating State:	STOP
Systemtime:	Thu Nov 07 14:18:44 2013

Additional Hardware

MLFB	Serial-Nr.	Revision-Nr.	FW-Name	User-Ver.	Build-Nr.
??????????????????	010617A0597X0504			V 0.0.0.0	V 0.0.0.0
			SINAMICS integrated	V 4.70.22.0	V 0.0.0.0
6FC5312-0FA00-2AA0	ST-B12051146		X1400 pniokernel	V 2.3.0.0	V 14.1.11.0
			X1400 pnioloader	V 2.3.0.0	V 53.0.0.0
			X150 pniokernel	V 2.3.0.0	V 14.1.11.0
			X150 pnioloader	V 2.3.0.0	V 1.0.0.0
Bootloader	D4xx_BOOT_V03.04			V 0.0.0.0	V 0.0.0.0
BIOS	V16.00.00.00			V 0.0.0.0	V 0.0.0.0
FPGA	A.5.18			V 0.0.0.0	V 0.0.0.0

Technological Packages

TP-Name	User-Ver.	Build-Nr.
tpcam	V 4.4.0.0	V 78.0.0.20 umcP12.BL_20_x86tpcamming.9.b

Figure 4-70 Device info on simplified HTML pages

4.4.3 Diagnostics

Overview of the general state of the SIMOTION control

The **Diagnostics** page displays the following states of the SIMOTION control:

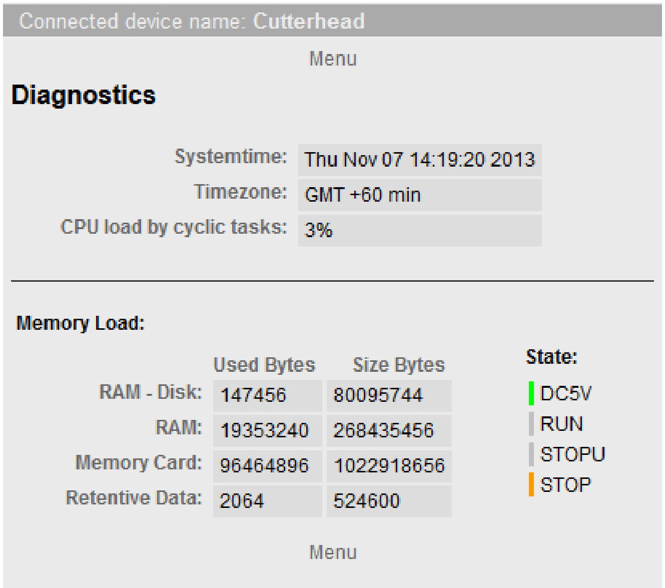
Systemtime — Current time of day of the SIMOTION control

Timezone — Current difference between the Systemtime and GMT in minutes

CPU Load by cyclic Tasks — Processor time of servo and IPO levels as a percentage of the total processor time

Memory Load — Size and allocation of the memory, RAM disk, memory card, and non-volatile memory in bytes

State — Current operating mode of the SIMOTION control



Connected device name: Cutterhead

Menu

Diagnostics

Systemtime:	Thu Nov 07 14:19:20 2013
Timezone:	GMT +60 min
CPU load by cyclic tasks:	3%

Memory Load:

	Used Bytes	Size Bytes
RAM - Disk:	147456	80095744
RAM:	19353240	268435456
Memory Card:	96464896	1022918656
Retentive Data:	2064	524600

State:

🟩 DC5V
▯ RUN
▯ STOPU
🟧 STOP

Menu

Figure 4-71 Diagnostics shown on simplified HTML pages

See also

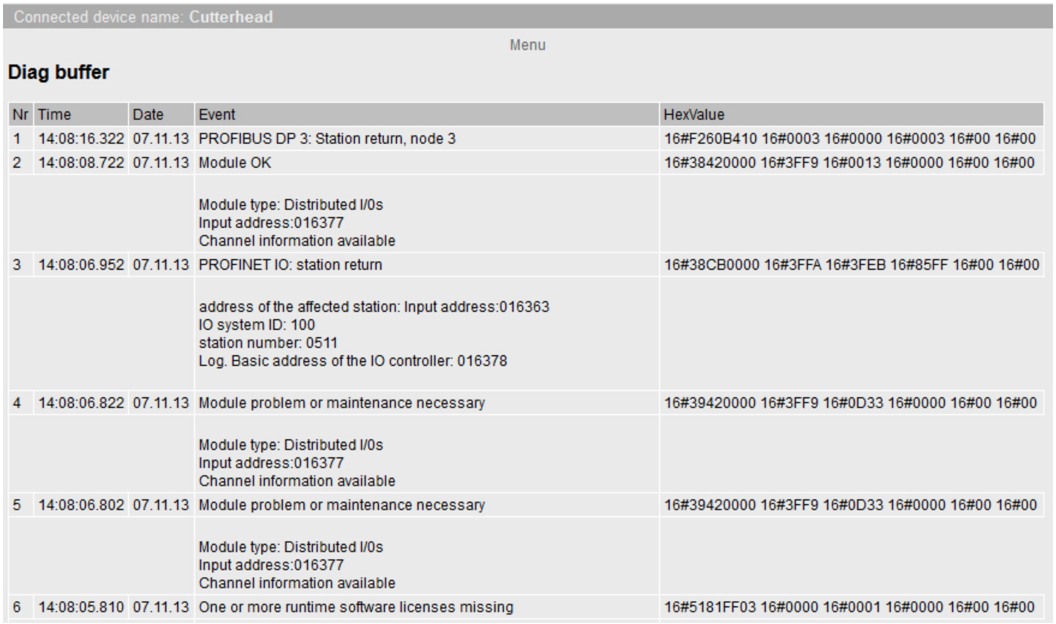
Diagnostic files (Page 61)

4.4.4 Diag buffer

Diag buffer information

The **Diag buffer** page shows the events in the diagnostics buffer.

Time	Time of the event
Date	Date of the event
Event	Displays the event as text. If the DGBUFTXT.EDB language file is missing, it will be displayed in hexadecimal notation.
HexValue	Hex value of the diagnostics buffer message



Diag buffer

Nr	Time	Date	Event	HexValue
1	14:08:16.322	07.11.13	PROFIBUS DP 3: Station return, node 3	16#F260B410 16#0003 16#0000 16#0003 16#00 16#00
2	14:08:08.722	07.11.13	Module OK	16#38420000 16#3FF9 16#0013 16#0000 16#00 16#00
			Module type: Distributed I/0s Input address:016377 Channel information available	
3	14:08:06.952	07.11.13	PROFINET IO: station return	16#38CB0000 16#3FFA 16#3FEB 16#85FF 16#00 16#00
			address of the affected station: Input address:016363 IO system ID: 100 station number: 0511 Log. Basic address of the IO controller: 016378	
4	14:08:06.822	07.11.13	Module problem or maintenance necessary	16#39420000 16#3FF9 16#0D33 16#0000 16#00 16#00
			Module type: Distributed I/0s Input address:016377 Channel information available	
5	14:08:06.802	07.11.13	Module problem or maintenance necessary	16#39420000 16#3FF9 16#0D33 16#0000 16#00 16#00
			Module type: Distributed I/0s Input address:016377 Channel information available	
6	14:08:05.810	07.11.13	One or more runtime software licenses missing	16#5181FF03 16#0000 16#0001 16#0000 16#00 16#00

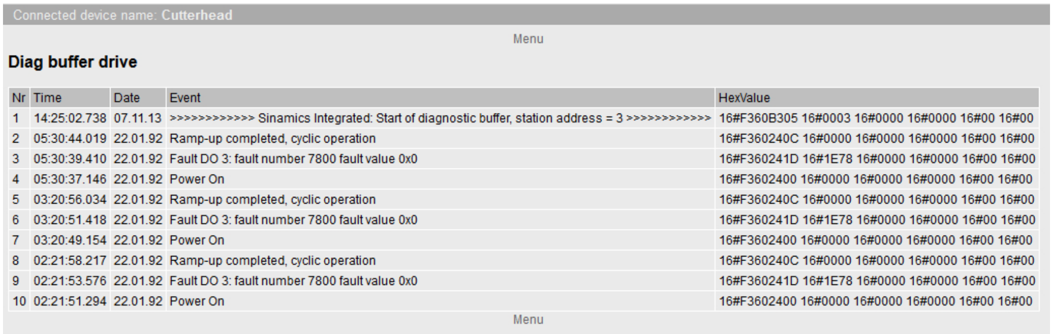
Figure 4-72 Diagnostics buffer shown in simplified format

4.4.5 Diag buffer drive

Diag buffer drive information

The **Diag buffer drive** page shows the events in the drive diagnostics buffer for the integrated drives.

Time	Time of the event
Date	Date of the event
Event	Displays the event as text. If the DGEXTXT.EDB language file is missing, it will be displayed in hexadecimal notation.
HexValue	Hex value of the drive diagnostics buffer message



Diag buffer drive

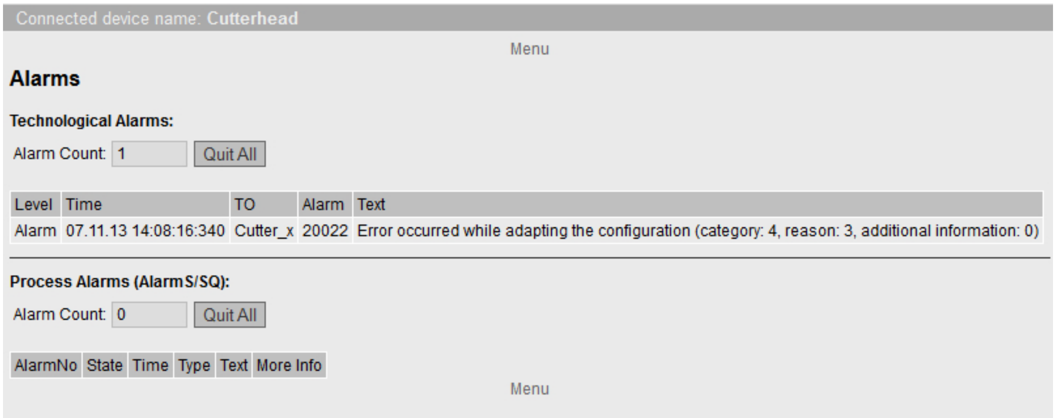
Nr	Time	Date	Event	HexValue
1	14:25:02.738	07.11.13	>>>>>>>>>>>> Sinamics Integrated: Start of diagnostic buffer, station address = 3 >>>>>>>>>>>>	16#F360B305 16#0003 16#0000 16#0000 16#00 16#00
2	05:30:44.019	22.01.92	Ramp-up completed, cyclic operation	16#F360240C 16#0000 16#0000 16#0000 16#00 16#00
3	05:30:39.410	22.01.92	Fault DO 3: fault number 7800 fault value 0x0	16#F360241D 16#1E78 16#0000 16#0000 16#00 16#00
4	05:30:37.146	22.01.92	Power On	16#F3602400 16#0000 16#0000 16#0000 16#00 16#00
5	03:20:56.034	22.01.92	Ramp-up completed, cyclic operation	16#F360240C 16#0000 16#0000 16#0000 16#00 16#00
6	03:20:51.418	22.01.92	Fault DO 3: fault number 7800 fault value 0x0	16#F360241D 16#1E78 16#0000 16#0000 16#00 16#00
7	03:20:49.154	22.01.92	Power On	16#F3602400 16#0000 16#0000 16#0000 16#00 16#00
8	02:21:58.217	22.01.92	Ramp-up completed, cyclic operation	16#F360240C 16#0000 16#0000 16#0000 16#00 16#00
9	02:21:53.576	22.01.92	Fault DO 3: fault number 7800 fault value 0x0	16#F360241D 16#1E78 16#0000 16#0000 16#00 16#00
10	02:21:51.294	22.01.92	Power On	16#F3602400 16#0000 16#0000 16#0000 16#00 16#00

Figure 4-73 Diag buffer drive

4.4.6 Alarms

Information about alarms

Level	Category of the alarm
Time	Time of the alarm
TO	Technology object that triggered the alarm
Nr	Alarm number
Text	Displays the alarm message as text



Alarms

Technological Alarms:

Alarm Count: 1

Level	Time	TO	Alarm	Text
Alarm	07.11.13 14:08:16:340	Cutter_x	20022	Error occurred while adapting the configuration (category: 4, reason: 3, additional information: 0)

Process Alarms (AlarmS/SQ):

Alarm Count: 0

AlarmNo	State	Time	Type	Text	More Info

Figure 4-74 Alarms shown in simplified format

4.4.7 IP Config

Data of the SIMOTION control Ethernet interface

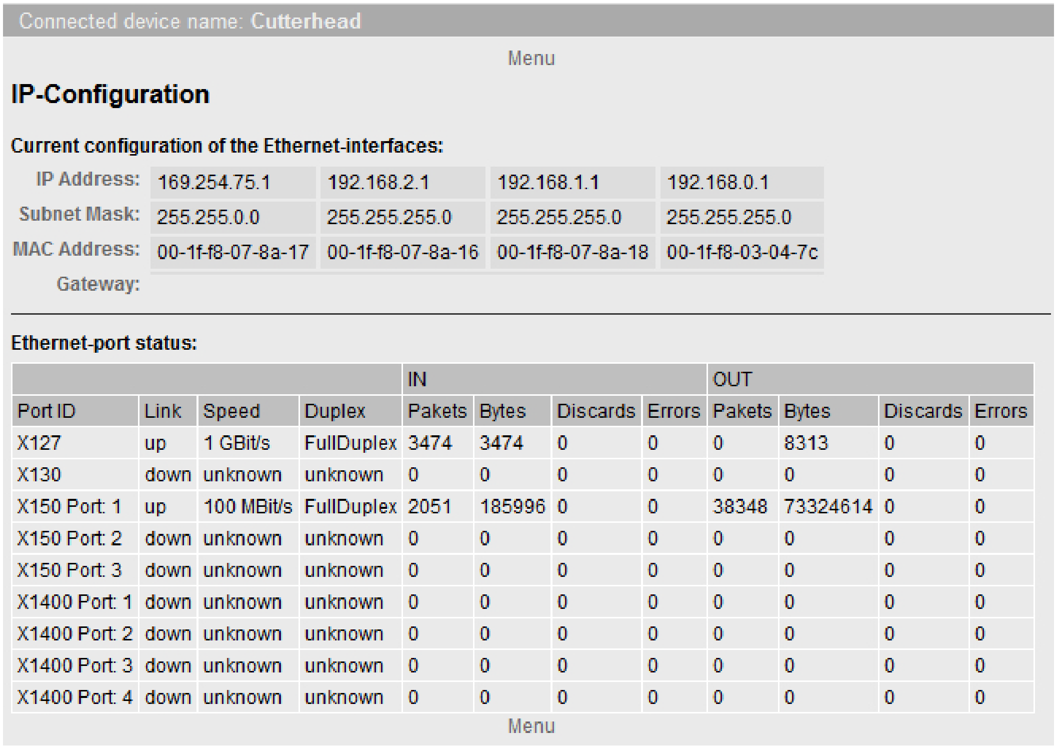
IP Address — Address of the interface

Subnet Mask — Subnet mask of the interface

MAC Address — Subnet mask of the network card

Gateway — Default gateway of the interface

The corresponding information is always displayed in the first column. It is not necessarily directly related to the IP address of the column and may even have been configured for the other interfaces.



Connected device name: Cutterhead

Menu

IP-Configuration

Current configuration of the Ethernet-interfaces:

IP Address:	169.254.75.1	192.168.2.1	192.168.1.1	192.168.0.1
Subnet Mask:	255.255.0.0	255.255.255.0	255.255.255.0	255.255.255.0
MAC Address:	00-1f-f8-07-8a-17	00-1f-f8-07-8a-16	00-1f-f8-07-8a-18	00-1f-f8-03-04-7c
Gateway:				

Ethernet-port status:

				IN				OUT			
Port ID	Link	Speed	Duplex	Pakets	Bytes	Discards	Errors	Pakets	Bytes	Discards	Errors
X127	up	1 GBit/s	FullDuplex	3474	3474	0	0	0	8313	0	0
X130	down	unknown	unknown	0	0	0	0	0	0	0	0
X150 Port: 1	up	100 MBit/s	FullDuplex	2051	185996	0	0	38348	73324614	0	0
X150 Port: 2	down	unknown	unknown	0	0	0	0	0	0	0	0
X150 Port: 3	down	unknown	unknown	0	0	0	0	0	0	0	0
X1400 Port: 1	down	unknown	unknown	0	0	0	0	0	0	0	0
X1400 Port: 2	down	unknown	unknown	0	0	0	0	0	0	0	0
X1400 Port: 3	down	unknown	unknown	0	0	0	0	0	0	0	0
X1400 Port: 4	down	unknown	unknown	0	0	0	0	0	0	0	0

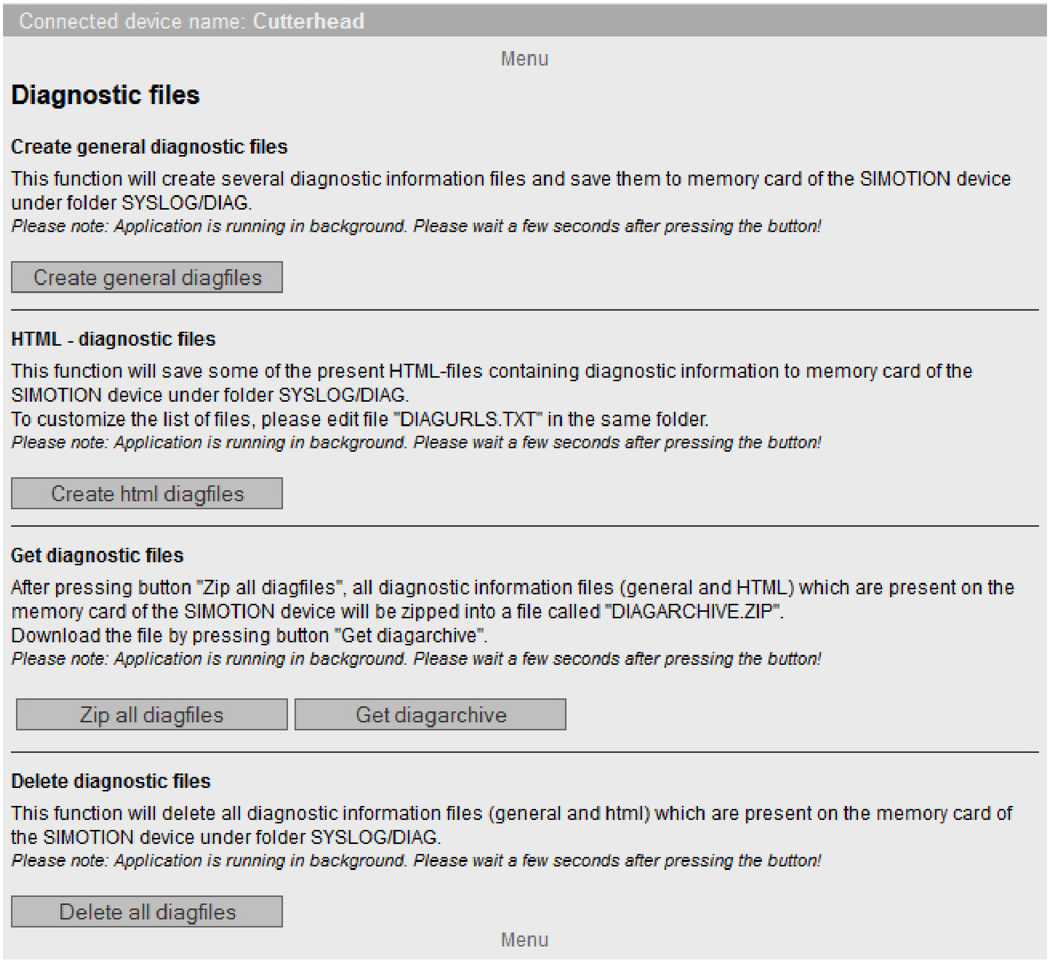
Menu

Figure 4-75 IP Config

4.4.8 Diagnostic files

Backing up diagnostic pages of the web server

You can use this page to back up general diagnostic data and individual SIMOTION IT Diagnostics HTML pages.



