

SINUMERIK 840D sl SIMATIC S7-300/400

SINUMERIK Integrate AMB, AMC, AMM

Function Manual

Valid for:

Control system

SINUMERIK 840D sl/840DE sl
SINUMERIK 840Di sl/840DiE sl
SINUMERIK 840D/840DE
SINUMERIK 840Di/840DiE

Software

SINUMERIK Integrate

version

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
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Legal notes

Warning concept

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

 DANGER
Indicates that death or severe personal injury will result if proper precautions are not taken.

 WARNING
Indicates that death or severe personal injury can result if proper precautions are not taken.

 CAUTION
with a triangular safety alert, indicates that slight personal injury may result if proper precautions are not taken.

CAUTION
without triangular safety alert means that there can be damage to property if the corresponding safety measures are not followed.

NOTICE
indicates that an unintended result or situation can occur if the corresponding information is not taken into account.


If more than one level of danger is simultaneously applicable, the warning notice for the highest level is used. If a warning notice is used with the safety alert symbol to warn against injury, this same notice may also include a warning regarding property damage.

Qualified personnel

The product/of system that belongs to this documentation may be used/operated by **qualified personnel** while carefully observing the appropriate documentation for the associated task, in particular, the safety and warning notes provided in the documentation. As a result of their training and experience, qualified personnel are able to recognize any risks involved with handling these products/systems and avoid any possible dangers.

Correct usage of Siemens products

Note the following:

 WARNING
Siemens products must only be used for the applications specified in the catalog and in the technical documentation. If third-party products and components are used, they must be recommended or approved by Siemens. These products can only function correctly and safely if they are transported, stored, set up, mounted, installed, commissioned, operated and maintained correctly. The permissible ambient conditions must be adhered to. The notes in the associated documentation must be complied with.

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Disclaimer of liability

We have checked the contents of this document for agreement with the hardware and software described. However, since deviations cannot be precluded entirely, we cannot guarantee full consistency. The information given in this publication is reviewed at regular intervals and any corrections that might be necessary are made in the subsequent editions.

Foreword

SINUMERIK documentation

The SINUMERIK documentation is organized in the following categories:

- General documentation
- User documentation
- Manufacturer/service documentation

More information

You can find information on the following topics under the link www.siemens.com/motioncontrol/docu:

- Ordering documentation / overview of documentation
- Additional links to download documents
- Using documentation online (finding and searching in manuals/information)

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

My Documentation Manager (MDM)

Under the following link you will find information to individually compile OEM-specific machine documentation based on the Siemens content:
www.siemens.com/mdm

Training

You can find information about the range of training courses at the following links:

- www.siemens.com/sitrain
SITRAIN - training courses from Siemens for products, systems and solutions in automation technology
- www.siemens.com/sinutrain
SinuTrain - training software for SINUMERIK

FAQs

You can find Frequently Asked Questions in the Service&Support pages under Product Support. <http://support.automation.siemens.com>

SINUMERIK

You can find information on SINUMERIK under the following link:
www.siemens.com/sinumerik

Target group

This publication is intended for project engineers, programmers, technologists (of machine manufacturers), and system startup engineers (of systems/machines).

Prerequisite (area of validity)

This manual is valid for use with the following product versions:

Analyze MyCondition (AMC)	Version 4.12
Access MyBackup (AMB)	Version 4.12
Access MyMachine (AMM)	Version 2.0

Benefits

The Function Manual describes the functions so that the target group is familiar with and can select them. It provides the target group with the information required to implement the functions.

Usage phase

Planning and configuration phase, implementation phase, setup and commissioning phase.

Standard scope

Additions or revisions made by the machine manufacturer are documented by the machine manufacturer.

Other functions not described in this documentation might be executable in the control. This does not, however, represent an obligation to supply such functions with a new control or when servicing.

For the sake of simplicity, this documentation does not contain all detailed information about all types of the product and cannot cover every conceivable case of installation, operation, or maintenance.

Technical support

You will find telephone numbers for other countries for technical support in the Internet under <http://www.siemens.com/automation/service&support>

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1

1 Introduction

1.1 Overview of the SINUMERIK Integrate documentation

Overview

Document class	Content	Valid for	
Software Installation Manual	Documentation for commissioning SINUMERIK Integrate in machines and systems	V4.12.0	03/2013
Function Manual	Documentation of all functions that can be performed via the server UI and how to use them	V4.12.0	03/2013
Operating Manual	Information for the machine operator	V4.12.0	03/2013

1.2 Overview of functions

What is SINUMERIK Integrate Analyze MyCondition?

SINUMERIK Integrate Analyze MyCondition supports the service and maintenance activities of machine tool manufacturers and manufacturing companies. This is done with software services that are available in a CNC, S7 control, machine PC, or work station PC.

This requires both a control on the machine that complies with the specifications, and Internet access.

The following services are parts of SINUMERIK Integrate:

Remote access

Remote access to the control is performed via a secure Internet infrastructure. Remote access is performed via Access MyMachine/Ethernet or Access MyMachine/STEP 7. It provides the following functions:

- Desktop Control
- File Transfer
- Conference
- Session recording

Control monitor services

Recording of events in a history and documentation of the current status of the control at this point. This allows the status of the device to be analyzed and compared with earlier states should a fault occur.