Connected device name: Cutterhead

Diagnostic files

Create general diagnostic files

This function will create several diagnostic information files and save them to memory card of the SIMOTION device under folder SYSLOG/DIAG.
Please note: Application is running in background. Please wait a few seconds after pressing the button!

HTML - diagnostic files

This function will save some of the present HTML-files containing diagnostic information to memory card of the SIMOTION device under folder SYSLOG/DIAG.
To customize the list of files, please edit file "DIAGURLS.TXT" in the same folder.
Please note: Application is running in background. Please wait a few seconds after pressing the button!

Get diagnostic files

After pressing button "Zip all diagfiles", all diagnostic information files (general and HTML) which are present on the memory card of the SIMOTION device will be zipped into a file called "DIAGARCHIVE.ZIP".
Download the file by pressing button "Get diagarchive".
Please note: Application is running in background. Please wait a few seconds after pressing the button!

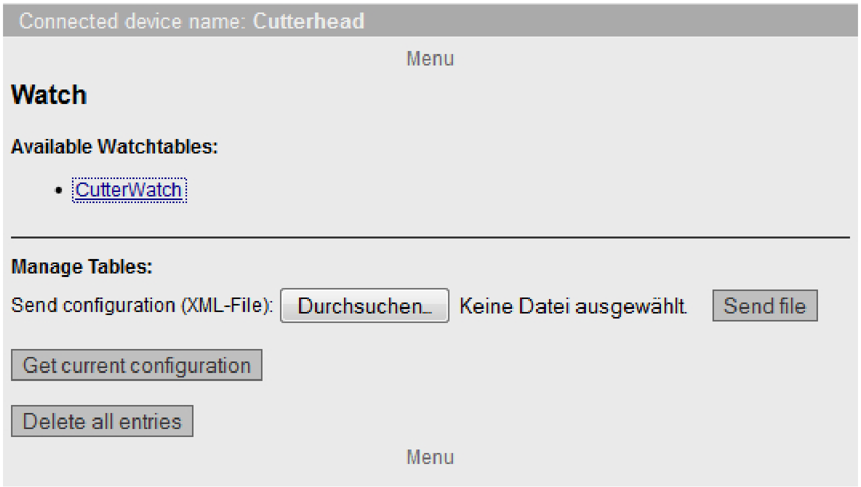
Delete diagnostic files

This function will delete all diagnostic information files (general and html) which are present on the memory card of the SIMOTION device under folder SYSLOG/DIAG.
Please note: Application is running in background. Please wait a few seconds after pressing the button!

Figure 4-76 Diagnostic files

4.4.9 Watch tables

Watchtables



Connected device name: **Cutterhead**

Watch

Available Watchtables:

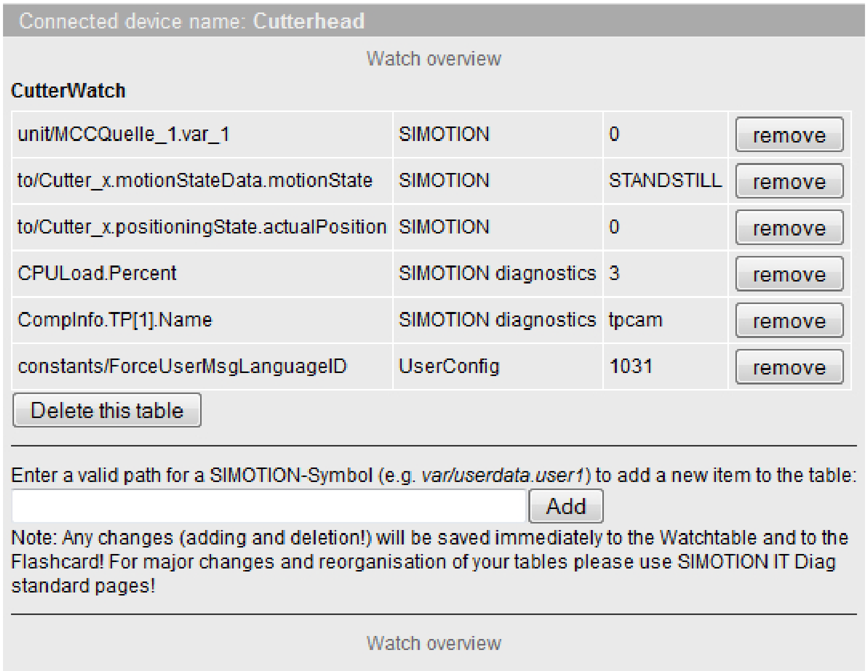
- CutterWatch

Manage Tables:

Send configuration (XML-File): Keine Datei ausgewählt.

Figure 4-77 Watchtables

This page shows all created Watch tables. These Watch tables are the same as on the standard SIMOTION IT Diagnostics page. They can be saved, deleted, and uploaded. Editing is not possible here.



Connected device name: **Cutterhead**

CutterWatch

unit/MCCQuelle_1.var_1	SIMOTION	0	remove
to/Cutter_x.motionStateData.motionState	SIMOTION	STANDSTILL	remove
to/Cutter_x.positioningState.actualPosition	SIMOTION	0	remove
CPULoad.Percent	SIMOTION diagnostics	3	remove
CompInfo.TP[1].Name	SIMOTION diagnostics	tpcam	remove
constants/ForceUserMsgLanguageID	UserConfig	1031	remove

Enter a valid path for a SIMOTION-Symbol (e.g. *var/userdata.user1*) to add a new item to the table:

Note: Any changes (adding and deletion!) will be saved immediately to the Watchtable and to the Flashcard! For major changes and reorganisation of your tables please use SIMOTION IT Diag standard pages!

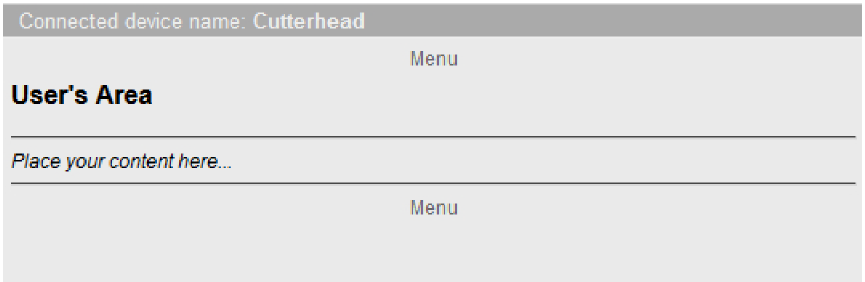
Figure 4-78 Display of a Watchtable

See also

Watch (Page 47)

4.4.10 User's Area

User’s Area



Connected device name: Cutterhead

User's Area

Place your content here...

Figure 4-79 User's Area

User-defined pages are displayed in the User's Area .

4.5 SIMOTION IT configuration

4.5.1 Introduction

The UserDataBase.xml and WebCfg.xml configuration files are used to make user-relevant settings in the web server.

UserDataBase.xml

File UserDataBase.xml contains user data of the controller. Access to the controller is controlled by the user administration. To be back up a device, an administrator must be set up who can set up all other users and groups. See Section Login administration (Page 110).

WebCfg.xml

The file is subdivided into several different sections, e.g. server options and virtual file system. WebCfg.xml can be reloaded during runtime. This action restarts the web server. The modified settings are available after the restart.

The **Manage Config > SIMOTION IT** standard pages can be used to safely modify entries in WebCfg.xml . SIMOTION IT File Access (Page 81)

The configuration file is divided into various areas:

- Virtual file system: Representing the physical file system of the memory card in XML format.
- Server options: Replace the home page of the standard diagnostic pages with your own home page (see the manual *SIMOTION IT Programming and Web Services*, *User-defined home page* chapter), port settings.
- Configuration area: Module-specific configuration data
- File types: Specification of the MIME type (Page 173)in the HTTP header.

The WebCfg.xml file can be found either on the SIMOTION control memory card in the USER \SIMOTION\HMICFG\ directory or on the supplied DVD in the 3_Configuration directory (in the default state).

4.5.2 Authentication and login administration

4.5.2.1 Log-in administration

Structure of the log-in administration

SIMOTION IT uses a user database to safeguard access to a device. The file UserDataBase.xml contains this user data.

If the control is started without a user database, a user database is automatically created when the control starts up. This user database contains no users and is therefore empty.

If web pages are called in this condition, the anonymous user `Anonymous` is active. This user has no special access rights.

Use of the Web pages requires activation of the Web server using SCOUT or HW Config. Without activation of the Web server, there can be no communication with the device. The services are activated by default when a new device is set up, and they must be explicitly deactivated to prevent access.

User administration is based on the Administrator user group. If the UserDataBase.xml does not include a user belonging to the Administrator user group, no users can be set up, edited, or deleted via the User's & Passwords Web page.

There are many application cases related to the web server and UserDataBase.xml that differ in terms of the individual files on the memory card.

Empty memory card, no SCOUT project exists on the memory card and empty UserDataBase.xml

The memory card only contains the firmware and the licenses.

In the as-delivered state, file UserDataBase.xml contains no users and is "empty" as far as the system is concerned.

In this case, the status of the control is **Security Level Low**. To make it possible to perform commissioning via the web server, all the websites can be used without logging on. The FTP and Telnet can be accessed with any user name and password.

Users can be set up in the following ways to create a valid user database.

1. Call page **Manage Config > SIMOTION IT > Users & Passwords**. Add a user with Administrator group. As soon as the user is saved, the web server switches to the **Security Level normal** condition because the user database now contains a valid entry.
2. Create a file UserDataBase.xml with content as described below. Upload via the web page **Manage Config > SIMOTION IT > Users & Passwords**.
3. Create a file **UserDataBase.xml** with content as described below. Connect CF card to to the PC via a card reader and save the XML file under /USER/SIMOTION/HMICFG/ USERDATABASE/.
4. Create a file UserDataBase.xml with content as described below. Use the device update tool and save the file UserDataBase.xml to a folder USERDATABASE in directory IT Config.

SCOUT project exists on the memory card and empty UserDataBase.xml

If a valid project exists on the card, the status **Security Level normal** applies to the web server, in which the web pages, FTP and Telnet are protected by a login. However, if file UserDataBase.xml is in the as-delivered state, it contains no users. In this case, log-in will not be possible.
The user database can be edited in any of the following ways:

1. Delete project with **Delete user data on card** in SCOUT. The web server then goes into **Security Level Low** and the user database can be edited as described above.
2. Create a file UserDataBase.xml with content as described below. Connect CF card to to the PC via a card reader and save the XML file under /USER/SIMOTION/HMICFG/ USERDATABASE/.

3. Create a file UserDataBase.xml with content as described below. Use the device update tool (but not via the web pages) and store file UserDataBase.xml in a folder USERDATABASE in directory IT Config.
4. You can use service switch `8`, simotion.ini or the PSTATE program to reset to Security Level low and thus change the password.

SCOUT project exists on the memory card and UserDataBase.xml contains valid users

If a valid project exists on the card, the status **Security Level normal** applies to the web server, in which the web pages, FTP and Telnet are protected by a login.

The user database can be edited in any of the following ways:

1. Call page **Manage Config > SIMOTION IT > Users & Passwords**. After logging in successfully with administrator rights, new users can be created and existing users edited. This however assumes that at least one user who belongs to the Administrator group has already been set up.
2. Create a file UserDataBase.xml with content as described below. Connect CF card to to the PC via a card reader and save the XML file under /USER/SIMOTION/HMICFG/USERDATABASE/.
3. Create a file UserDataBase.xml with content as described below. Use the device update tool (but not via the web pages) and store file UserDataBase.xml in a folder USERDATABASE in directory IT Config.

Authentication

The authentication is constructed as follows:

- There are USERs.
- Every USER has a password that can be entered as plain text before startup. After startup, the password exists as A1 Hash .
- Users belong to groups (GROUP).
- Web pages, directories, and applications are protected by secure realms (REALM) defined for each group.
- Only users that belong to the realm can access the protected page.
- Each realm has a group of users who are authorized for access.
- A user can belong to multiple groups.

Note

Editing the file UserDataBase.xml

- If file UserDataBase.xml is not adapted, after the SCOUT project has been downloaded, it will no longer be possible to log onto the websites or access with FTP and Telnet, because no valid user exists.
- The user database UserDataBase.xml must contain at least one user that is a member of group Administrator. Group Administrator is the REALM that the system expects for accessing protected applications, whose access rights cannot be set via WebCfgx.ml.
- The editor used for editing UserDataBase.xml must be set to UTF-8 encoding.
- If file UserDataBase.xml contains illegal characters or the XML syntax contains errors, the file cannot be evaluated by the system. This makes login impossible.
- After startup, all plaintext passwords are deleted and only exist in encrypted form. Neither can they be ascertained by the administrator. However, the administrator can assign a new password without knowing the old password.
- Since the password is no longer available in plain text in UserDataBase.xml, the password must be entered again each time a change is made to the groups of an existing user, otherwise the A1-Hash cannot be calculated.
- After loading via FTP, the control must be restarted to transfer the UserDataBase.xml file. It is not enough simply to restart the web server.

Structure of the file UserDataBase.xml

The useful data are stored in UserDataBase.xml. UserDataBase.xml is located in directory /USER/SIMOTION/HMICFG/USERDATABASE

Sample configuration

UserDataBase.xml before startup

```
<?xml version="1.0" encoding="UTF-8"?>
<UserDataBase>
  <USER NAME="service"
    PASSWORD="a67_YjH"
    ChangePassword="never"
    DESCRIPTION="Administrator with all rights"
    REAL_NAME="">
      <GROUP NAME="Anyone"/>
      <GROUP NAME="Administrator"/>
  </USER>
  <USER NAME="user1"
    PASSWORD="93!ujEa"
    ChangePassword="allowed"
    DESCRIPTION="Normal user"
    REAL_NAME="">
      <GROUP NAME="Anyone"/>
  </USER>
</UserDataBase>
```

UserDataBase after startup

```
<?xml version="1.0" encoding="UTF-8"?>
<UserDataBase>
  <USER NAME="service"
    ChangePassword="never"
    DESCRIPTION="Administrator with all rights"
    REAL_NAME="">
      <GROUP NAME="Anyone"         A1="0302831a41b222c5f5bfc22e5ff80620"/>
      <GROUP NAME="Administrator"  A1="fa712df9294b40baa1e7504f8dd2b0d5" /
>
  </USER>
  <USER NAME="user1"
    ChangePassword="allowed"
    DESCRIPTION="Normal user"
    REAL_NAME="">
      <GROUP NAME="Anyone" A1="c5a15667e4d0cadff85d35354ea0fbb6"/>
  </USER>
</UserDataBase>
```

Table 4-4 Attributes of the USER node

Attribute	Permissible values	Description
NAME	numerals, letters, special characters but not : =, “ , <,>, %, &, \	Login name
PASSWORD	numerals, letters, special characters but not : =, “ , <,>, %, &, \	Password in plain text
CHANGEPASSWORD	ALLOWED ⇒ The password can be changed by the user in the web page. (default setting) NEVER ⇒ The password cannot be changed by the user in the web page.	Behavior when user logs on via web pages. No effect when opening the file in the file system
DESCRIPTION	numerals, letters, special characters but not : =, “ , <,>, %, &, \	Description of the user
REAL_NAME	numerals, letters, special characters but not : =, “ , <,>, %, &, \	Actual name of the user

Table 4-5 Attributes of the GROUP node

Attribute	Permissible values	Description
NAME	numerals, letters, special characters but not : =, “ , <,>, %, &, \	Name of the group.
A1	Valid hash value (numerals, letters)	Hash value that is expressed as a MD5 checksum via USER NAME, USER PASSWORD and GROUP NAME. If none exists, generated after the control starts up.