The current status of the machine is documented using the following events and data:

- Alarms, PLC events, time intervals, combinations of machine signals
- Limit value violation and time delay violation from condition monitoring
- Series of measurements/tests and variable monitors
- Manual help request by the machine operator in the event of faults
- HMI action log, machine data, NC status data
- PLC trace, PLC data blocks
- Certain files (e.g. log files) of the control

Condition monitoring services

Measurement and documentation of the current machine status on the basis of predefined, standardized tests and continuous recording of status characteristics (traverse path, traverse time and traverse operations for one axis). The test parameters can be defined centrally and configured with appropriate warning limits. Using series of measurements, it is also possible to identify trends and apply them as a basis for optimizing maintenance and service activities.

The machine operator can then carry out these predefined tests quickly and easily, and without additional test equipment.

The following tests and monitors are available:

- Circularity test
- Equability test
- Universal axis test
- Variable monitor (NC variables, PLC variable,s freely addressable variables)

Data services

The data services permit the current control archives (NC and PLC archives) on the server to be saved, to be restored in the control in a controlled way, and to be used as reference for control monitors comparisons.

Workflow services

Triggering of service and maintenance processes by notification via media that are internal and external to the system (SMS, e-mail, service cases). Planning, monitoring, and documentation of maintenance activities on the machine.

Maintenance schedules support you in the following tasks:

- Load- and consumption-based predictive maintenance (see Section: Creating maintenance schedules and organizational tasks)
- Automated triggering of operating sequences when faults are detected (see: Maintenance schedules, maintenance jobs, fault help requests, and service cases)
- Planning time schedule and contents of condition monitors, and monitoring their execution (see: Maintenance schedules, maintenance jobs and control monitors)

The Workflow Services can respond to all event sources of the Control Monitor Services and Condition Monitoring Services.

Administration services

Functions for the administration of the system:

- Creation and administration of machines
- Creation and administration of users
- Assignment of access rights for external organizations
- Access to use data / invoices

1.3 Operating Concept

--- PKI login

Fig. 1-1: Login

You can log in using:

- Password
- Password/certificate
- Certificate

This must be specified when a new user logs in or must be subsequently changed for existing users:

Fig. 1-2: Necessary user data

Note

An e-mail address must be entered when logging in using the certificate.

If you have access to only a single organization on a server, the PKI login takes you immediately to the Machine information page (the same page that opens when you log in with a password).

If you have access to more than one organization, an intermediate page opens where you can select one of the accessible organizations.



Possible logins			
	User name	Organization	E-Mail
	mueller	I IS IN	sandra.mueller@epsnetwork.com
	mueller	epsinternal	sandra.mueller@epsnetwork.com

Fig. 1-3: Login

Overview

The functions of SINUMERIK Integrate are subdivided into five main categories that can be reached via tabs. The "Machine information" and "Set up functions" tabs always apply to the selected machine.

Note

The availability of each function to the machine operator in each of the various roles is described in the Appendix.

Details of the functions can be found in the related chapters.



Fig. 1-4: Basic principle of operation

Tabs	Description	Type
Machine information	<p>The "Machine information" tab shows you important information about a particular selected machine.</p> <p>It is divided into the following areas:</p> <ul style="list-style-type: none"> • Maintenance • Fault services • Remote access 	ACTION
Configure functions	<p>On the "Configure functions" tab you can make all settings for the selected machine.</p> <p>It is divided into the following areas:</p> <ul style="list-style-type: none"> • Maintenance • Fault services • Global settings • Copying function settings • Client-server communication 	ACTION
Organization tasks	The "Organization tasks" tab contains functions and services that apply to all	ACTION

Tabs	Description	Type
	machines of an organization. It is divided into the following areas: <ul style="list-style-type: none"> • Maintenance jobs • Service cases 	
Statistic/export	The "Import/Export" tab contains functions and services that apply to all machines of an organization. It is divided into the following areas: <ul style="list-style-type: none"> • Import • Export • Overviews 	ACTION
Administration	The "Administration" tab contains functions and services that apply to the settings of an organization . It is divided into the following areas: <ul style="list-style-type: none"> • Management of the organization • Personal settings 	ACTION
Select machine	All machine-related views and configurations require a machine or machine group to be selected. The menu for selecting a machine or machine group is displayed again with the setting of the last use.	ACTION
Help	Invokes the Help menu with descriptions of the functions.	ACTION

Select machine

The window that appears with the Select machine tab allows you to display, search for, and filter machines and machine groups.