NOTICE
Invalid XML file
Using impermissible values may invalidate the XML file so that it cannot be read.

See also

SIMOTION IT Users & Passwords (Page 84)

4.5.2.2 Login and WebCfg.xml

Differentiated protection of web pages, directories, and applications with WebCfg.xml

The realms are assigned for individual web pages, directories, and applications in configuration file WebCfg.xml. Content requiring protection is labeled REALM Administrator. The users belonging to this group are specified in file UserDataBase.xml.

Besides REALM Administrator used by the system, the user can create and apply his own realms to protect web pages, etc.

Example

Excerpt UserDataBase.xml:

```
…
<USER NAME="user1"
    PASSWORD=""
    ChangePassword="allowed"
    DESCRIPTION="Service with restricted rights"
    REAL_NAME="John Smith">
<GROUP NAME="Anyone"
        A1="c5a15667e4d0cadff85d35354ea0fbb6"/>
<GROUP NAME="Servicegroup"
        A1="45735fdcee4d0cdfafde825354ea0aa17"/>
</USER>
…
```

Excerpt WebCfg.xml:

```
…
<settings.mwsl.cms ALIAS="html/standard/settings.mwsl.cms"
REALM="Servicegroup" READ="Servicegroup" WRITE="Servicegroup"
MODIFY="Servicegroup"/>
…
```

`user1` has been inserted. This user belongs to the new group `Servicegroup` and has access to the `settings.mwsl` page. However, any user who wants to open the Settings page must belong to the `Servicegroup` group. It is therefore recommended that administrators belong to all the groups that exist in the user database.

Realms for applications

Besides the realms for individual MWSL pages and directories, the REALM of some of the applications of the web server are also defined in the configuration file WebCfg.xml.

These realms can be adapted if necessary.

> ⚠ CAUTION
>
> **Deleting a REALM**
>
> If you delete a REALM, the associated pages can be accessed without a login. So carefully check which pages were protected by the REALM.

- Web service for OPC-XML DA and therefore reading, writing, monitoring of the variables of all providers

  ```
  <WEBSERVICE NAME="OpcXml" URL="/SOAP/OPCXML"
  REALM="Administrator" />
  ```

  > **Note**
  >
  > **As-delivered state without REALM**
  >
  > In the as-delivered state, this value has no REALM to ensure downward compatibility reasons! It is therefore recommended to prepare the OPC-XML DA client currently being used for password and user name use and to set the REALM here.

- Application for writing variables in all providers on the HTML diagnostics pages:
  <VarApp REALM="Administrator" />
- Application for updating project and firmware:
  <FWUpdtApp REALM="Administrator" />
- Application for reading and writing the user database UserDataBase.xml
  <UserDataBaseApp REALM="Administrator" />
- Application of Jamaica VM for calling servlets
  <JApp REALM="Administrator" />

In addition, there are system applications that require logon of a user who belongs to the Administrator group.

4.5.2.3 A1 hash

Composition of the A1 hash

The A1 hash is formed by generating an MD5 hash value from a combination of user name, password, and REALM.

MD5 (message Digest Algorithm 5) is a cryptographic hash algorithm, which saves a character string requiring protection in the configuration but not as plain text.

Saving the password in plain text would have the disadvantage that a hacker could read it and use it to gain unauthorized access to the system. Instead, the password is saved as what is known as a hash. The hash is a fingerprint of the password.

To authenticate a user, the client (in this case the web browser) sends the password to the server, which then generates the hash and the MD5. This hash can be compared with the one saved in the configuration and the system can respond accordingly. This procedure is considered one of the most secure of its type. You can find more information on the Internet, e.g. at http://de.wikipedia.org/wiki/Message-Digest_Algorithm_5.

4.5.2.4 Delete password

Deletion of a password in the user database depends on whether the user has administration rights.

Deleting user passwords

The Administrator can always overwrite user passwords. See SIMOTION IT Users & Passwords (Page 84).

Deleting Administrator passwords

If the Administrator's password is no longer available, one of the methods described below can be used to modify the user database:

- Deleting UserDataBase.xml from the memory card. An empty UserDataBase.xml is created at startup.
- A password can be entered in plain text in UserDataBase.xml on the memory card.
  Example: `<USER NAME="CutterAdmin" PASSWORD="New password" ....>`
  The controller overwrites existing A1-Hashes if a `PASSWORD` attribute is found. A new A1-Hash is formed from the found `PASSWORD`.
- By setting the service selector switch to position "8", it is possible to send a UserDataBase.xml to the controller.

4.5.3 Configuration of the file system

4.5.3.1 Links to the physical file system (ALIAS)

Access to the physical file system of the memory card via the web server is limited for security reasons.

To access a file via an URL, is must be located in the so-called WWWRoot. In addition, the web server recognizes the memory card area SystemRoot. The SystemRoot cannot be accessed via URLs and is used store configuration files.

Table 4-6 Paths of the web server areas

WWWRoot	/USER/SIMOTION/HMI
SystemRoot	/USER/SIMOTION/HMICFG

The URL of a file in the file system is always relative to the WWWRoot.

Example

The file mypage.mwsl is located in directory /USER/SIMOTION/HMI/FILES.

The URL for calling the file is: `http://<IP-Address>/Files/mypage.mwsl`

By making settings in file WebCfg.xml, it is possible to create references to individual files or directories in the physical file system. In addition, by assigning REALMS (Page 120), the access rights to resources can also be assigned.

For that, the physical file system is mapped on XML data nodes. The node `<BASE>` corresponds to the WWWRoot - /USER/SIMOTION/HMI.

Each child node of <BASE> is a reference to a file or directory. Using these references, a direct call without specifying the entire path is possible. The tag name corresponds to the name of the file. With the attribute ALIAS, the path of the file is specified relative to the WWWRoot.

MWSL files are located in the physical file system in a compiled format with file name extension .cms and must be referenced accordingly.

URL	Target in the physical file system	Entry in WebCfg.xml	Comment

<ip address>/ myfile.mwsl	/USER/SIMOTION/HMI/FILES/ myfile.mwsl.cms	`<BASE>`
		`<myfile.mwsl.cms`
		`ALIAS="/FILES/ myfile.mwsl.cms" />`
		`</BASE>`
			ALIAS to a file.

<ip address>/ mydir	/USER/SIMOTION/HMI/FILES/ mydir	`<BASE>`
		`<mydir  ALIAS="/FILES/mydir"/>`
		`</BASE>`
			ALIAS to a directory

See also

ALIAS attribute (Page 167)

4.5.3.2 Browsing of directories

Browsing (Browse) of directories can be activated or deactivated.

This is controlled using the `BROWSEABLE` attribute. If the attribute is `TRUE`, a directory view is allowed.

Setting the `BROWSEABLE` value to `true` enables the browsing of directories by default.

Table 4-7 Examples of paths

```
/
 /Datei1

 /Directory1/
 /Directory1/Datei2.mwsl
 /Directory1/Datei3.mwsl
 /Directory1/Directory2
```

```
/Datei4
```

The root directory `/` is the same as the FILES directory.

Table 4-8 WebCfg.xml:

```
<?xml version="1.0" standalone="yes"?>
<SERVERPAGES>
  [...]
  <BASE LOCALLINK="/">
    <www LOCALLINK="/" BROWSEABLE="true" .../>
  </BASE>
  [...]
</SERVERPAGES>
```

The client requests the URL `http://<IP-Address>/www/Directory1`.

In the XML file system, the parser searches for www in the root directory and finds `LOCALLINK="/"`.

In the physical file system, the parser searches for `/Directory1`. The forward slash "/" in this path is retained, as was specified in the `LOCALLINK="/"` tag. `Directory1` refers to the path.

The `Directory1` directory exists in the physical file system. Since `Browseable = true` and no default HTML page has been specified, the browse view of the directory is returned.

See also

<BROWSEABLE> (Page 171)

<DEFAULTDOCUMENT> (Page 173)

4.5.3.3 Security concept of the file system

Permission information in the form of attributes can be stored at each XML node of the XML file system:

- `REALM` (secure area)
- `READ` (reading rights)
- `WRITE` (writing rights)
- `MODIFY` (modification rights)

`REALM` may only contain one group name, while `READ`, `WRITE`, and `MODIFY` may contain a list of group names separated by "," characters. No spaces or other Whitespace characters may be used.

A set of user groups is assigned to each user.

If a file is requested by a user, the XML file system is searched through for this file. The XML tree is run through corresponding to the file path. If several XML nodes are run through, the logged-in user must have rights for all of the "touched" nodes.

Example:

```
<?xml version="1.0" standalone="yes"?>
<SERVERPAGES>
  [...]
  <BASE ALIAS="/">
    <FILES ALIAS="FILES/" BROWSEABLE="true" REALM="Anyone"
           READ="Anyone" WRITE="Anyone" MODIFY="Anyone">
      <www ALIAS="/WebPages/"
           BROWSEABLE="true"
           READ="Administrator"
           WRITE="FileAdministrator" />
    </FILES>
    <Test.mwsl.cms ALIAS="/Tests/Test.mwsl.cms/"/>
    <XMLDir>
    </XMLDir>
  </BASE>
[...]
</SERVERPAGES>
```

Table 4-9 Types of file permissions

URL	Access	Groups	Comment
/<File>.mwsl	Read	None	
/<File>.mwsl	Write	None	Access not permitted
/MainDir/<File>.mwsl	Read	USER	Login mask if USER group is not present

4.5.3.4 REALM

Setting up a security area

Realm is used to designate a secure area in the WWW environment. If a directory is entered and the user is not a member of the specified realm (or the user has not yet logged in), a login prompt appears (authentication required).

If a file protected by REALM is accessed, the client must be authenticated. Web browsers usually display a login screen requiring the user to enter his or her user name and password

The REALM attribute can be used to enable or force a user login.

Note

Only one REALM can be specified for a directory. In a directory hierarchy, different REALMs must be separate, not superimposed.

Because the file objects are accessed on a hierarchical basis, different hierarchy levels may well have different secure groups. In this case, no user can access the relevant files because it is not possible to change the realm during a request. An access is always connected to a maximum of one realm even if the user is a member of several security groups.

```
<?xml version="1.0" standalone="yes"?>
```

```
<SERVERPAGES>
  [...]
  <BASE>
    <Motion REALM="Operator">
      [...]
    </Motion>
    <Tests REALM="Tester" >
      [...]
    </Tests >
  </BASE>
  [...]
</SERVERPAGES>
```

In this example, a user with the "Operators" and "Tester" secure groups has access to Motion and Tests as well their subordinate objects.

NOTICE
ALIAS and XML file system If you have linked a file or directory with an ALIAS and set the user rights, you must do the same for the XML file system!

```
<?xml version="1.0" standalone="yes"?>
<SERVERPAGES>
  [...]
  <BASE ALIAS="/">
  <Test.mwsl.cms ALIAS="/Files/Test.mwsl.cms/"
            BROWSEABLE="true"
            READ="Administrator"
            WRITE="Administrator"
            MODIFY="Administrator" />
  [...]
  </BASE>
[...]
</SERVERPAGES>
```

With this configuration, the login window appears when you call

```
http://<IP-Adresse>/Test.mwsl
```

However, access to this page is still possible via:

```
http://<IP-Adresse/Files/Test.mwsl
```

To prevent this, the configuration must be made as follows:

```
<?xml version="1.0" standalone="yes"?>
<SERVERPAGES>
  [...]
  <BASE ALIAS="/">
```

```
        <FILES ALIAS="FILES/"
               BROWSEABLE="true"
               READ="Anyone"
               WRITE="Anyone"
               MODIFY="Anyone">

          <Test.mwsl.cms
                    BROWSEABLE="true"
                    READ="Administrator"
                    WRITE="Administrator"
                    MODIFY="Administrator" />
        </FILES>

        <Test.mwsl.cms ALIAS="/Files/Test.mwsl/"
                  BROWSEABLE="true"
                  READ="Administrator"
                  WRITE="Administrator"
                  MODIFY="Administrator" />

          [...]
      </BASE>
      [...]
    </SERVERPAGES>
```

See also

REALM attribute (Page 170)

4.5.3.5 READ

Setting up read authorization with the READ attribute

If the READattribute is specified for a directory, the user must be a member of one of the groups specified for the READ-attribute. With READ, several groups can be specified. These must be separated with commas and no white space characters may be used.

Example

```
<MyDir READ="User,Administrator" />
```

Users that belong to the User or Administrator group (or both) may read the content of the directory.

If a user does not have read rights, i.e. he/she does not belong to any of the groups that are specified with READ , a FORBIDDEN message is generated. A login for the client is not initiated.

If no READattribute is present for a directory, read access is always permitted.

See also

READ attribute (Page 169)

4.5.3.6 WRITE

Setting write authorizations with the WRITE attribute

If a directory has a `WRITE`attribute and the logged-in user is a member of one of the specified groups, the user may only create new files in this directory.

The user may:

- Not create any new directories
- Not overwrite any files
- Not delete any files
- Create new files

Note

To create files, the user also needs READ rights!

See also

WRITE attribute (Page 171)

4.5.3.7 MODIFY

Unlocking directories for modification

If a directory has a `MODIFY`attribute and the logged-in user is a member of one of the specified groups, the user may carry out all write operations in this directory:

The user may:

- Create new directories
- Overwrite files
- Delete files
- Create new files

The user must, of course, have `READ`rights for the directory as well (otherwise, he/she would not have access to the directory to start with).

See also

MODIFY attribute (Page 168)

4.5.3.8 Creating directories and files

If directories or files are created, they inherit the authorizations of the directory that contains them.

Rights cannot be changed via the directory browser. Rather, they can only be changed directly by modifying the WebCfg.xml file.

4.5.3.9 Browsing the file system

The web server allows you to visualize a (physical) directory in the client.

For this purpose, the BROWSEABLE attribute for the ALIAS tag or the global <BROWSEABLE>-tag must be set to true.

If a client accesses this link, a directory view of the directory is created. Navigation from this directory to subdirectories is also possible (also to higher-level directories if browsing is allowed for them).

Provided you have sufficient permissions, you can send, receive and delete files as well as create and delete directories. The appearance of the directory in the client can be freely configured.

If there is no authentication mechanism on the web server, write access is generally not permitted (see Security concept).

```
<?xml version="1.0" standalone="yes"?>
<SERVERPAGES>
   [...]
   <BASE>
      <www ALIAS="/UserData" BROWSEABLE="true"
           REALM="GuestUser"/>
      <Test.mwsl.cms LINK="/Tests/Test.mwsl.cms/"/>
   </BASE>
   [...]
</SERVERPAGES>
```

In this example, a directory view of the local directory "/UserData" (relative to WWWRoot!) would be returned to the client if it requests the URL /www and has been authenticated as a user of the REALM "GuestUser."

Write access to the directory is not possible because a WRITE or MODIFY attribute has not been specified for the directory entry.

4.5.3.10 File access via FTP

Securing FTP access

In file UserDataBase.xml, a user must be a member of the group Administrator to be able to log into FTP. During the FTP login, the user name and password entered there must be authenticated.

⚠ WARNING

FTP access with security level low

If the security level is low, the user name and password will not be checked. Any values can be entered.

4.6 Variable providers

4.6.1 Overview

Variable providers

The data of the SIMOTION device can be accessed via the "variable providers". Each provider enables access to certain variables.

At present there are five variable providers; these are described in the section below.

- SIMOTION
- SIMOTION diagnostics
- UserConfig
- MiniWeb
- IT Diag

You can access the data supplied by the variable providers from SIMOTION IT OPC XML-DA, SIMOTION IT Diagnostics standard pages, or, if necessary, from user-defined HTML pages.

4.6.2 SIMOTION

You can access SIMOTION process variables via the "SIMOTION" provider. As of V4.1, you can also change the operating mode, initiate backups with RamToRom and ActiveToRam, and access drive parameters and technological alarms.

Note

You will find a description of the storage concept in the online help of SIMOTION SCOUT in section "SIMOTION storage concept (in the target device)."

Variables syntax of the "SIMOTION" provider

With OPC XML DA V1.0, access to the variables of the SIMOTION device is via the terms "ItemPath" and "ItemName". In MWSL functions, they are accessed via the "ItemName."

ItemPath

The name for "ItemPath" is always "SIMOTION" for SIMOTION process variables for use in the MWSL and SSI. It is not necessary to specify the ItemPath with MWSL and SSI.

```
ItemPath="SIMOTION"
```

Note

The "ItemPath" is only required for accessing via OPC XML-DA. None of the other SIMOTION IT accesses to the variable provider "SIMOTION" use "ItemPath".

Overview of variable access

Table 4-10 OPC XML-DA variable access

Variables	Variable declaration	Availa bility	Access syntax	Requirements for access
Global device variables (Page 132)	*Variable type*			The corresponding checkmark in the properties dialog box of the CPU must be set (CPU > Properties > Settings)
	retain	x	glob/<var name>	
	not retain	x	glob/<var name>	
I/O variables (Page 134)	*Access modes*			
Addresses 0..63	"PI../PQ.. (without assignment to a process image)"		io/_direct.<var name> io/_image.<var name> io/_quality.<var name>	
	"PI../PQ.. (without assignment to a process image)"	x	io/_direct.<var name> io/_image.<var name> io/_quality.<var name>	
	%I../%Q..	-	-	
Addresses >63	"PI../PQ.. (without assignment to a process image)"	x	io/_direct.<var name> io/_quality.<var name>	
	"PI../PQ.. (with assignment to a process image)"	x	io/_direct.<var name> io/_image.<var name> io/_quality.<var name>	
Unit (MCC/ST/LAD-FBD) (Page 128)	*Variable type*			The compiler option "Permit OPC-XML (load symbols to RT)" must be set at the source
Interface	(VAR_GLOBAL)	x	unit/<unit name>.<var name>	
	(VAR_GLOBAL RETAIN)	x	unit/<unit name>.<var name>	
Implementation	(VAR_GLOBAL)	-	-	
	(VAR_GLOBAL RETAIN)	-	-	
	(VAR)	-	-	
Unit DCC		x	unit/<unit name>.<var name>	

4.6.2.1 Accessing system variables/technology object system variables

For **system variables**, the **ItemName** syntax is:

	ItemName="var/name"
Example:	ItemName="var/userData.user3"

For **technology object system variables**, the **ItemName** syntax is:

	ItemName="to/name.variable"
Example:	ItemName="to/Axis_1.positioningState.actualPosition"

Note

The names of the system variables and technology object system variables to be used can be found in the online help for SIMOTION SCOUT in "System Functions, System Variables and Configuration Data".