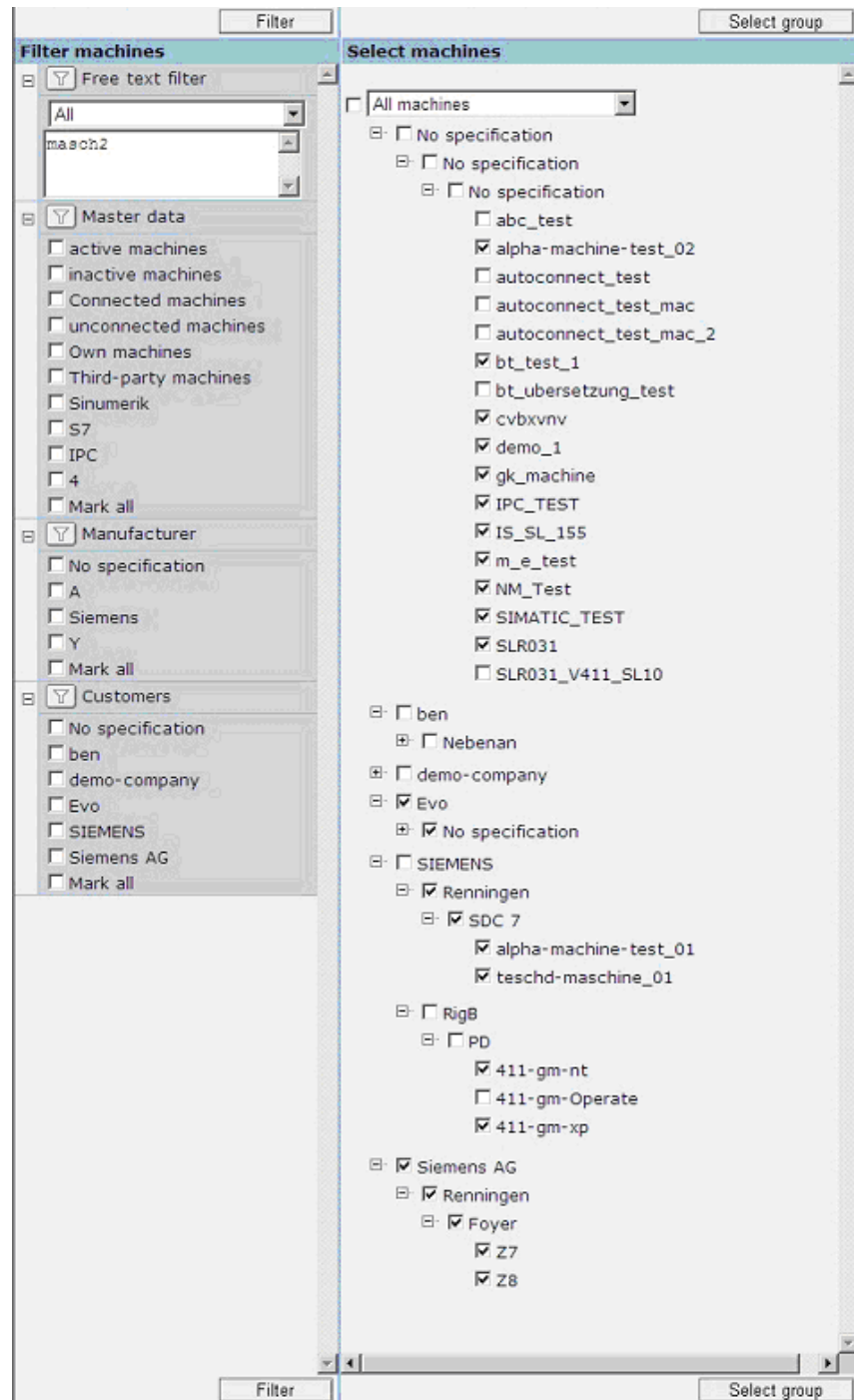



Fig. 1-5: Filtering machines

Function	Description	Type
 Free text filter	Use the "+" "/" "-" symbol to open and close the free text filter dialog box.	SELECTION (toggle) ACTION
<ul style="list-style-type: none"> • All • Machine ID • Manufacturer's number • Internal name • Manufacturer's name 	In the selection window, you can preselect master data information for filtering.	SELECTION DISPLAY
• Enter - Text field for partial text recognition	To further limit the machine selection, you can enter one or more partial texts separated by commas or line breaks to restrict the filter results.	INPUT DISPLAY
Master data	Use the +- symbol to open and close the dialog box.	SELECTION (toggle) ACTION
<ul style="list-style-type: none"> • Active machines • Inactive machines • Connected machines • Disconnected machines • Own machines • External machines • SINUMERIK • S7 • IPC • 4 • Select all 	Under Master data, you can select or clear additional limiting filter conditions according to current information about the status of the machines.	SELECTION (Toggle) DISPLAY
Manufacturer	Use the +- symbol to open and close the dialog box.	SELECTION (toggle) ACTION
<ul style="list-style-type: none"> • No status • ... • ... • ... • Select all 	All manufacturers documented in the master data are available for filter selection.	SELECTION (toggle) DISPLAY
Customers	Use the +- symbol to open and close the dialog box.	ACTION (Toggle)

Function	Description	Type
<ul style="list-style-type: none"> • No status • ... • ... • ... • Select all 	All customers documented in the master data are available for filter selection.	SELECTION (toggle) DISPLAY
All machines	<p>All machines in the list can be selected or cleared at the same time.</p> <p>All machines selected here can be selected as a group.</p>	SELECTION (toggle) DISPLAY
<ul style="list-style-type: none"> • Partner for external machines • Partner for own machines 	As a subgroup of All machines, you can choose between Released by me or Released for me.	SELECTION (toggle) DISPLAY
Filtering	Updates the current display to these filter conditions based upon the entries and selections you have made.	ACTION
Select group	<p>All machines with a check mark set for all machines or manually for individual machines in the list can be defined as a group.</p> <p>This group will be used in all menus for views and functions with multiple machines.</p>	ACTION

2

2 Machine information

2.1 Machine overview

Overview

Machine events in the machine information:

The machine events of an individual machine can be viewed in the same way as the multi-machine events and always refer to the selected machine only.

See also Section: Multi-machine views

See also Section: Fault services

Machine information

Machine overview	
▶	Current control software
▶	Machine events
▶	Time series (measurement series and variable monitors)
▶	Archives
Maintenance	
▶	Maintenance jobs
Fault services	
▶	Report fault
Remote access	
▶	Start remote access

2.1.2 Machine events - List view

Function description

You can view events for the selected machine in a list under "Machine events" in the "Machine information" area.

Examples:

- Events from Control Monitor Services
 - Alarm or PLC events
 - Fault processing request
 - Cyclic events (time-based triggers)

Events that have been configured by control monitors with the identification "Without entry in the machine events" do not generate an entry, and their details cannot be viewed either.

- Events from condition monitor services
 - Exceeded interval limits of variable monitors
 - Limit value violation for measurement series / test series
- System events
 - NC/PLC archives created
 - Service sessions performed

You can view additional diagnostic information or triggered workflow services elements for each event, and evaluate it (in some cases graphically):

- Workflow services elements
 - Transmitted notifications (SMS / e-mail)
 - Generated maintenance jobs
 - Service cases
- Diagnostics data
 - Files
 - HMI action log
 - Machine data
 - NC status data
 - Feedback messages to the PLC
 - PLC trace
 - PLC data blocks
 - PLC monitors
 - Variable monitors
 - Archives

To ascertain differences between machine data, NC status data, and data of the HMI action log, you can compare this data with data of the same type for several events on the same machine.

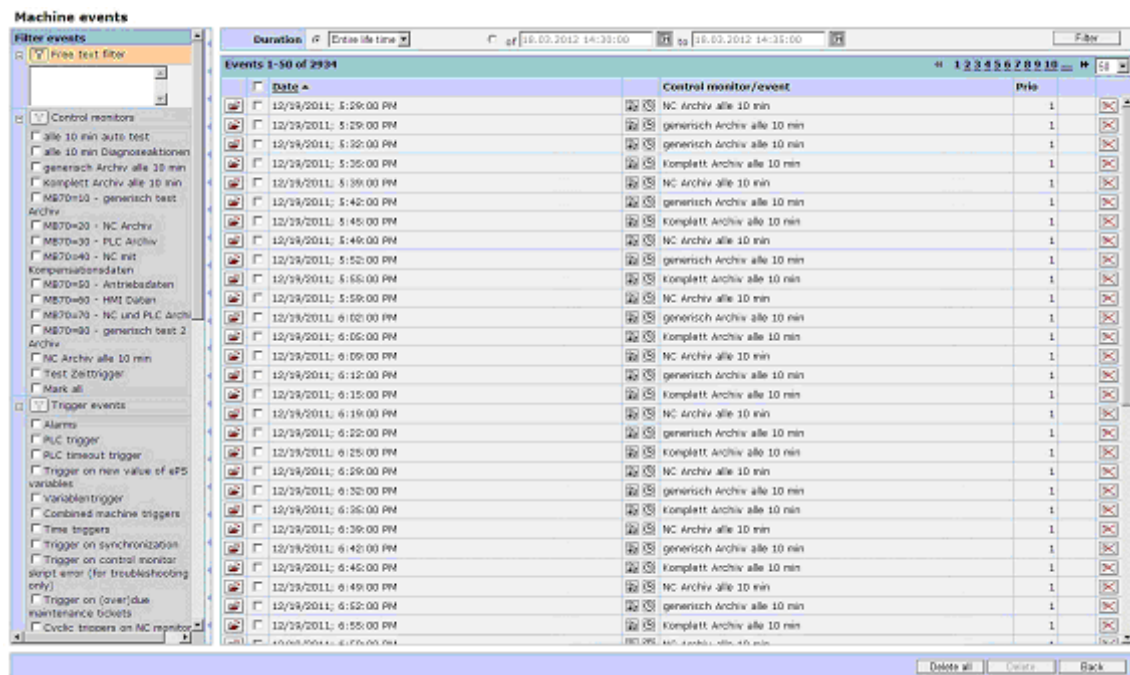




Fig. 2-2: Machine events - List view

Function	Description	Type
Time period	<p>The following time periods can be selected:</p> <ul style="list-style-type: none"> Total lifetime Last year Last half year / 6 months Last quarter year / 3 months Last month Last week Last day <p>- OR -</p> <ul style="list-style-type: none"> A freely definable time period from date/time to date/time <p>The set time period must be activated via the "Filter" button.</p>	SELECTION DISPLAY
Filter events	<p>Events can be filtered according to their properties.</p> <p>The following different filter options are available:</p> <ul style="list-style-type: none"> Filter according to event type (alarm, PLC, time-based trigger, trigger from variable monitors, conferences, session logs, etc.) Filter according to type of diagnostics data (e.g. files, PLC Traces) Filter according to type of triggered Workflow Services Elements (e.g. maintenance jobs) Filter according to event priority Filter according to time periods (e.g. today, this week, from/to) Filter according to archives / data backups 	SELECTION DISPLAY

	Note: The filter can be hidden to make it easier to evaluate the event history at lower screen resolutions. However, the filter settings still remain active.	
Find events	Searches events using a free text search. The search is applied to the "Name" and "Details" fields. Note: Localized alarm texts of the machine that was loaded into the server are also found, even if another language is currently set on your workstation (browser).	SELECTION ACTION
	Opens the detailed view of an event, for example, in order to view and compare diagnostic events.	ACTION
Sort events	Sorts events only according to time stamp (date). Note: If the list of events has already been reduced by filtering and/or a search, the reduced list is sorted.	ACTION
 Delete Delete all	Deletes individual events. - OR - Deletes all or several events at the same time: <ul style="list-style-type: none"> Select the individual entries using the checkboxes in the line and then click the "Delete" button. Click the "Delete all" button to remove all events. Note: Delete events <div> </div> Events marked as "not deletable" can be deleted if this has been released via the dialog shown above. This prompt is displayed after clicking the "Delete all" button. Notice: Diagnostics data generated with an event is also deleted; however, triggered Workflow Services Elements (e.g. maintenance jobs) are not deleted!	ACTION

2.1.3 Machine events - Detailed view

Function description

In the detailed view of an event you can view detailed information about a trigger event and the diagnostics data and triggered workflow service elements it generates.