For unit variables in the interface, the **ItemName** syntax is:

	ItemName=" unit/name.variable"
Example:	ItemName=" unit/prog_1.var_1"

Note

The names to be used for the unit variables in the interface correspond to the program and variable names **in lower case characters**.

4.6.2.2 Accessing technology object configuration data (V4.1 and higher)

For **technology object configuration data**, the **ItemName** syntax is:

ItemName="cfg/TOName.activeConfigData|setConfigData.variable"

activeConfigData: Currently valid configuration files, read-only setConfigData: Data set image, write access possible

The data can be write-accessed if the "effectiveness" property has the "CHANGEABLE_WITH_RESTART" or "CHANGEABLE_WITHOUT_RESTART" value.
In the case of "CHANGEABLE_WITH_RESTART," the change does not take effect until the respective technology object has been restarted.

Example: ItemName="cfg/Axis_0.setConfigData.Restart.restartActivationSetting"

Note

The names of the TO configuration data to be used can be found in the online help for SIMOTION SCOUT in "System Functions, System Variables and Configuration Data".

4.6.2.3 Accessing drive parameters (V4.1 and higher)

For **drive parameters**, the **ItemName** syntax is:

ItemName="drv/TOName|LogAddr.Params.ParamNo"

TOName: Specifies the technology object name (possible if an Axis technology object exists for the drive object)

LogAddr: Specifies the logical drive address

ParamNo: Parameter number

If an attempt is made to write-access a read-only drive variable, the drive issues a feedback message (error code) to this effect.

Example 1: ItemName="drv/Axis_0.Params.105"

Example 2: ItemName="drv/256.Params.5"

4.6.2.4 Accessing technological alarms (V4.1 and higher)

For **technological alarms**, the **ItemName** syntax is:

ItemName="dev/Alarm.Variable|Values-Array

Variable:

- State
  Status of query:
  READY
  BUSY
  ERROR
- Version
  Incremented each time the alarm buffer is modified. By entering this variable in a subscription, you can be notified each time a change is made to the alarm buffer.
- EventCount
  Number of currently pending alarms
- QuitAll
  Acknowledges all pending alarms

Values array: Array with the currently pending alarms

This array contains as many elements as are entered in EventCount.

Example: ItemName="dev/Alarm.Version"

For a currently pending alarm, the **ItemName** syntax is:

ItemName="dev/Alarm.Values[ValueNumber].ArrayElement"

ValueNumber: Index of an alarm in the list of currently pending technological alarms

ArrayElement:

- AlarmNo
  Alarm number
- To
  Name the technology object that generated the alarm
- Time
  Time of the alarm entry
- Text
  Alarm text
- Quit
  Acknowledges the alarm
- Type
  Classification of the technological alarm:
  ALARM
  WARNING
  INFORMATION

Example: ItemName="dev/Alarm.Values[0].AlarmNo"

4.6.2.5 Changing the operating mode (V4.1 and higher)

For setting the operating mode, the **ItemName** syntax is:

ItemName="dev/Service.BZU.Variable"

Variable:
- Value
  Writing one of the following values changes the operating mode accordingly:
  - STOP
  - STOPU
  - RUN
- State
  Displays the execution states during an operating mode change
  The states change from IDLE to ACTIVE to READY.
- Result
  Shows the result of the operating mode change (when State = READY)
  Result = OK if the operating mode has been changed successfully. Otherwise, Result = Error ID

Example: ItemName="dev/Service.BZU.Value"

4.6.2.6 RamToRom (V4.1 and higher)

For execution of **RamToRom**, the **ItemName** syntax is:

ItemName="dev/Service.RamToRom.Variable"

Variable:
- Value
  Save operation starts with Value = 0
- State
  Displays the status of the save operation
  The display starts with 0% and continues to 100%.
- Result
  Shows the result of the save operation (when State = 100%)
  Result = OK if the save operation has been completed successfully. Otherwise, Result = Error ID

Example: ItemName=" dev/Service.RamToRom.Value"

Note

Ram ToRom only works with the configuration data. System variables have their download value again after a 'Power on/off.'

4.6.2.7 ActiveToRam (V4.1 and higher)

For execution of **ActiveToRam** (after changing the configuration data), the **ItemName** syntax is:

ItemName="dev/Service.ActToRam.Variable"

Variable:

- Value
  Save operation starts with Value = 0
- State
  Displays the status of the save operation
  The display starts with 0% and continues to 100%.
- Result
  Shows the result of the save operation (when State = 100%)
  Result = OK if the save operation has been completed successfully. Otherwise, Result = Error ID

Example: ItemName=" dev/Service.ActToRam.Value"

4.6.2.8 Accessing the global variables (V4.2 and higher)

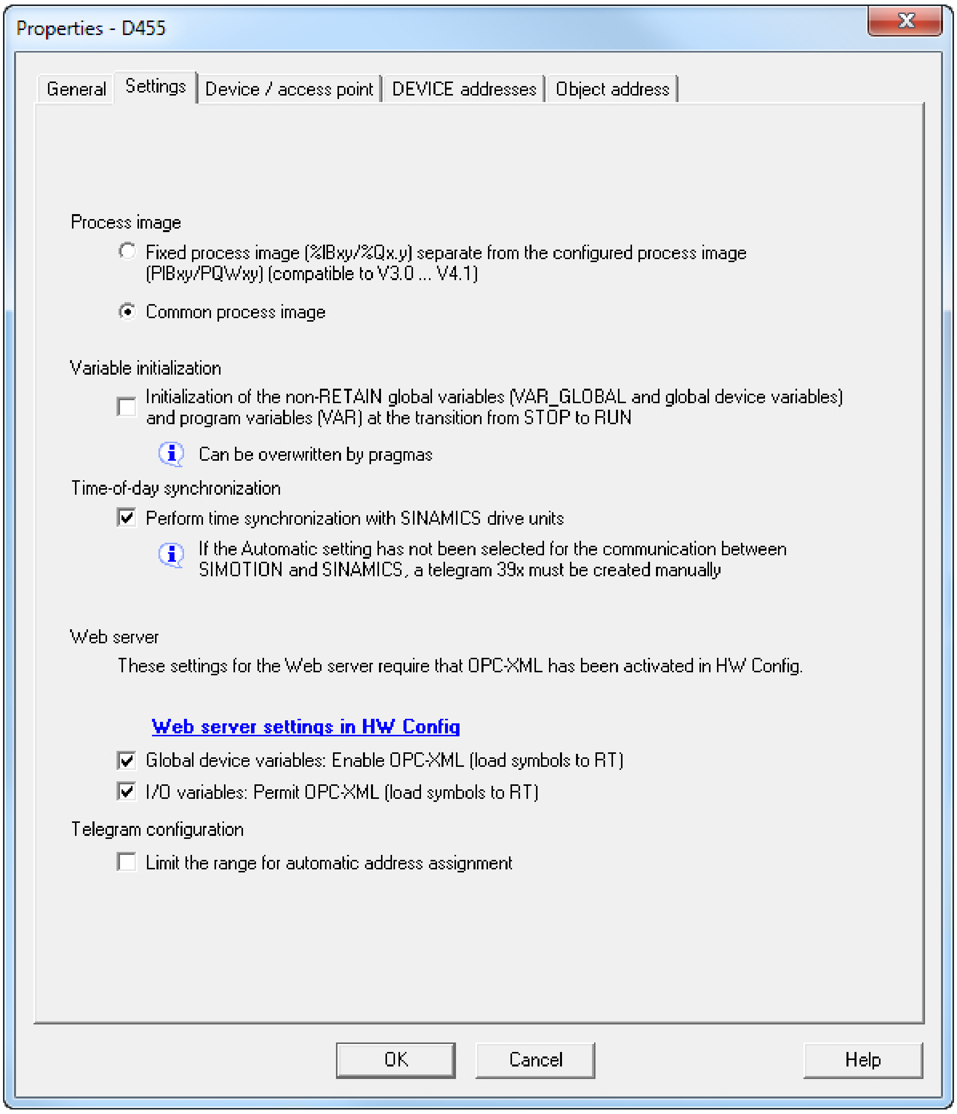
The way to access the control's "global device variables" created by the user in SCOUT is via / glo/.

For the **global device variables**, the **ItemName** syntax is:

ItemName="glob/name"

To make these variables visible, the symbol information must be

downloaded to the control. For this purpose, the relevant checkmark must be made under **Device > Properties > Settings** in SCOUT.



Properties - D455

Process image

○ Fixed process image (%IBxy/%Qx.y) separate from the configured process image (PIBxy/PQWxy) (compatible to V3.0 ... V4.1)

● Common process image

Variable initialization

□ Initialization of the non-RETAIN global variables (VAR_GLOBAL and global device variables) and program variables (VAR) at the transition from STOP to RUN

Can be overwritten by pragmas

Time-of-day synchronization

☑ Perform time synchronization with SINAMICS drive units

If the Automatic setting has not been selected for the communication between SIMOTION and SINAMICS, a telegram 39x must be created manually

Web server

These settings for the Web server require that OPC-XML has been activated in HW Config.

Web server settings in HW Config

☑ Global device variables: Enable OPC-XML (load symbols to RT)

☑ I/O variables: Permit OPC-XML (load symbols to RT)

Telegram configuration

□ Limit the range for automatic address assignment

Figure 4-80 SCOUT setting global variables

4.6.2.9 Accessing the IO variables (V4.2 and higher)

There are three different ways to access the address list of the control's I/O variables that have been created in SCOUT:

- /io/_direct/
  addresses the direct I/O access (current value) of the I/O variables.
  This form of access is offered for all I/O variables.
- /io/_image/
  Addresses the process image of I/O variables.
  Only the I/O variables assigned to a process image are displayed. This applies for I/O variables in the address range 0 to 63 that are accessed via PI... /PQ... I/O variables in this address range that are accessed with %I... /%Q... cannot be displayed via /io/_image.
  All I/O variables outside the address range of 0-63 that are explicitly assigned to a process image in the address list are also displayed.
- /io/_quality/
  addresses the quality of I/O variables, i.e. the I/O status of the subslot (from HW Config) which contains this I/O variable.
  This is a 32-bit pattern. An overview of the possible bit pattern values can be found in the *SIMOTION ST Structured Text* manual, in the section entitled 'Access to I/O variables (as of V4.2)'.
  The quality is the same for all I/O variables in a subslot. The quality is given as an integer for the individual I/O variables of the basic data types (BIT, BYTE, WORD, DWORD) and for arrays. It is not given for array elements (i.e. arrays cannot be expanded).

For the IO **variables**, the **ItemName** syntax is:

ItemName="io/_direct|_image|_quality/name"

The symbol information must be loaded to the control in order to make these variables visible. For this purpose, the relevant checkmark must be made under **Device > Properties > Settings** in SCOUT.

4.6.2.10 Accessing the AlarmS messages (V4.2 and higher)

How to access the AlarmS messages created by the user in SCOUT and triggered by the control.

For the **AlarmS messages**, the **ItemName** syntax is:

ItemName="dev/Alarm.Values[ValueNumber].ArrayElement"

ValueNumber:	Index of an alarm in the list of currently pending technological alarms

ArrayElement:

- AlarmNo
  Alarm number
- AddInfo
  Additional information
- Time
  Time of AlarmS entry
- Text
  AlarmS text
- Quit
  Acknowledgement of AlarmS
- Type
  S / SQ

Example: ItemName="dev/Alarm.Values[0].AlarmNo"

4.6.3 SIMOTION diagnostics

4.6.3.1 Introduction

Access to diagnostics variables

The diagnostics variables of a SIMOTION control can be accessed via the "SIMOTION diagnostics" provider.

Most of the variables have read-only access and a few (e.g. operating mode) also have write access. All variables are of the string type. Therefore, numerical values are converted into strings by the provider.

The variable management area is dynamic and depends on the current configuration of the SIMOTION control. The provider supports browsing via OPC XML DA V1.0, meaning that the current variable management area can be viewed.

Variables groups of the "SIMOTION diagnostics" provider

The diagnostics variables of the "SIMOTION diagnostics" provider are combined into groups.

A variable name is made up of the group name and variable name:

For example: Group.Variable

4.6.3.2 DeviceInfo group

General information on the SIMOTION device

The DeviceInfo group contains general information on the SIMOTION device. The 10 variables of this group are always available.

Table 4-11 Variables of the DeviceInfo group

Variable	Description
DeviceInfo.Board	Specifies the system being used, read only
DeviceInfo.License-Serial-No	License serial number for this device, read-only
DeviceInfo.BZU	Access to the operating state, read and write, valid values for writing: STOP, STOPU, RUN
DeviceInfo.Systemtime	Access to the system time, read and write, the time must always be specified as in the following example: "Tue Aug 05 17:00:00 2003"; no other formats are accepted.
DeviceInfo.Timezone	Time offset in minutes, read and write, valid values are -720 to +720
DeviceInfo.Active-MAC	Active MAC address, read-only
DeviceInfo.Remanent-MAC	Retentive MAC address, read-only
DeviceInfo.IP-Address-0, …-1, -2, -3	IP configuration data (address, subnet mask and gateway), read-only
DeviceInfo.Subnet-Mask	
DeviceInfo.Gateway	

Additional variables of the DeviceInfo group

The following variables supply HTML color values ("#XXXXXX") which correspond to the colors of the DC5V, RUN, STOPU, and STOP LEDs of the SIMOTION device. It is, therefore, possible to display the operating mode as "traffic light information" via an HTML table (by means of the "background" attribute in the cells), for example, similar to the display in SIMOTION SCOUT, as for "Operating mode ..."

Access to these values is read-only.

Table 4-12 Variables of the DeviceInfo group

Variable	Description
DeviceInfo.LEDColor.DC5V	Color for the DC5V LED; as the server can only be addressed when a voltage is applied, the corresponding HTML color is always green ("#00FF00")
DeviceInfo.LEDColor.RUN	Color for the RUN LED; green in the RUN operating mode ("#00FF00"), otherwise gray ("#C0C0C0")
DeviceInfo.LEDColor.STOPU	Color for the STOPU LED; amber in the STOPU operating mode ("#FF9900"), otherwise gray ("#C0C0C0")
DeviceInfo.LEDColor.STOP	Color for the STOP LED; amber in the STOP operating mode ("#FF9900"), otherwise gray ("#C0C0C0")

4.6.3.3 CompInfo group

This group supplies information about the components of the device. The number of variables varies in this group depending on the number of technology packages or additional hardware components.

Access to all variables is read-only.

Information on the CPU

The following variables supply information on the CPU:

Table 4-13 Variables of the CompInfo group

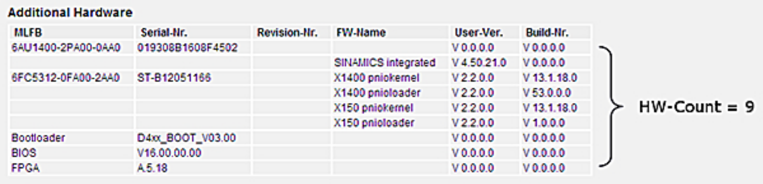
Variable	Description
CompInfo.Cpu.MLFB	CPU MLFB / order number
CompInfo.Cpu.Serial-Nr	CPU serial number
CompInfo.Cpu.Revision-Nr	Revision number
CompInfo.Cpu.Kernelname	Kernel name
CompInfo.Cpu.Build-Nr	Build number
CompInfo.Cpu.User-Version	User version (firmware)

Information on the technology packages (TPs) and hardware

The number of available TPs or hardware components can be determined with the following variables.

Table 4-14 Variables of the CompInfo group

Variable	Description
CompInfo.TP-Count	Number of available technology packages
CompInfo.HW-Count	Number of components from HW Config without TPs and CPU itself, => quantity of additional hardware on DeviceInfo.mcs



Additional Hardware

MLFB	Serial-Nr.	Revision-Nr.	FW-Name	User-Ver.	Build-Nr.
6AU1400-2PA00-0AA0	019308B1608F4502			V 0.0.0.0	V 0.0.0.0
			SINAMICS integrated	V 4.50.21.0	V 0.0.0.0
6FC5312-0FA00-2AA0	ST-B12051166		X1400 pniokernel	V 2.2.0.0	V 13.1.18.0
			X1400 pnioloader	V 2.2.0.0	V 53.0.0.0
			X150 pniokernel	V 2.2.0.0	V 13.1.18.0
			X150 pnioloader	V 2.2.0.0	V 1.0.0.0
Bootloader	D4xx_BOOT_V03.00			V 0.0.0.0	V 0.0.0.0
BIOS	V16.00.00.00			V 0.0.0.0	V 0.0.0.0
FPGA	A5.18			V 0.0.0.0	V 0.0.0.0

Figure 4-81 Example of CompInfo.HW-Count

If TPs are available, information on the individual TPs can be obtained with CompInfo.TPx.Variable-Name (whereby x stands for the TP number).

The first TP is allocated the number 1 (not 0), for example: CompInfo.TP1.Name

The following information is available:

Table 4-15 Variables of the CompInfo group

Variable	Description
CompInfo.TPx.Name	Name of the TP
CompInfo.TPx.User-Version	User version of the TP
CompInfo.TPx.Build-No	Build number of the TP

If additional hardware components are available, information on the individual hardware components can be obtained with CompInfo.HWx.Variable-Name (whereby x stands for the HW number).