The detailed view of an event is divided into three areas:

- Trigger
- Workflow actions: Opening displayed actions
□(maintenance job, notification)
- Diagnostics data: Opening displayed actions

The visualization is performed analogous to the configuration of a control monitor except for the restricted editing functions.

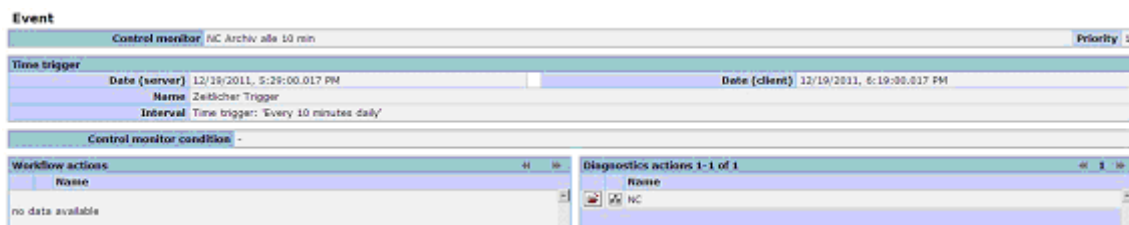


Fig. 2-3: Machine events - Detailed view

Note

The detailed information displayed for a particular event depends on the event type. The time stamp is displayed for all event types.

The time stamp is based on the time set on the machine, in order to achieve a true-to-life time-based payment for the event.

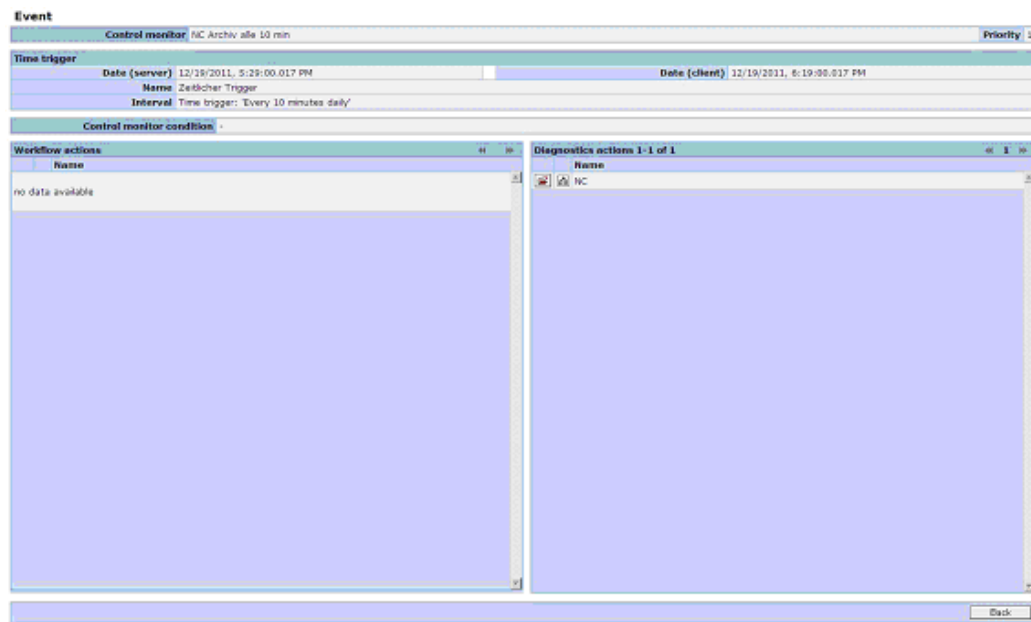




Fig. 2-4: Machine events - Detailed view with archive / data backup

Function	Description	Type
Control monitor	Name of the event	DISPLAY
Time-based trigger		
Date (server) Date (client)	Specification of the acquisition time on the server and on the client.	DISPLAY
Name	Name of the trigger type that the event triggers (e.g. time-based trigger)	DISPLAY
Interval	Trigger behavior (e.g. interval trigger)	DISPLAY
Control monitor - condition	Satisfied conditions that have enabled the initiation of the trigger.	DISPLAY
Workflow actions		
Name 	Name of the workflow action Opens the action and displays the details. The opened view corresponds to the representation configured under "Set up functions".	DISPLAY
Diagnostic actions		
Name 	Name of the diagnostic action Opens the action and displays the details. The opened view corresponds to the representation configured under "Set up functions".	DISPLAY
Back	Returns to the event overview.	ACTION

2.1.4 Evaluation of workflow actions

Function description

Here, you can view the recipients of notifications.

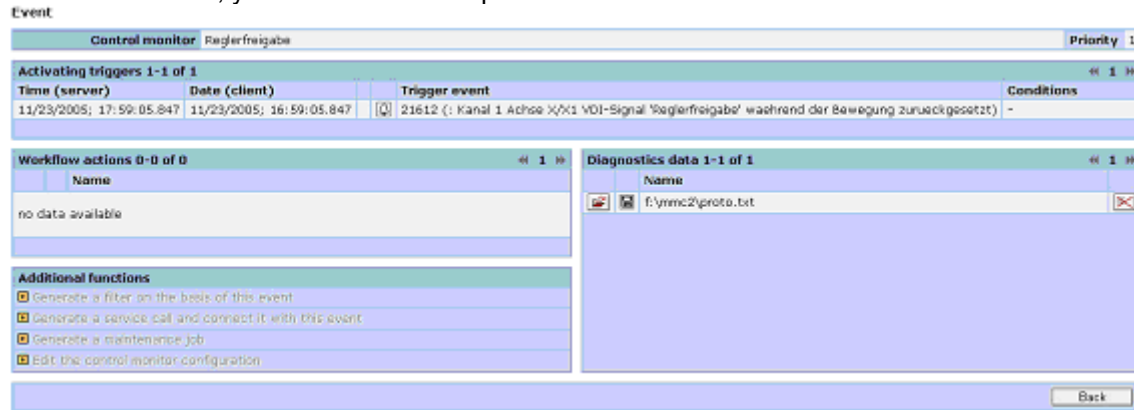


Fig. 2-5: Display of completed workflow actions

Function	Description
View workflow element	You can view workflow elements in detail. Note: Notifications and maintenance jobs cannot be edited.
Delete workflow element	You cannot delete workflow elements retroactively from events that have already occurred, since these show the documentation history. Note: Notifications, maintenance jobs and service cases cannot be deleted.

2.1.5 Evaluation of diagnostics data

Function description

SINUMERIK Integrate provides evaluation tools for the data acquired from the actions. These are either a text viewer (e.g. for machine data) or contain graphic views (e.g. PLC trace). A comparison tool is available for the machine data, NC status data, and HMI action log data types of diagnostics data. You can switch directly between different diagnostics data records of an event.

The following evaluation tools are available for the various diagnostics data:

- Viewing file lists
- Viewing HMI action log
- Viewing machine data
- Viewing NC status data
- Viewing PLC trace (the configurable view provides evaluation functions)
- Viewing PLC data block/list
- Visualize variable monitors
- Saving archives
- Feedback to PLC

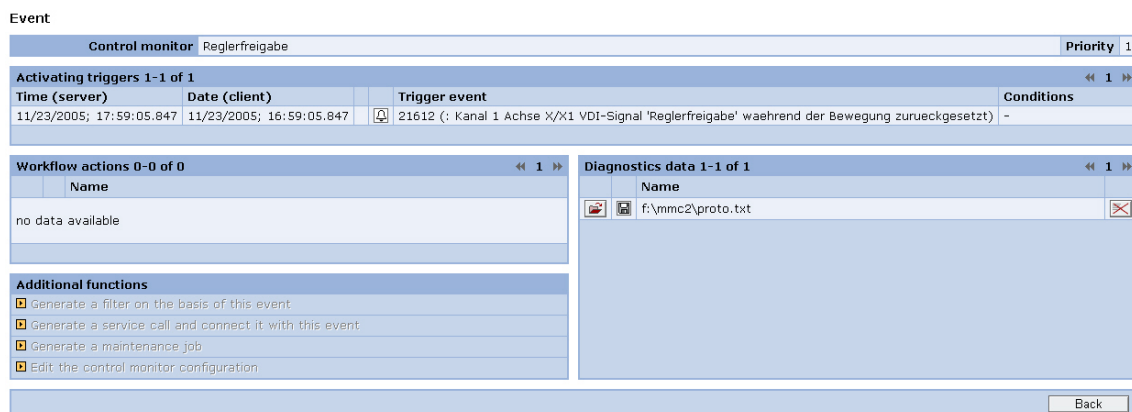


Fig. 2-6: Display of recorded diagnostics data

Function	Description
Diagnostics data	You can switch directly from viewing data for one action to viewing data for another, provided that it belongs to the same machine event.



File list

The files uploaded from the machine control with a particular event can be displayed in the Browser or in another application, or stored on a data carrier.



Fig. 2-7: List of uploaded files

Diagnostics data: General function

Function	Description
Change to	As this menu is a detail of the machine events, and several details may exist for the event, you can quickly change to other existing diagnostics data of the event via a menu.
	<p>You can open a file in either a separate browser window or another application. Alternatively, you can save the file to a data carrier.</p> <p>Note: The type of display depends on the data type and the applications installed on your system. Pure text or HTML documents are displayed in a separate browser window. Applications registered in the operating system are usually opened directly. You must save any files with unregistered data types and open them manually with your application.</p>
	<p>You cannot delete individual files from machine events; it is only possible to delete the entire event entry.</p> <p>Note: Deleting individual details from an event constitutes illegal manipulation of the archived document.</p>

HMI action log

An HMI action log uploaded with an event can be displayed in the browser and compared with other HMI action logs.