The first hardware component is allocated the number 1 (not 0), for example: CompInfo.HW1.MLFB

The following information is available:

Table 4-16 Variables of the CompInfo group

Variable	Description
CompInfo.HWx.MLFB	MLFB / order number
CompInfo.HWx.Serial-No	Serial number
CompInfo.HWx.Revision-No	Revision number
CompInfo.HWx.Firmwarename	Firmware name
CompInfo.HWx.Build-No	Build number
CompInfo.HWx.User-Version	User version

As the information is dynamic and the scope is not known beforehand, the following variables also exist to simplify the display of hardware components and TPs in HTML:

Table 4-17 Variables of the CompInfo group

Variable	Description
CompInfo.TableHead.TP	Supplies the header of an HTML table with all the information about the TPs, e.g. "<tr><th>TP Name</th><th>User Ver.</th><th>Build No.</th></tr>"
CompInfo.Table.TP	Supplies an HTML table with all the information about all the available TPs
CompInfo.TableHead.HW	Supplies the header of an HTML table with all the information about the hardware components, e.g. " <tr><th>MLFB</th><th>Serial No.</th><th>Revision No.</th><th>Firmware Name</th><th>User Ver.</th><th>Build No.</th></tr> "
CompInfo.Table.HW	Supplies an HTML table with all the information about all the available hardware components

Note

Separate access to the table and the table header enables separate formatting.

4.6.3.4 CPULoad group

Information on CPU load

The CPULoad group supplies information on the load of the CPU. Access to all variables is read-only.

Table 4-18 Variables of the CPULoad group

Variable	Description
CPULoad.Percent	CPU load in percent
CPULoad.Mintime	Minimum runtime of the BackgroundTask (free cycle) in ms with 5 decimal places
CPULoad.Acttime	Actual runtime of the BackgroundTask (free cycle) in ms with 5 decimal places
CPULoad.Maxtime	Maximum runtime of the BackgroundTask (free cycle) in ms with 5 decimal places

4.6.3.5 MemoryLoad group

Information on memory load

The MemoryLoad group provides information about the load on memory devices in bytes or as a percentage. Variables can only be accessed in read-only mode.

Table 4-19 Variables of the MemoryLoad group

Variable	Description
MemoryLoad.Flash-Size	Size of the Flash memory
MemoryLoad.Flash-Used	Currently occupied flash memory
MemoryLoad.RAM-Size	Size of the RAM
MemoryLoad.RAM-Used	Currently occupied RAM
MemoryLoad.RAMDisk-Size	Size of the RAM disk
MemoryLoad.RAMDisk-Used	Currently occupied RAM disk memory
MemoryLoad.Remanent-Size	Size of the retentive memory
MemoryLoad.Remanent-Used	Currently occupied retentive memory.
MemoryLoad.Flash-Percent	Percentage of external Flash memory used
MemoryLoad.RAM-Percent	Percentage of RAM memory used
MemoryLoad.RAMDisk-Percent	Percentage of RAM disk used
MemoryLoad.Remanent-Percent	Percentage of internal Flash memory used

4.6.3.6 TaskRT group

Variables of the TaskRT group

The TaskRT group supplies information about the task runtimes and the task states of the SIMOTION device. The same values are supplied as in the SIMOTION SCOUT under device diagnostics, task runtimes. Access to all values is read-only. The number of variables varies and depends on the current configuration of the execution system in SIMOTION SCOUT.

Table 4-20 Variables of the TaskRT group

Variable	Description
TaskRT.TaskCnt	Supplies the number of currently available tasks

Task names

The following information can be obtained for the individual tasks via TaskRT.Taskname.Variable-Name. The tasks have the same name in SIMOTION IT and SCOUT .

The same information can be obtained for every task; here is an example of the first MotionTask.

Example:

TaskRT.MotionTask_1.Status

Current task status, can be an appropriate combination of the following values: STOP_PENDING, STOPPED, RUNNING, STOP_UNCOND, WAITING, SUSPENDED, WAITING_FOR_NEXT_CYCLE, WAITING_FOR_NEXT_INTERRUPT, LOCKED, SUSPENDED_BY_DEBUG_MODE

Additional variables of the TaskRT group

Table 4-21 Variables of the TaskRT group

Variable	Description
TaskRT.MotionTask_1.Actual	Current runtime of the task in ms, with 5 decimal places
TaskRT.MotionTask_1.Min	Minimum runtime of the task in ms, with 5 decimal places
TaskRT.MotionTask_1.Max	Maximum runtime of the task in ms, with 5 decimal places
TaskRT.MotionTask_1.Average	Average runtime of the task in ms, with 5 decimal places

As the information is dynamic and the scope is not known beforehand, the following variables also exist to simplify the display of task information in HTML:

Table 4-22 Variables of the TaskRT group

Variable	Description
TaskRT.TableHead	Supplies the header of an HTML table with all the information about the tasks, e.g. " <tr><th>Taskname</th><th>Status</th> <th>Actual</th><th>Min</th><th>Max</th> <th>Average</th></tr> "
TaskRT.Table	Supplies an HTML table with all the information about the available tasks; all runtime values are entered with the unit as, unlike the individual value query, they can vary between s and ms. Three decimal places are displayed.

4.6.3.7 DiagBuffer group

The DiagBuffer group supplies information about the events in the DiagBuffer . Access to all variables is read-only.

Events can be output in English, French, German, Italian, and Spanish text.

Requirements

Text is output in English by default. To display event text in a different language, a file in the relevant language must be downloaded to the SIMOTION control memory card.

Language	File name
English	DGBUFTXT-EN.EDB
German	DGBUFTXT-DE.EDB
French	DGBUFTXT-FR.EDB
Italian	DGBUFTXT-IT.EDB
Spanish	DGBUFTXT-ES.EDB

Language-specific file names of the DiagBuffer texts

Procedure

1. Open the \3_Diag_Buf_Messages\Diag_Buf_Messages directory on the SIMOTION IT DVD.
2. Insert the SIMOTION control memory card in a reader/writer.
3. Copy the DGBUFTXT-XX.EDB file for the required language into the \USER\SIMOTION \HMICFG directory. You must create the directory if it does not already exist.
4. Insert the memory card in the SIMOTION device again.

Procedure for the SIMOTION P350

1. Shut down the SIMOTION P control.
2. Open the AddOn\4_Accessories\SIMOTION_IT\3_Diag_Buf_Messages \Diag_Buf_Messages directory on the SIMOTION SCOUT Add-Ons DVD.

3. Copy the DGBUFTXT-XX.EDB file for the required language to the F:\SIMOTION\USER \CARD\USER\SIMOTION\HMICFG directory (for the default installation).
4. Start the SIMOTION P control.

Procedure for the SIMOTION P320

1. Shut down the SIMOTION P control.
2. Open the AddOn\4_Accessories\SIMOTION_IT\3_Diag_Buf_Messages \Diag_Buf_Messages directory on the SIMOTION SCOUT Add-Ons DVD.
3. Copy the DGBUFTXT-XX.EDB file for the required language to the D:\Card\USER \SIMOTION\HMICFG directory (for the default installation).
4. Start the SIMOTION P control.

Note

Only one language can be stored on the SIMOTION control at any given time.

On delivery and following a firmware update, the English version will be present on the device in all cases.

For reasons of compatibility, a DGBUFTXT.EDB file is recognized, even if no DGBUFTXT-XX.EDB file is found. If both files are present, priority is given to DGBUFTXT-XX.EDB.

Variables of the DiagBuffer group

The following variables are available for enhancing the display:

Table 4-23 Variables of the DiagBuffer group

Variable	Description
DiagBuffer.TableHead	Supplies the header of an HTML table with all events. The contents are: <tr><th>Nr</th><th>Time</th><th>Date</th><th>Event</th></tr>
DiagBuffer.Table	Supplies the contents of an HTML table with all events. The structure of each row is as follows: <tr><td>NUMBER</td><td>TIME</td><td>DATE</td><td>EVENT</td></tr> **Note:** The NUMBER, TIME, DATE , and EVENT texts specified in this format are replaced with the corresponding value of each event.
DiagBuffer.ExtendedTable	Supplies the contents of the HTML table with all events, including the extended entries displayed via the Info button.

Variable	Description
DiagBuffer.ExtendedBufferJScript	Supplies the dynamically generated JavaScript fragment required to display the table.
DiagBuffer.LText[]	Supplies an array that enables access to the entire text of the diagnostics buffer entry. The index matches the index of the diagnostics buffer entry. The individual elements of a diagnostics buffer entry (time, date, text, extended entry text) are separated by "/@@/".

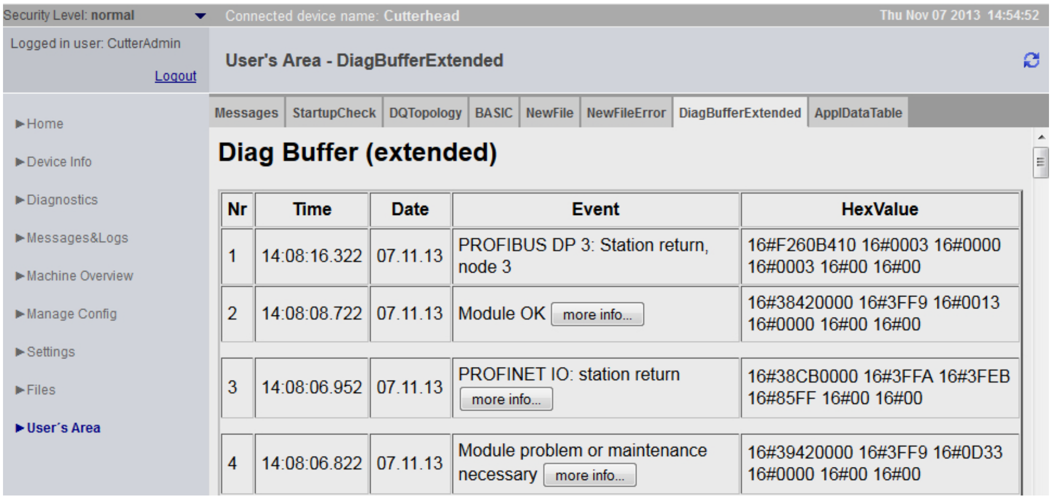
The following variables can be used for direct access to the data of certain events in the diagnostics buffer:

Table 4-24 Variables of the DiagBuffer group - direct access

Variable	Description
DiagBuffer.EventCnt	Number of events currently in the diagnostics buffer
DiagBuffer.CplEventCnt	Event counter beyond the circular buffer limit During ramp-up, the buffer is initialized with the current number of diagnostics buffer entries. Each time an entry is made, the value is incremented, even beyond the maximum number of diagnostics buffer entries.
DiagBuffer.Time_1 bis DiagBuffer.Time_n	Time of each event
DiagBuffer.Date_1 bis DiagBuffer.Date_n	Date of each event
DiagBuffer. Text_1 bis DiagBuffer.Text_n	Text of each event **Note:** If the event text number and its parameters cannot be resolved, the number and parameters are output in HEX format. The variable in HEX format is a string of 20 hexadecimal characters (without separators).

Example of an HTML page

```
<html>
 <head>
  <title>SIMOTION <%=DeviceInfo.Board%> - Diagnostics</title>
  <script type="text/javascript">
   <%=DiagBuffer.ExtendedBufferJScript%>
  </script>
 </head>
 <body style="font-family: Arial">
  <h2>Diag Buffer (extended)</h2>
  <table border="2" cellspacing="1" cellpadding="5">
   <font size="4">
    <%=DiagBuffer.TableHead%>
    <%=DiagBuffer.ExtendedTable%>
   </font>
  </table>
 </body>
</html>
```



Diag Buffer (extended)

Nr	Time	Date	Event	HexValue
1	14:08:16.322	07.11.13	PROFIBUS DP 3: Station return, node 3	16#F260B410 16#0003 16#0000 16#0003 16#00 16#00
2	14:08:08.722	07.11.13	Module OK more info...	16#38420000 16#3FF9 16#0013 16#0000 16#00 16#00
3	14:08:06.952	07.11.13	PROFINET IO: station return more info...	16#38CB0000 16#3FFA 16#3FEB 16#85FF 16#00 16#00
4	14:08:06.822	07.11.13	Module problem or maintenance necessary more info...	16#39420000 16#3FF9 16#0D33 16#0000 16#00 16#00

Figure 4-82 Example code result

4.6.3.8 DiagBufferDrv group

The DiagBufferDrv group provides information about the drive diagnostics buffer. Access to all variables is read-only.

Variables of the DiagBufferDrv group

Variable	Description
DiagBufferDrv.TableHead	Supplies the header of an HTML table with all events. The contents are: <tr><th>Nr</th><th>Time</th><th>Date</th><th>Event</th></tr>
DiagBufferDrv.Table	Supplies the contents of an HTML table with all events. The structure of each row is as follows: <tr><td>NUMBER</td><td>TIME</td><td>DATE</td><td>EVENT</td></tr> **Note:** The NUMBER, TIME, DATE , and EVENT texts specified in this format are replaced with the corresponding value of each event.
DiagBufferDrv.ExtendedTable	Supplies the contents of the HTML table with all events, including the extended entries displayed via the Info button.
DiagBufferDrv.ExtendedBufferJScript	Supplies the dynamically generated JavaScript fragment required to display the table.
DiagBufferDrv.LText[]	Supplies an array that enables access to the entire text of the diagnostics buffer entry. The index matches the index of the diagnostics buffer entry. The individual elements of a diagnostics buffer entry (time, date, text, extended entry text) are separated by "/@@/".

The following variables can be used for direct access to the data of certain events in the drive diagnostics buffer:

Table 4-25 Variables of the DiagBufferDrv group - direct access

Variable	Description
DiagBufferDrv.EventCnt	Number of events currently in the drive diagnostics buffer
DiagBufferDrv.CplEventCnt	Event counter beyond the circular buffer limit During ramp-up, the counter is initialized with the current number of drive diagnostics buffer entries. Each time an entry is made, the value is incremented, even beyond the maximum number of drive diagnostics buffer entries.
DiagBufferDrv.Time[1] bis DiagBufferDrv.Time[n]	Time of each event
DiagBufferDrv.Date[1] bis DiagBufferDrv.Date[n]	Date of each event
DiagBufferDrv. Text[1] bis DiagBufferDrv.Text[n]	Text of each event **Note:** If the event text number and its parameters cannot be resolved, the number and parameters are output in HEX format. The variable in HEX format is a string of 20 hexadecimal characters (without separators).

4.6.3.9 Alarms group

Information about alarm table

The Alarms group provides information about the pending alarms. Access to all variables is read-only.

Table 4-26 Variables of the Alarms group

Variable	Description
Alarms.AlarmCnt	Number of alarms
Alarms.Table	HTML table with all pending alarms
Alarms.TableHead	Table header for the HTML table of pending alarms
Alarms.TableHeadBuffer	HTML table (header only) of the alarm buffer
Alarms.TableHeadUser	HTML table (header only) of the AlarmS
Alarms.TableBodyBuffer	HTML table (content only) of the alarm buffer
Alarms.TableBodyUser	HTML table (content only) of the AlarmS
Alarms.TableBuffer	HTML table of the alarm buffer
Alarms.UserAlarmCnt	Number of AlarmS

4.6.3.10 AlarmsDrv group

Information about drive alarm table

The AlarmsDrv group provides information about the active drive alarms. Access to all variables is read-only.

Table 4-27 Variables of the AlarmsDrv group

Variable	Description
AlarmsDrv.AlarmCnt	Number of drive alarms
AlarmsDrv.AlarmDsc	JavaScript Code for the standard page **Alarms drive**
AlarmsDrv.Table	HTML table with all active drive alarms
AlarmsDrv.TableHead	Table header for the HTML table of active drive alarms

4.6.3.11 ActiveTraces group

Variables of the ActiveTraces group

The ActiveTraces group returns the number of active traces and a list of the active traces. Access to all variables is read-only.

Table 4-28 Variables of the ActiveTraces group

Variable	Description
ActiveTraces.TraceCnt	Number of active traces
ActiveTraces.TableHead	Supplies the header of an HTML table with all active traces. The contents are: <tr><th>Name</th><th>State</th></tr>
ActiveTraces.Table	Supplies the contents of an HTML table with all active traces. The structure of each row is as follows: <tr><td>NAME</td><td>STATE</td></tr> **Note:** The NAME and STATE placeholders specified in the format are replaced with the corresponding value of each trace.

4.6.3.12 Watch group

Variables of the Watch group

The Watch group provides access to saved watch tables. Access to all variables is read-only.

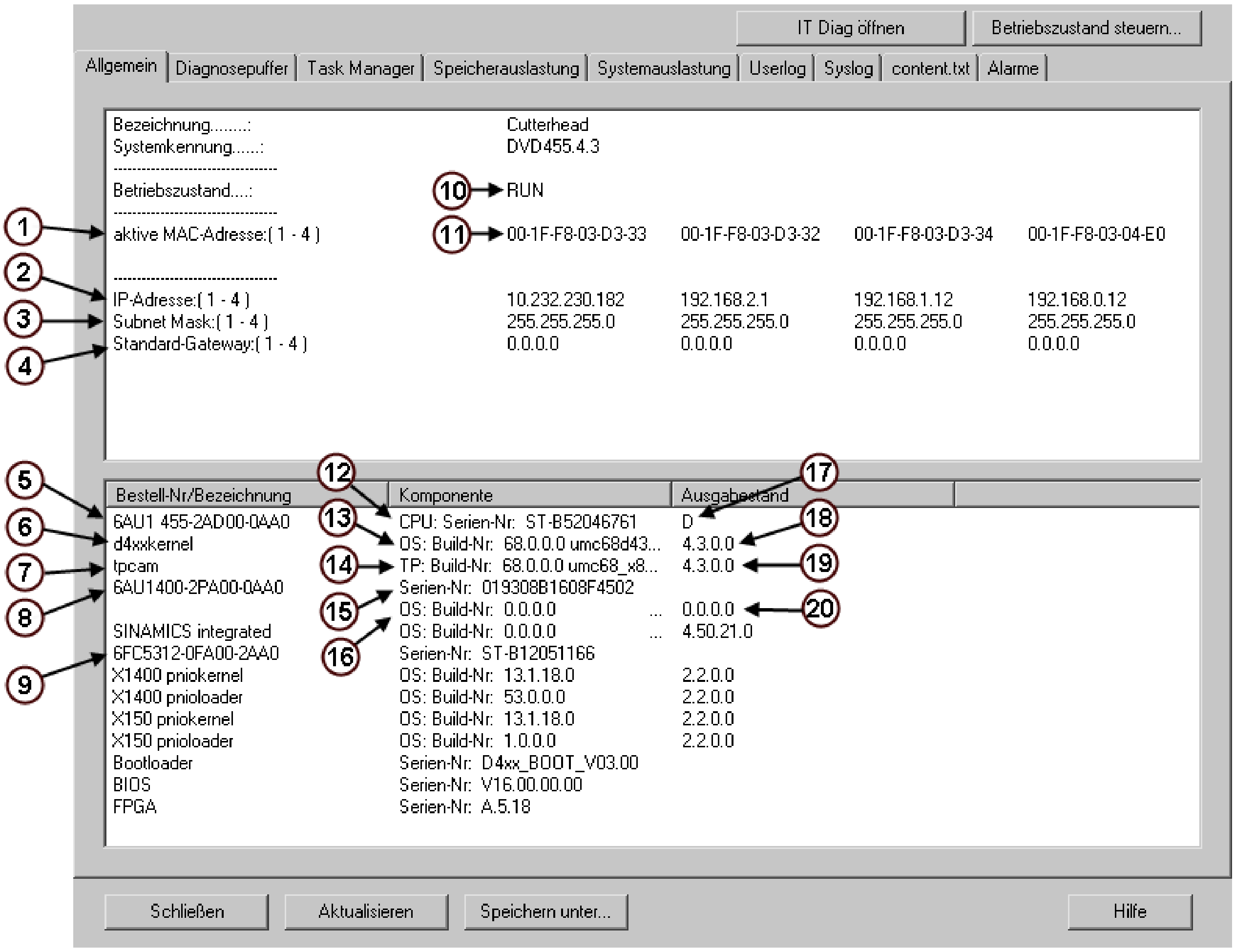
Table 4-29 Variables of the Watch group

Variable	Description
Watch.TableNames	List of watch table names separated by commas
Watch.TableHead	Table header for the HTML table of a watch table
Watch.TablesCount	Number of watch tables
Watch.Tables.*TableName*.csv	Exports the specified watch table (*TableName*) as CSV file
Watch.Tables.*TableName*.xml	Exports the specified watch table (*TableName*) as an XML file for transfer to other controls
Watch.Tables.*TableName*.html	Provides the specified watch table (*TableName*) in HTML format

4.6.3.13 Comparison with the device diagnostics of SIMOTION SCOUT

Comparison with device diagnostics in SIMOTION SCOUT

The variables described in this chapter are based on the view of the device diagnostics in SIMOTION SCOUT. The following figures show the connection between the "SIMOTION diagnostics" variables and the device diagnostics in SIMOTION SCOUT.



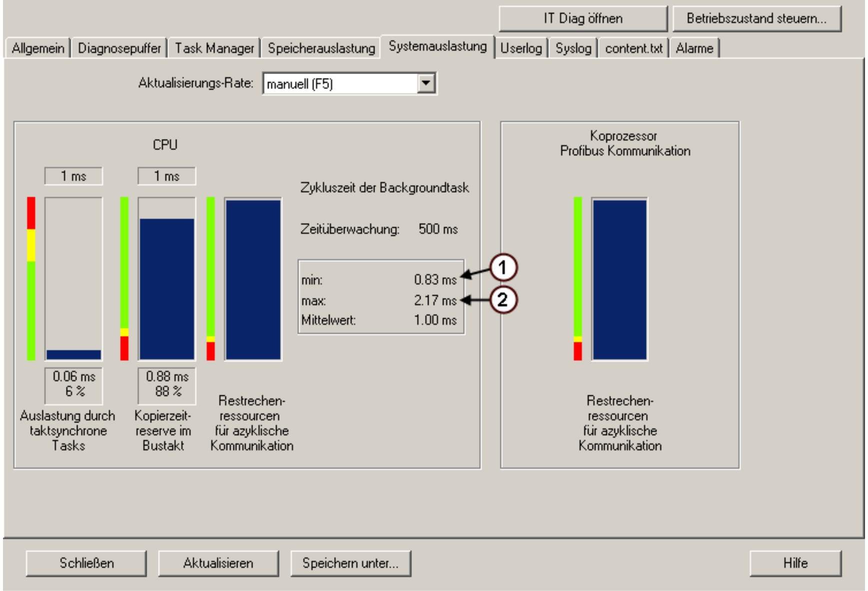
```
Bezeichnung........:                Cutterhead
Systemkennung......:                DVD455.4.3
--------------------------------
Betriebszustand....:                RUN
--------------------------------
aktive MAC-Adresse:( 1 - 4 )        00-1F-F8-03-D3-33   00-1F-F8-03-D3-32   00-1F-F8-03-D3-34   00-1F-F8-03-04-E0

--------------------------------
IP-Adresse:( 1 - 4 )                10.232.230.182      192.168.2.1         192.168.1.12        192.168.0.12
Subnet Mask:( 1 - 4 )               255.255.255.0       255.255.255.0       255.255.255.0       255.255.255.0
Standard-Gateway:( 1 - 4 )          0.0.0.0             0.0.0.0             0.0.0.0             0.0.0.0
```

```
Bestell-Nr/Bezeichnung    Komponente                          Ausgabestand
6AU1 455-2AD00-0AA0       CPU: Serien-Nr:  ST-B52046761       D
d4xxkernel                OS: Build-Nr:  68.0.0.0 umc68d43... 4.3.0.0
tpcam                     TP: Build-Nr:  68.0.0.0 umc68_x8... 4.3.0.0
6AU1400-2PA00-0AA0        Serien-Nr:  019308B1608F4502
                          OS: Build-Nr:  0.0.0.0          ... 0.0.0.0
SINAMICS integrated       OS: Build-Nr:  0.0.0.0          ... 4.50.21.0
6FC5312-0FA00-2AA0        Serien-Nr:  ST-B12051166
X1400 pniokernel          OS: Build-Nr:  13.1.18.0            2.2.0.0
X1400 pnioloader          OS: Build-Nr:  53.0.0.0             2.2.0.0
X150 pniokernel           OS: Build-Nr:  13.1.18.0            2.2.0.0
X150 pnioloader           OS: Build-Nr:  1.0.0.0              2.2.0.0
Bootloader                Serien-Nr:  D4xx_BOOT_V03.00
BIOS                      Serien-Nr:  V16.00.00.00
FPGA                      Serien-Nr:  A.5.18
```

Figure 4-83 "General" device diagnostics

1	DeviceInfo.Active-MAC	11	DeviceInfo.IP-Address-0, …-1, -2, -3
2	DeviceInfo.IP-Address-0, …-1, -2, -3	12	CompInfo.Cpu.Serial-Nr
3	DeviceInfo.Subnet-Mask	13	CompInfo.Cpu.Build-Nr
4	DeviceInfo.Gateway	14	CompInfo.TP1.Build-Nr
5	CompInfo.Cpu.MLFB	15	CompInfo.HW1.Serial-Nr
6	CompInfo.Cpu.Kernelname	16	CompInfo.HW1.Build-Nr
7	CompInfo.TP1.Name	17	CompInfo.Cpu.Revision-Nr
8	CompInfo.HW1.Firmwarename	18	CompInfo.Cpu.User-Version

9	CompInfo.HW2.Firmwarename	19	CompInfo.TP1.User-Version
10	DeviceInfo.BZU	20	CompInfo.Cpu.HW1.User-Version



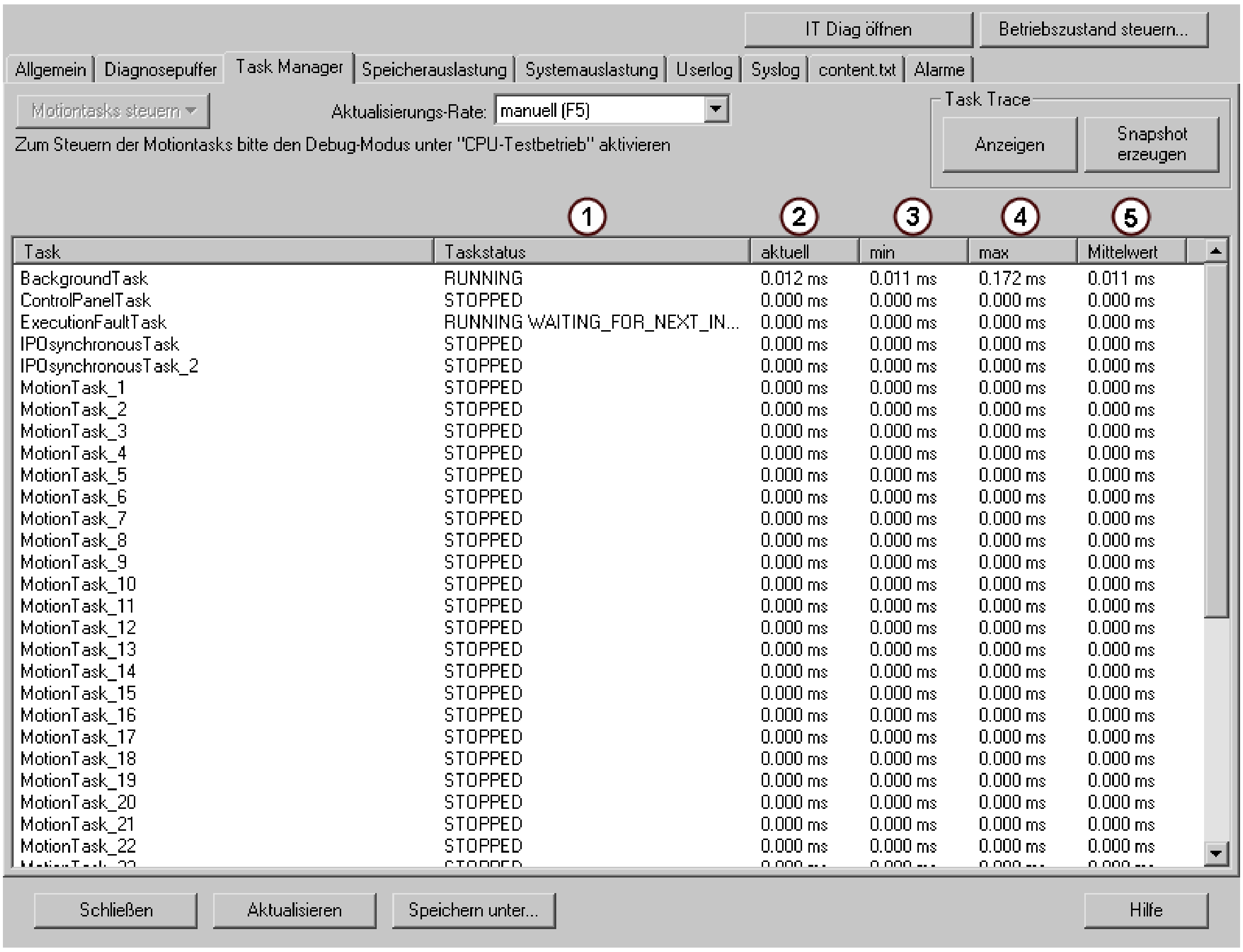
Aktualisierungs-Rate: manuell (F5)

Zeitüberwachung: 500 ms

min: 0.83 ms
max: 2.17 ms
Mittelwert: 1.00 ms

Figure 4-84 "System load" device diagnostics

1	CPULoad.Mintime
2	CPULoad.Maxtime



Aktualisierungs-Rate: manuell (F5)

Zum Steuern der Motiontasks bitte den Debug-Modus unter "CPU-Testbetrieb" aktivieren

Task	Taskstatus	aktuell	min	max	Mittelwert
BackgroundTask	RUNNING	0.012 ms	0.011 ms	0.172 ms	0.011 ms
ControlPanelTask	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
ExecutionFaultTask	RUNNING WAITING_FOR_NEXT_IN...	0.000 ms	0.000 ms	0.000 ms	0.000 ms
IPOsynchronousTask	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
IPOsynchronousTask_2	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_1	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_2	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_3	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_4	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_5	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_6	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_7	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_8	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_9	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_10	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_11	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_12	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_13	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_14	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_15	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_16	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_17	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_18	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_19	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_20	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_21	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms
MotionTask_22	STOPPED	0.000 ms	0.000 ms	0.000 ms	0.000 ms

Figure 4-85 "Task runtimes" device diagnostics

1	TaskRT.MotionTask_11.Status
2	TaskRT.MotionTask_11.Actual
3	TaskRT.MotionTask_11.Min
4	TaskRT.MotionTask_11.Max
5	TaskRT.MotionTask_11.Average

4.6.4 UserConfig

4.6.4.1 User-defined variables

The user-defined variables can be declared in the WebCfg.xml file and read in the variable provider. Inside the WebCfg.xml, the user-defined variables are created in the `<CONFIGURATION_DATA>` tag (Page 172).

For the **variable provider**, the **ItemName** syntax is:

Some constant variables are preinstalled in SIMOTION IT:

Name	Type	Description
ForceUserMsgLanguageID	Integer (LCID)	Specifies the language to be used when importing user-defined messages (diagnostics buffer or AlarmS). Setting the language for AlarmS and user-defined diagnostics buffer messages (Page 33)
WatchWritable	YES/NO default: YES	Specifies whether watch tables can be edited and deleted on the standard pages.
BasicWatchWritable	YES/NO default: YES	Specifies whether watch tables can be edited and deleted on the basic pages.
UserArea	Character string: Embedded, EmbeddedSimple, StandAlone	User's Area display mode. See Embedded, user-defined pages
UserDir	String	Directory for user pages: "/FILES" + <UserDir>

Overview of preinstalled constant variables

See also

SIMOTION IT Configuration data (Page 83)

4.6.5 MiniWeb

4.6.5.1 Variable provider MiniWeb

The variable provider MiniWeb contains variables of the basic settings of the web server.

Cannot be configured by the user:

- MiniWeb_Build
- MiniWeb_Version
- SystemRoot
- UpTime
- WWWRoot

Can be configured in WebCfg.xml and via **Manage Config > SIMOTION IT > Serveroptions** :

- HTTP_PORT
- ALTERNATIVE_HTTP_PORT
- SSL_PORT
- ALTERNATIVE_SSL_PORT

Configurable in the HW Config dialog box: **Device > Objekteigenschaften > Ethernet erweitert / Webserver** or **Settings**:

- SystemTime
- Date
- TIMEZONE

4.6.6 ITDiag

4.6.6.1 Variable provider ITDiag

Representation of web server contents

The ITDiag provider is used to represent the connection data of the web server. The variables mostly have a diagnostic function and are used by software developers and service personnel to analyze the performance or faults.

Name	Description
ActiveConnections	Number of connections on which data are being actively transmitted (Request or Response).
MaxConnections	Maximum total number of possible connections for clients and servers. Remark: Client and server connections are each limited to a separate maximum number.
MaxConnectionsUsed	Maximum number of connections that have been open since the control was switched on.
MaxIndisposableConnectionsUsed	Maximum number of simultaneously open connections without "SleepingConnections."
MaxSimultaneousConnections	Maximum number of connections that can be managed in the Select mechanism of the protocol stack.
OpenConnections	Number of connection that are currently open.
Overflows	Number of failed connection attempts since control power-on.
SimultaneusConnections	Number of connections that are currently being managed in the Select mechanism of the protocol stack.
SleepingConnections	Number of connections that are still open because of a connection marked as "Keep-Alive." They are closed by the web server as required.
WaitingConnections	Number of connections through which a complete Request, but still no response is transmitted.
resetMaxUsedConnections	By writing "true" to this variable, the statistics variables can be reset.
MaxIndisposableConnectionsUsed Time	Instant at which the MaxIndisposableConnectionsUsed occurred.
OverflowTime	Instant at which the last overflow occurred.

The information relevant to the user are shown on the Diagnostics (Page 42) web page.

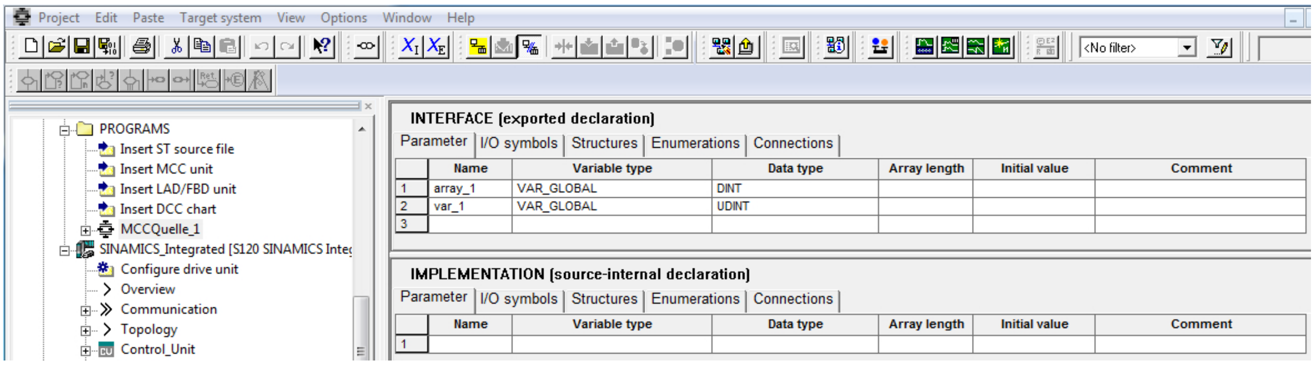
4.6.7 Making unit variables available

To make variables available on the SIMOTION IT OPC XML DA server, you have to declare them as VAR_GLOBAL.