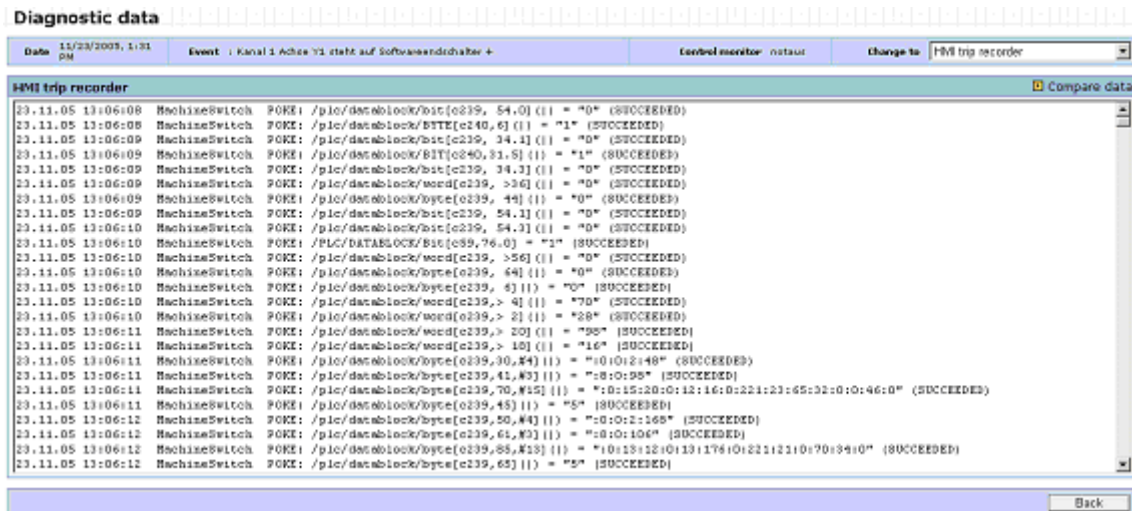



Fig. 2-8: HMI action log display


Function	Description
Display the HMI action log	<p>You can display and evaluate the content of an HMI action log in a text window.</p> <p>Note: The content of the HMI action log is defined via local settings on the machine control. See Section: Global settings The time stamp of the recorded information is generated from the PLC clock at the time of its occurrence.</p>
 Compare data	<p>You can compare the currently selected HMI action log with another one. The system offers you a list of all available HMI action logs of the currently selected machine.</p> <p>The HMI action logs are displayed in two horizontally adjacent windows and can be compared with each other. The event is displayed for each HMI action log, together with the event details and time stamp.</p>
Delete HMI action log	<p>You cannot delete individual HMI action log files from machine events; it is only possible to delete the entire event entry.</p> <p>Note: Deleting individual details from an event constitutes illegal manipulation of the archived document.</p>

Machine data

Machine data uploaded with an event can be displayed in the browser and compared with other machine data.

Date	4/4/2013, 10:45 AM	Event	Error report: sdafter5	Control monitor	IT: Störfallmeldung am HMI	Change to	-- Select diagnostic data --
Machine data							
		Channel	1				
PID	Area	Name	Value				
10010	MN	ASSIGN_CHAN_TO_MODE_GROUP[1]	1				
10061	MN	POSCTRL_CYCLE_TIME	0.002				
10063	MN	POSCTRL_CYCLE_DIAGNOSIS[0]	0.000135				
10063	MN	POSCTRL_CYCLE_DIAGNOSIS[1]	0.000137				
10063	MN	POSCTRL_CYCLE_DIAGNOSIS[2]	0.000219				
10063	MN	POSCTRL_CYCLE_DIAGNOSIS[3]	0.00195				
10063	MN	POSCTRL_CYCLE_DIAGNOSIS[4]	0.001971				
10063	MN	POSCTRL_CYCLE_DIAGNOSIS[5]	0.001974				
10071	MN	IPO_CYCLE_TIME	0.008				
10091	MN	INFO_SAFETY_CYCLE_TIME	0.002				
10092	MN	INFO_CROSSCHECK_CYCLE_TIME	0.474				
11412	MN	ALARM_REACTION_CHAN_NOREADY	1				
11640	MN	ENABLE_CHAN_AX_GAP	'H1'				
13140	MN	PROFIBUS_ALARM_ACCESS	2				
13318	MN	SAFE_GLOB_ACT_CHECKSUM[0]	'H21aa1fe4'				
13318	MN	SAFE_GLOB_ACT_CHECKSUM[1]	'He6f5aa52'				
13318	MN	SAFE_GLOB_ACT_CHECKSUM[2]	'Hf03d44ad'				

Fig. 2-9: Machine data display

Function	Description
Display machine data	<p>You can display and evaluate the content of the machine data in a table. You can select which channel you want to view machine data for.</p> <p>Note: Machine data without a channel reference is displayed in the first channel. The machine data generated with control monitor services does not contain any drive machine data.</p>
 Compare data	<p>You can compare the currently selected machine data record with another one. The system offers you a list of all available machine data records of the currently selected machine. The machine data values are displayed side by side for each machine data item. A machine data item is highlighted when the values in the original data record and in the comparison data record differ. The event is displayed for each machine data record, together with the event details and time stamp.</p> <p>It is possible to display only differences. The system hides all machine data with identical values in the initial data record and in the comparison data record.</p> <p>Note: Drive machine data is not compared.</p>
Delete machine data	<p>You cannot delete individual machine data record files from machine events; it is only possible to delete the entire event entry.</p> <p>Note: Deleting individual details from an event constitutes illegal manipulation of the archived document.</p>

NC status data

NC status data uploaded with an event can be displayed in the browser and compared with other NC status data.