Declaring unit variables in the interface

In the declaration table, you define the data type for each variable. Only variables declared as VAR_GLOBAL are available for OPC XML-DA.

The following figure shows an example of unit variable declarations in an MCC program.



INTERFACE (exported declaration)

Parameter | I/O symbols | Structures | Enumerations | Connections

	Name	Variable type	Data type	Array length	Initial value	Comment
1	array_1	VAR_GLOBAL	DINT			
2	var_1	VAR_GLOBAL	UDINT			
3						

IMPLEMENTATION (source-internal declaration)

Parameter | I/O symbols | Structures | Enumerations | Connections

	Name	Variable type	Data type	Array length	Initial value	Comment
1						

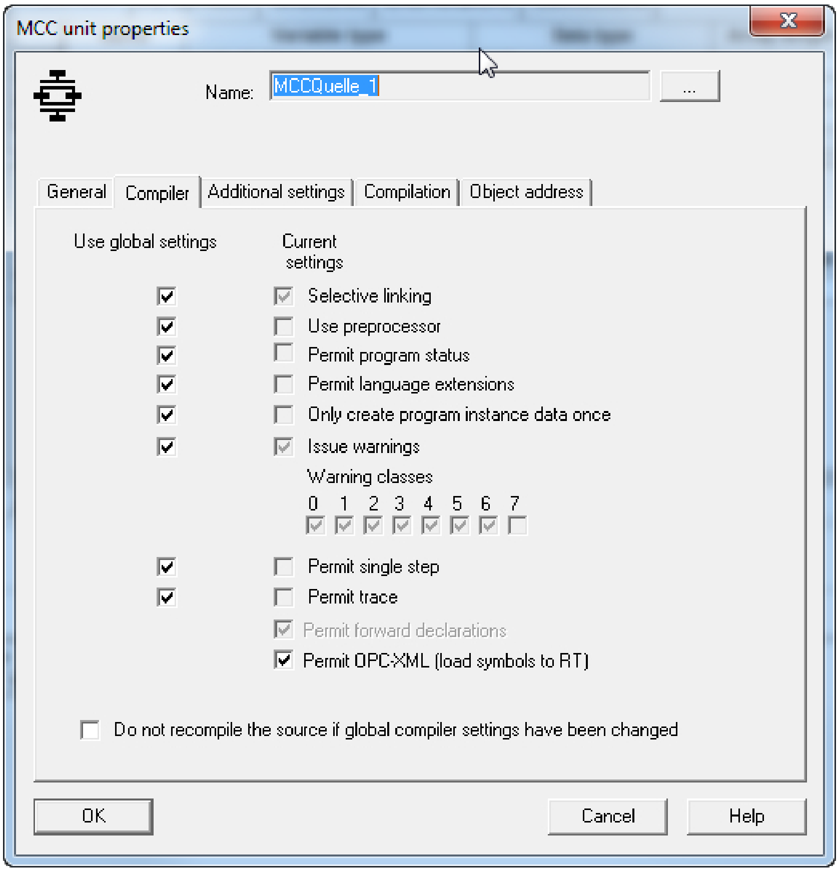
Figure 4-86 Declaring global variables

Permit OPC XML

To activate the variables for OPC XML DA, proceed as follows:

1. Open the **Properties** of the unit/source.
2. Select the **Compiler** tab.
3. Activate **Permit OPC-XML**, if it is not already activated (standard setting).

The following figure shows how to activate the unit variables from an MCC source.



Name: MCCQuelle_1

Use global settings	Current settings	
☑	☑	Selective linking
☑	□	Use preprocessor
☑	□	Permit program status
☑	□	Permit language extensions
☑	□	Only create program instance data once
☑	☑	Issue warnings

Warning classes

0	1	2	3	4	5	6	7
☑	☑	☑	☑	☑	☑	☑	□

Use global settings	Current settings	
☑	□	Permit single step
☑	□	Permit trace
	☑	Permit forward declarations
	☑	Permit OPC-XML (load symbols to RT)

□ Do not recompile the source if global compiler settings have been changed

Figure 4-87 Making variables available for OPC XML DA

Note

The OPC XML activation applies also to variables in LAD/FBD and ST programs. To make variables available for OPC XML-DA in an ST program, they have to be defined in a global variable block (VAR_GLOBAL and VAR_GLOBAL_RETAIN). This must be located in the interface section.

4.7 Secure Socket Layer

Introduction

The Secure Socket Layer protocol (SSL) enables encrypted data transmission between a client and SIMOTION. HTTPS access between the browser and the SIMOTION control is based on the Secure Socket Layer protocol.

Encrypted access to SIMOTION can take place via both SIMOTION IT OPC XML-DA and SIMOTION IT user-defined pages.

This section tells you which steps you need to follow to enable encrypted data communication between a client and SIMOTION. The possibilities are as follows:

1. You use the default configuration of the as-delivered condition.
2. You have a Certification Authority (CA) in your organization and the necessary key files are available.
3. You do not have a CA in your organization. In this case, you will need to create the key files yourself.

Note

HTTPS connections are supported in SIMOTION V3.2 and higher.

See also

Key files (V4.1 and higher) (Page 156)

4.7.1 Encryption methods

You need two key files for the encryption method used by the Secure Socket Layer protocol. You need a public certificate and a private key. The pair of keys is created individually for each SIMOTION control. This ensures that the address requested matches the SIMOTION control accessed during HTTPS communication.

Note

Encrypted access to the SIMOTION control is only possible with the control identifier (name/ IP address) specified when the key was created.

You can find further information about Secure Socket Layer certificates at http://www.verisign.de (http://www.verisign.de).

4.7.2 Key files (V4.1 and higher)

4.7.2.1 As delivered

So that you can access the SIMOTION control via HTTPS in the as-delivered condition of the SIMOTION IT diagnostics standard pages, a root certificate and a private key are supplied as a file on the device.

When you attempt HTTPS access using the key files supplied with the system, you will be warned that the certificate is unknown and that the current address of the controller does not match the name of the controller in the certificate.

Note

Secure data transmission

A HTTPS connection via the preinstalled certificate is not the most secure way of accessing the control. The preinstalled certificate should therefore only be used if no self-created or purchased certificate can be used.

4.7.2.2 Creating key files with the script cert.pl (V4.1 and higher)

Overview

Note

HTTPS connections are supported as of SIMOTION V3.2.

If no Certification Authority (CA) is available in your organization, we recommend that you follow the steps described in the following section. The certificate and the key files are created with the OpenSSL tool and a Perl script cert.pl

Carry out the following steps:

No.	Working step	Remark
1.	Install a Perl runtime environment	If Perl is not installed
2.	Install OpenSSL	
3.	Create the certificate and key files with Perl script	
4.	Import the created certificate to the PC browser	This step must be performed once for each PC.

HTTPS access is available after the SIMOTION controller ramps up.

Installation of a Perl runtime environment

Install Perl if the Perl runtime environment is not present on your PC. You can download a free setup for Windows from the following websites, for example:

- http://www.activestate.com (http://www.activestate.com)
- http://www.perl.org (http://www.perl.org)

Installation of OpenSSL

You can download a free OpenSSL setup for Windows, for example, from the following website:

- http://slproweb.com/products/Win32OpenSSL.html (http://slproweb.com/products/Win32OpenSSL.html)

Installation of cert.pl

The cert.pl Perl script generates certificates for the controller. The script is on the AddOn-DVD 2 in the \Addon\4_Accessories\SIMOTION_IT\6_Tools directory.

A new `<CertDir>` directory (e.g. `c:/cert`) is first created on the PC and the cert.pl file is copied into it.

Call syntax cert.pl

```
Usage: perl cert.pl [-h][-?][-cert CertPath]
  [-site <Site name>]
  [-cpu <CPU name>]
  [-ip <IPAddr>[,<IPAddr>,...]][-ossl <path>][-tools <path>]
  [-d <duration>][-img <path>][-wcfg <WebCfgPath>]
  [-ca][-srvn][-srvu][-ksize size][-srvcfg]

Options:

  -cert <certpath>: Workspace used for the creation of certificates
(default: current directory)
  -site <site name>: Name of the site the cpu is belonging to

  -cpu <CPU name>: Name of the cpu

  -ip <IPAddr>[,<IPAddr>,...]: List of IP addresses belonging to 1
cpu (no spaces allowed)

  -ca: Create new root CA

  -srvn: Create new server certificate

  -srvu: update existing server certificate

  -srvcfg: Create new server configuration

  -d <duration>: Duration of validity (in days)

  -tools <path>: Path to the tools dir containg eg. 7za.exe

  -img <path>: Path to the output dir (default: <certpath>)

  -e: Export the certificates of 1 cpu to the path specified by the
-img option

  -ossl <path>: Path to an openssl installation (eg. C:/OpenSSL-Win32)

  -ksize <size>: Key size (default: 2048)

  -h: Print this help

  -?: Print this help
  -wcfg WebCfgFile: Use <WebCfgFile> as a template
```

The path to the OpenSSL installation is determined via the "OPENSSL_CONF" environment variable from the program. This environment variable is created during the installation of OpenSSL with a setup program. If the environment variable is not set, then the "-ossl" option must be used.

See also

Importing the SSL certificate into the browser (Page 161)

4.7.2.3 Creating a SSL certificate yourself

The cert.pl Perl tool can be used to generate the certificates required for customer systems (sites) and combine them into packages for loading.

Generation of root and server certificates

A new <certpath> directory (e.g. c:/tools) is first created on the PC and the cert.pl file is copied into it.

If an upload-capable ZIP file is to be generated, then the current 7-Zip Command Line Version (e.g. 7za920.zip) is also required. Please download the program from the Internet (). After unpacking, copy the 7za.exe program to the <certpath> directory.

As of SIMOTION Version 4.4, there are two applications for which the tool can be used:

1. The controller automatically generates the required server certificates and their private keys at the first HTTPS access. A root certificate and the associated private key is required for this purpose.
   The root certificate and the associated private key are generated with the aid of the Perl tool.

   Call: `perl cert.pl -cert <certpath> -ca`

   Name of the root certificate: ITDiagRootCA.crt
   Name of the private key: ITDiagRootCA.key
   Storage location in the file system: <certpath>/CA

   The data of the certification authority is queried first:
   - Country (2-digit code, e.g. DE)
   - State (e.g. Bavaria)
   - City/town (e.g. Erlangen)
   - Company (e.g. MyCompany AG)
   - Department (e.g. IT Development)
   - Common name (e.g. ITDiagRootCA)
   - E-mail (e.g. sepp@MyCompany.com)

2. Self-generated server certificate
   In this case, the required server certificates must be generated in addition to the root certificate.

   Call: `perl cert.pl [-ca] [-cert <certpath>] [-site <sitename>] -cpu <cpuname> -ip <IP-Addr1>,<IP-Addr2>,.... -srvn`

   Name of the generated root certificate: ITDiagRootCA.crt
   Name of the private key: ITDiagRootCA.key
   Storage location in the file system: <certpath>/CA

   The root certificate will only be generated if a certificate does not already exist. On all following calls, the existing root certificate will be used to sign the newly created server certificates. The generation of a new root certificate can be forced via the `-ca` option.
   The list of IP addresses (<IP-Addr1>,<IP-Addr2>) must not contain any blanks. This also applies for all other parameters.
   The data of the applicant is queried when creating the first server certificate of a site. This data is also queried when creating a CPU if `-site` has not been specified:
   - Country (2-digit code, e.g. DE)
   - State (e.g. Bavaria)
   - City/town (e.g. Erlangen)
   - Company (e.g. MyCompany AG)
   - Department (e.g. IT Development)
   - E-mail (e.g. sepp@MyCompany.com)

Note

Validity duration of the certificates

The default validity is 30 years (effectively infinite).

With the d-option, you can generate certificates with a shorter runtime. In this case, HTTPS communication will no longer function after the validity has expired.

It is up to the user to install the new valid certificates on all affected controllers.

Update of existing server certificates

If one of the parameters essential for the generation of the server certificates (e.g. the root certificate, the lifetime or the configuration) changes, an update can be started for the server certificates.

Call: `perl cert.pl [-cert <certpath>] [-site <sitename>] [-cpu <cpuname>] -svru`

If the `-cpu` parameter is missing, all certificates of the CPUs belonging to the site are renewed.

If the `-site` parameter is also missing, all certificates are renewed.

Export of existing server certificates

The path to the exported images can be specified with the `-img` option.

The generated certificates can be exported for each CPU.

Call: `perl cert.pl [-cert <certpath>] [-img <path>] [-site <sitename>] [-cpu <cpuname>] [-ip <IP-Addr1>,<IP-Addr2>,....] -e`

Storage location in the file system: `<path>/images/<sitename>/<cpuname>`

A directory structure can be found at `<imgpath>/images/<sitename>/<cpuname>/image` which can be copied to the `/USER/SIMOTION/HMICFG` directory of the CF card.

An upload-capable ZIP archive (`<cpuname>`.zip) can also be generated at `<imgpath>/images/<sitename>/<cpuname>` if the 7za.exe zipper is in `<toolspath>` (option `–tools <toolspath>`).

The archive can be unpacked in the HMICFG directory. Any existing server certificates have to be removed. To do this, delete the complete /USER/SIMOTION/HMICFG/certstore/servercerts directory. The controller then has to be restarted.

The server certificates can also be loaded to the CPU via the **Certificates** website at **Manage Config**. Unnecessary files and directories are deleted and a restart of the web server triggered.

SIMOTION versions prior to Version 4.4

For SIMOTION versions prior to Version 4.4, the previous functionality of the tool will be retained.

Generated server certificates are entered in a copy of a template of the WebCfg.xml file.

The template is sought in one of the following directories in the specified order:

```
- -wcfg Option
- <certpath>/<sitename>/<cpuname>/<ipaddr>
-<certpath>/<sitename>/<cpuname>
- <certpath>/<sitename>
-<certpath>
```

4.7.2.4 Importing the SSL certificate into the browser

If you use SSL with your own certification authority, you will need to prepare your PCs for communication with the SIMOTION controller. To do this, the "ITDiagRootCA.crt" root certificate must be included in the list of certificates in your browser.

Please follow the instructions of your browser when importing the certificate.

Various types of certificate use:

1. Browser import of the "ITDiagRootCA.crt" root certificate (e.g. from the "<certpath>\images \<site>\<cpu>\image\certstore\CA" directory).
2. If there is an HTTP connection to the device, the root certificate can be saved via the **Manage Config > Certificates** page with the **Get root certificate** button.
3. During HTTPS access to a device without previous import of the root certificate, a prompt appears in the browser as to whether the associated server certificate is to be imported. This import enables the secure connection to **one** device and must be repeated for all other devices. For this reason, the import of the root certificate is always preferred.

List of abbreviations/acronyms

5

Abbreviations

CA	Certification Authority
CSS	Cascading Style Sheets
CSV	Character Separated Values
DO	Drive Object (Drive object)
DOM	Document Object Model
ECMA	European Computer Manufacturers Association
FTP	File Transfer Protocol
GMT	Greenwich Mean Time
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
HTTPS	Secure HTTP
JS	JavaScript
MWSL	MiniWeb Server Language
OPC	Denotes a standard interface for communication in automation technology. http://www.opcfoundation.org/ (http://openssl.org)
OPC XML-DA	OPC XML Data Access
SSL	Secure Socket Layer
TO	Technology Object (Technology object)
TVS	Trace Via SOAP
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
UTC	Universal Time Coordinated
XML	Extensible Markup Language
XSL	Extensible Stylesheet Language
XSLT	XSL Transformation

Appendix 6

6.1 WebCfg.xml

6.1.1 <ALTERNATE_PORTNUMBER>

Tag	<ALTERNATE_PORTNUMBER>
	Additional port for requests for the web server. Every TCP/IP server (or service) has what is known as a well-known port number which can be used by a client to address it. For the web server, this is normally port number 80. The web server can also "listen" to a second port number. For example, by adding a firewall you can establish a firewall-controlled security concept. If the value is set to 0, no alternative port will be available. This is the default setting.

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`   [...]`
	`   <BASE>`
	`      [...]`
	`   </BASE>`
	`   <SERVEROPTIONS>`
	`      <ALTERNATE_PORTNUMBER VALUE="81" />`
	`      [...]`
	`   </SERVEROPTIONS>`
	`   [...]`
	`</SERVERPAGES>`
	
	In this example, the alternative port number of the web server is set to 81.

6.1.2 <ALTERNATE_SSL_PORTNUMBER>

Tag	<ALTERNATE_SSL_PORTNUMBER>
	For the SSL protocol (Secure Socket Layer), an additional well-known port number is needed. This is normally port number 443. The web server can also "listen" to a second port number. For example, by adding a firewall you can establish a firewall-controlled security concept. Another application of this alternative port uses the DAV module to detect whether a request is a DAV request or a web request. This is the alternative SSL port.

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`   [...]`
	`   <BASE>`
	`      [...]`
	`   </BASE>`
	`   <SERVEROPTIONS>`
	`      <ALTERNATE_SSL_PORTNUMBER VALUE="5443" />`
	`      [...]`
	`   </SERVEROPTIONS>`
	`   [...]`
	`</SERVERPAGES>`
	
	In this example, the alternative port number for SSL is set to 5443.

6.1.3 BASE

6.1.3.1 <BASE>

Tag	<BASE>
	The link lists for user-defined HTML pages are stored in the <BASE> tag of WebCfg.xml .

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`   [...]`
	`   <BASE ALIAS="/">`
	`      [...]`
	`      <myIndex.mwsl.cms ALIAS="mydir/myIndex.mwsl.cms" />`
	`      [...]`
	`   </BASE>`
	`   [...]`
	`</SERVERPAGES>`

6.1.3.2 ALIAS attribute

Tag	Any node: <BASE> and all child nodes	
Attribute	`ALIAS`	The ALIAS attribute is a link to the physical file system, relative to the WWWRoot path /USER/SIMOTION/HMI. The file name must be identical to the file name in the `ALIAS`; otherwise, the file will not be found. Each data node of the XML file system can have a `ALIAS` attribute, including the `<BASE>` node. The `<BASE>` node corresponds to the WWWRoot of the file system.

Example	`<?xml version="1.0" encoding="UTF-8" standalone="yes"?>`
	`<SERVERPAGES version="78.00">`
	`  [...]`
	`  <BASE>`
	`    <myfile.mwsl.cms ALIAS="/FILES/myfile.mwsl.cms"`
	`                     REALM="Administrator"`
	`                     READ="Administrator"`
	`                     WRITE="Administrator"`
	`                     MODIFY="Administrator" />`
	`  </BASE>`
	`  [...]`
	`</SERVERPAGES>`
	
	In this example, the file myfile.mwsl.cms can now be called via the following URL: `http://<IP-Address>/myfile.mwsl`	

6.1.3.3 BROWSEABLE attribute

Tag	Any node: `<BASE>` and all child nodes or as a global switch via the tag `<BROWSEABLE>`	
Attribute	`BROWSEABLE`	`BROWSEABLE` can be assigned "`true`" or "`false`." When a client accesses this link, a directory view of the directory is created. Navigation from this directory to subdirectories is also possible. Other higher-level directories can also be navigated to if browsing is also permitted for them. Provided you have sufficient permissions, you can send, receive, and delete files as well as create and delete directories.

Example	`<?xml version="1.0" encoding="UTF-8" standalone="yes"?>`
	`<SERVERPAGES version="78.00">`
	`  [...]`
	`  <BASE>`
	`   <FILES ALIAS="FILES/" BROWSEABLE="true" REALM="Anyone" READ="Anyone"`
	`         WRITE="Anyone" MODIFY="Anyone">`
	`     <myFile ALIAS="/FILES/myfile.mwsl.cms" BROWSABLE="true"`
	`             REALM="Administrator"`
	`             READ="Administrator"`
	`             WRITE="Administrator"`
	`             MODIFY="Administrator" />`
	`   </FILES>`
	`  </BASE>`
	`  [...]`
	`</SERVERPAGES>`	

6.1.3.4 MODIFY attribute

Tag	Any node: `<BASE>` and all child nodes	
Attribute	`MODIFY`	If a directory has a `MODIFY` attribute and the logged-in user is a member of one of the specified groups, the user may carry out all write operations in this directory. He may • Create new directories • Overwrite files • Delete files • Create new files The user must, of course, have READ rights as well (otherwise, he/ she would not have access to the directory to start with).

6.1.3.5 READ attribute

<table>
<tr><td>Tag</td><td colspan="2">Any node: <BASE> and all child nodes</td></tr>
<tr><td>Attribute</td><td>READ</td><td>If a READ attribute is specified for a directory, the user must be a member of one of the groups specified for the READ attribute.
With READ , several groups can be specified. These must be separated with commas and no Whitespace characters may be used.</td></tr>
<tr><td>Example</td><td colspan="2"><pre>
<?xml version="1.0" standalone="yes"?>
<SERVERPAGES>
  [...]
  <BASE ALIAS="/">
    <FILES ALIAS="FILES/" BROWSEABLE="true" REALM="Anyone" READ="Anyone"
           WRITE="Anyone" MODIFY="Anyone">
      <www ALIAS="/WebPages/"
          BROWSEABLE="true"
          READ="Administrator"
          WRITE="FileAdministrator" />
    </FILES>
    <Test.mwsl.cms ALIAS="/Tests/Test.mwsl.cms/"/>
    <XMLDir>
    </XMLDir>
  </BASE>
  [...]
</SERVERPAGES>
</pre></td></tr>
</table>

6.1.3.6 REALM attribute

<table>
<tr><td>Tag</td><td colspan="2">Any node: `<BASE>` and all child nodes</td></tr>
<tr><td>Attribute</td><td>`REALM`</td><td>The `REALM` attribute is used to set up a secure area.
`REALM` may only contain one group name.
The `REALM` attribute enables one login for all users of a group. For all users that do not belong to this group, access is blocked.</td></tr>
<tr><td>Example</td><td colspan="2">

```
<?xml version="1.0" standalone="yes"?>
<SERVERPAGES>
  [...]
  <BASE ALIAS="/">
    <FILES ALIAS="FILES/" BROWSEABLE="true" REALM="Anyone" READ="Anyone"
           WRITE="Anyone" MODIFY="Anyone">
     <www ALIAS="/WebPages/"
          REALM="Anyone"
          BROWSEABLE="true"
         READ="Administrator"
          WRITE="FileAdministrator" />
    </FILES>
    <Test.mwsl.cms ALIAS="/Tests/Test.mwsl.cms/" />
    <XMLDir>
    </XMLDir>
  </BASE>
  [...]
</SERVERPAGES>
```

</td></tr>
</table>

6.1.3.7 WRITE attribute

Tag	Any node: `<BASE>` and all child nodes	
Attribute	`WRITE`	If a directory has a `WRITE` attribute and the logged-in user is a member of one of the specified groups, the user may only create new files in this directory. He may ● Not create any new directories ● Not overwrite any files ● Not delete any files ● Create new files The user must, of course, have `READ` rights as well (otherwise, he/she would not have access to the directory to start with).

Example

```
<?xml version="1.0" standalone="yes"?>
<SERVERPAGES>
  [...]
  <BASE ALIAS="/">
    <FILES ALIAS="FILES/" BROWSEABLE="true" REALM="Anyone" READ="Anyone"
           WRITE="Anyone" MODIFY="Anyone">
      <www ALIAS="/WebPages/"
           BROWSEABLE="true"
           READ="Administrator"
           WRITE="FileAdministrator" />
    </FILES>
    <Test.mwsl.cms LOCALLINK="/Tests/Test.mwsl.cms/"/>
    <XMLDir>
    </XMLDir>
  </BASE>
  [...]
</SERVERPAGES>
```

6.1.4 <BROWSEABLE>

Tag	<BROWSEABLE>
Values	true, false

	Enable and disable browsing and displaying of directories. This tag can be used to allow browsing globally for all directories. In this case, the individual `BROWSEABLE` attributes of the nodes are of no relevance.

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`   [...]`
	`   <BASE>`
	`      [...]`
	`   </BASE>`
	`   <SERVEROPTIONS>`
	`      <BROWSEABLE VALUE="false" />`
	`      [...]`
	`   </SERVEROPTIONS>`
	`   [...]`
	`</SERVERPAGES>`
	
	In this example, global browsing is disabled and can be explicitly enabled for individual nodes. This is the default behavior.

See also

Browsing of directories (Page 118)

6.1.5 <CONFIGURATION_DATA>

Tag	<CONFIGURATION_DATA>
	Each module provides the option of defining module-specific configuration data within this tag. The format of the individual items of configuration data depends exclusively on the modules. Therefore, it cannot be described in general terms.

Example	`<SERVERPAGES>`
	`  [...]`
	`  <CONFIGURATION_DATA>`
	`    <USERCONFIG>`
	`      [...]`
	`      <UserArea>EmbeddedSimple</UserArea>`
	`      <UserDir/>`
	`      <IncludeScriptsDirectly>NO</IncludeScriptsDirectly>`
	`      <!-- Add your constants here -->`
	`      <ForceUserMsgLanguageID>1031</ForceUserMsgLanguageID>`
	`    </USERCONFIG>`
	`  </CONFIGURATION_DATA>`
	`  [...]`
	`</SERVERPAGES>`

6.1.6 <DEFAULTDOCUMENT>

Tag	<DEFAULTDOCUMENT>
	Specification of the document that is to be displayed if the URL received from the browser does not contain explicit page information. This is often called Default.mwsl or Index.mwsl. There can be only one default document. If no default document is found and file browsing is permitted, the directory itself is returned.

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`  [...]`
	`  <BASE>`
	`  [...]`
	`  </BASE>`
	`  <SERVEROPTIONS>`
	`    <DEFAULTDOCUMENT VALUE="Default.mwsl.cms" />`
	`    [...]`
	`  </SERVEROPTIONS>`
	`  [...]`
	`</SERVERPAGES>`
	If, for example, the URL http://<IP-Address>/MyDir is used to query a directory, the web server appends the file name "Default.mcs" to the URL (http://<IP address>/MyDir/Default.mwsl) and then attempts to resolve the URL:
	● If this succeeds, Default.mwsl is returned to the client.
	● If this is not successful, either a directory view is returned or an HTTP 404 "Not Found" error message is issued (depending on configuration).

6.1.7 <LANGUAGE>

Tag	<LANGUAGE>
	Setting the language.

6.1.8 <MIME_TYPES>

Tag	<MIME_TYPES>
	With the MIME type table, the web server offers the option of mapping the file extension of a particular file to an associated MIME type. In addition, a different icon can be saved for each file extension for the directory browser.

Explanation	The content of a file is designated in the file system by its extension (e.g. "txt" for text files). This type of extension is not mandatory in a transport protocol such as HTTP. For this reason, an HTTP header named "MIME type" is inserted, which contains this information about the content type.

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`   [...]`
	`   <BASE>`
	`      [...]`
	`   </BASE>`
	`   <SERVEROPTIONS>`
	`      <MIME_TYPES>`
	`         <FILE EXTENSION="htm" MIMETYPE="text/html"`
	`               ICON="/Images/www.gif" />`
	`         <FILE EXTENSION="html" MIMETYPE="text/html"`
	`               ICON="/Images/www.gif" />`
	`            [...]`
	`     </MIME_TYPES>`
	`     [...]`
	`   </SERVEROPTIONS>`
	`   [...]`
	`</SERVERPAGES>`
	
	For the "htm" and "html" extensions, the MIME type "text/html" is specified. The icon with the URL "/Images/www.gif" is used to designate this data type in the directory browser.
	For more information about MIME types, refer to the RFCs 2045 ff.

6.1.9 <PORTNUMBER>

Tag	<PORTNUMBER>
	Every TCP/IP server (or service) has what is known as a well-known port number which can be used by a client to address it. For the web server, this is normally port number 80. This port number can be set in the <PORTNUMBER> tag. If nothing is set, the number 5001 is set automatically in order to prevent a collision with any existing web server.

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`  [...]`
	`  <BASE>`
	`    [...]`
	`  </BASE>`
	`  <SERVEROPTIONS>`
	`    <PORTNUMBER VALUE="80" />`
	`    [...]`
	`  </SERVEROPTIONS>`
	`  [...]`
	`</SERVERPAGES>`
	In this example, the port number of the web server is set to 80.

6.1.10 <SERVEROPTIONS>

Tag	<SERVEROPTIONS>
	The "Server Options" tag includes all basic parameters of the web server. The settings made within the tag affect the core of the web server.

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`  [...]`
	`  <BASE>`
	`    [...]`
	`  </BASE>`
	`  <SERVEROPTIONS>`
	`    [...]`
	`  </SERVEROPTIONS>`
	`  [...]`
	`</SERVERPAGES>`

6.1.11 <SSLPORTNUMBER>

Tag	<SSLPORTNUMBER>
	For the SSL protocol (Secure Socket Layer), an additional well-known port number is needed. This is normally port number 443. If SSL is used in the web server, the port number for SSL can be set here. If nothing is set, the number 5443 is set automatically in order to prevent a collision with any existing web server.

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`   [...]`
	`   <BASE>`
	`      [...]`
	`   </BASE>`
	`   <SERVEROPTIONS>`
	`      <SSLPORTNUMBER VALUE="443" />`
	`      [...]`
	`   </SERVEROPTIONS>`
	`   [...]`
	`</SERVERPAGES>`
	
	In this example, the port number for SSL is set to 443.

6.1.12 <TIMEZONE>

Tag	<TIMEZONE>
	Sets the time zone of the web server. To enable time zones to be synchronized with other partners (in other words, to enable the local time-of-day setting of the web server to be converted to UTC), the web server must know which time zone has been set for the control's local clock. The value specified here represents the deviation from UTC +/- minutes. In the as-delivered state, this entry is missing and either the default value "UTC +60" (if the project is missing) or the time zone set in HW Config for the web server will be valid. If the TIMEZONE node is added, the value from the HW Config will not be considered.

Example	`<?xml version="1.0" standalone="yes"?>`
	`<SERVERPAGES>`
	`  [...]`
	`  <BASE>`
	`    [...]`
	`  </BASE>`
	`  <SERVEROPTIONS>`
	`     <TIMEZONE VALUE="+60" />`
	`     [...]`
	`  </SERVEROPTIONS>`
	`  [...]`
	`</SERVERPAGES>`
	In this example, the time zone is set to "UTC + 60 minutes". This corresponds to MET winter time.

6.2 SIMOTION IT Diagnostics files

6.2.1 DIAGURLS.TXT

Structure of the file DIAGURLS.TXT

DIAGURLS.TXT contains the names of the SIMOTION IT diagnostics pages that are backed up when the diagnostics button is pressed or the pages are requested via **Diagnostics > Diagnostics files.** The file is in directory /HMI/SYSLOG/DIAG and can be expanded with further URLs if necessary.

Here is an example of how this file might look like in the delivery state:

```
alarms.mwsl
alarmsdrvifrm.mwsl
alarmbufifrm.mwsl
devinfo.mwsl
basic/b_extdiag.mwsl
basic/b_diagbufdrv.mwsl
diagnost.mwsl
ipconfig.mwsl
mempool.mwsl
start.mwsl
taskrunt.mwsl
timezone.mwsl
```

Content of the file DIAGURLS.TXT

See also

Diagnostic files (Page 61)

6.3 LCID country codes

6.3.1 LCID table

Country-specific codes

Table 6-1 English LCID

Decimal value	Country	UMC abbreviation	Priority
1033	United States	B	1
2057	Great Britain	B	2
3081	Australia	B	10
10249	Belize	B	10
4105	Canada	B	10
9225	Caribbean	B	10
6153	Ireland	B	10
8201	Jamaica	B	10
5129	New Zealand	B	10
13321	Philippines	B	10
7177	Southern Africa	B	10
11273	Trinidad	B	10

Table 6-2 German LCID

Decimal value	Country	UMC abbreviation	Priority
1031	Germany	A	3
3079	Austria	A	20
5127	Liechtenstein	A	20
4103	Luxembourg	A	20
2055	Switzerland	A	20

Table 6-3 French LCID

Decimal value	Country	UMC abbreviation	Priority
1036	France	C	4
2060	Belgium	C	30
3084	Canada	C	30
5132	Luxembourg	C	30
4108	Switzerland	C	30

Table 6-4 Spanish LCID

Decimal value	Country	UMC abbreviation	Priority
1034	Spain (trad.)	D	5
11274	Argentina	D	40
16394	Bolivia	D	40
13322	Chile	D	40
9226	Colombia	D	40
5130	Costa Rica	D	40
7178	Dominican Rep.	D	40
12298	Ecuador	D	40
17418	El Salvador	D	40
4106	Guatemala	D	40
18442	Honduras	D	40
2058	Mexico	D	40
19466	Nicaragua	D	40
6154	Panama	D	40
15370	Paraguay	D	40
10250	Peru	D	40
20490	Puerto Rico	D	40
14346	Uruguay	D	40
8202	Venezuela	D	40

Table 6-5 Italian LCID

Decimal value	Country	UMC abbreviation	Priority
1040	Italy	E	6
2064	Switzerland	E	50

FurtherLCID

```
Decimal value of country

=========================

1078 Afrikaans
1052 Albanian
14337 Arabic - United Arab Emirates
15361 Arabic - Bahrain
5121 Arabic - Algeria
3073 Arabic - Egypt
2049 Arabic - Iraq
11265 Arabic - Jordan
13313 Arabic - Kuwait
12289 Arabic - Lebanon
4097 Arabic - Libya
6145 Arabic - Morocco
8193 Arabic - Oman
16385 Arabic - Qatar
1025 Arabic - Saudi Arabia
```

```
10241 Arabic - Syria
7169 Arabic - Tunisia
9217 Arabic - Yemen
1067 Armenian
1068 Azeri - Latin
2092 Azeri - Cyrillic
1069 Basque
1059 Belarusian
1026 Bulgarian
1027 Catalan
2052 Chinese - China
3076 Chinese - Hong Kong SAR
5124 Chinese - Macau SAR
4100 Chinese - Singapore
1028 Chinese - Taiwan
1050 Croatian
1029 Czech
1030 Danish
1043 Dutch - Netherlands
2067 Dutch - Belgium
1061 Estonian
1065 Farsi
1035 Finnish
1080 Faroese
2108 Gaelic - Ireland
1084 Gaelic - Scotland
1032 Greek
1037 Hebrew
1081 Hindi
1038 Hungarian
1039 Icelandic
1057 Indonesian
1041 Japanese
1042 Korean
1062 Latvian
1063 Lithuanian
1071 F.Y.R.O. Macedonia
1086 Malay - Malaysia
2110 Malay – Brunei
1082 Maltese
1102 Marathi
1044 Norwegian - Bokml
2068 Norwegian - Nynorsk
1045 Polish
2070 Portuguese - Portugal
1046 Portuguese - Brazil
1047 Raeto-Romance
1048 Romanian - Romania
2072 Romanian - Republic of Moldova
1049 Russian
2073 Russian - Republic of Moldova
1103 Sanskrit
```

3098	Serbian - Cyrillic
2074	Serbian - Latin
1074	Setsuana
1060	Slovenian
1051	Slovak
1070	Sorbian
1072	Southern Sotho
1089	Swahili
1053	Swedish - Sweden
2077	Swedish - Finland
1097	Tamil
1092	Tatar
1054	Thai
1055	Turkish
1073	Tsonga
1058	Ukrainian
1056	Urdu
2115	Uzbek - Cyrillic
1091	Uzbek – Latin
1066	Vietnamese
1076	Xhosa
1085	Yiddish
1077	Zulu

Index