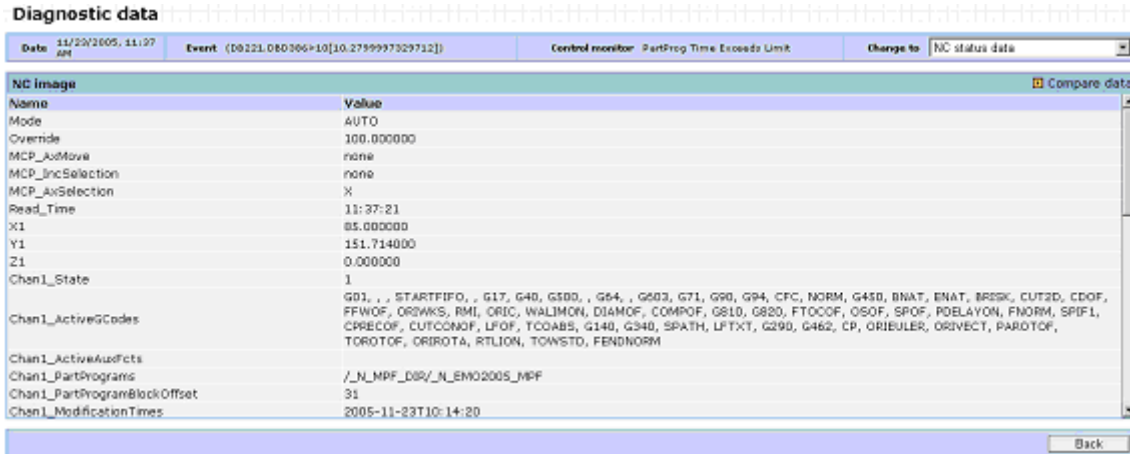


Fig. 2-10: NC status data display

Function	Description
Display NC status data	<p>You can display and evaluate the content of the NC status data in a table and evaluate it.</p> <p>Notice: The NC status data reflect the status of the related NC variables after an event has occurred. For some events (e.g. RESET alarms) there is a danger of misinterpretation as the event itself influences the variable value (example: pointer to current block is reset by alarm).</p>
Compare data	<p>You can compare the NC status data record currently selected with another data record. The system offers you a list of all available NC status data records of the currently selected machine. The values of the NC status data records are listed next to each other for each variable for comparison purposes. A variable is highlighted when the values in the original data record and in the comparison data record differ. The event is displayed for each NC status data record, together with the event details and time stamp.</p> <p>It is possible to display only differences. The system hides all variables with identical values in the original data record and in the comparison data record.</p>

Function	Description
Delete NC status data	You cannot delete individual NC status data from machine events; it is only possible to delete the entire event entry.
	Note: Deleting individual details from an event constitutes illegal manipulation of the archived document.

PLC trace

PLC trace data created with an event can be displayed in the browser and evaluated with graphical tools. Signal curves can be checked by displaying variable values in the graphical display, setting markings and zooming.

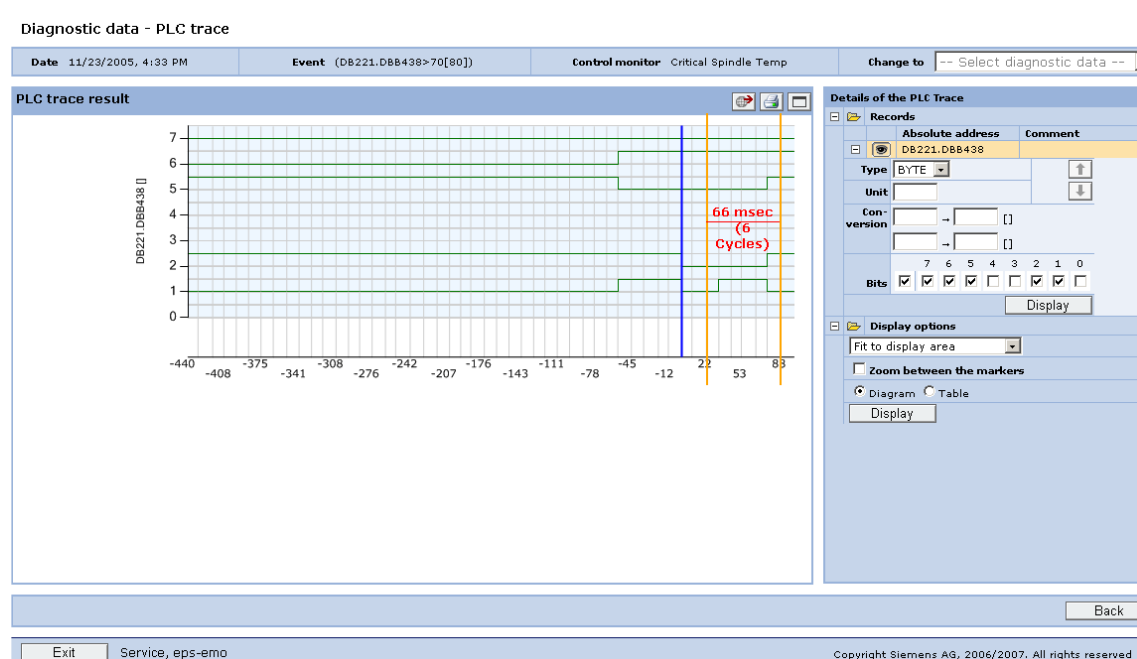








Fig. 2-11: PLC trace display as diagram

Function	Description
Display	The PLC trace is displayed for all configured variables in the specified format. The signal triggering the recording is displayed and selected as 0 cycle / 0 time. Display updates the display with the predefined details for the PLC trace.

Function	Description
+ /–	Opening and closing of the details for: <ul style="list-style-type: none"> • Recordings • Display options • Variables
	Showing/hiding the graph of the variable in the display: For a clearer view, variables can be hidden in the display in order that individual variable configurations can be viewed.
Type	Format of the variables.
Unit	Dimension of evaluated variable values (e.g. ° C).
Conversion of display scaling	Evaluation of variable values for the dimension adjustment, linearly through two defined value assignments. The variables can be scaled linearly via two defined points for the display (e.g. byte value 16 corresponds to 20° C, byte value 128 corresponds to 90° C).
Bits	Display of a variable in byte format; not as a value, but individually as a binary signal for each selected bit. Variables configured as byte can also be displayed as individual bits (BOOL). If not all of the individual bits are required in the view, they can be specifically selected for the display.
 	The sequence of the variables can be changed so that they can be compared directly next to each other.
PLC trace: Time/cycles display	The horizontal axis is always displayed with a millisecond specification for each cycle. This can be changed to the cycle number, each calculated with the starting point 0 from the trigger.
Display options	PLC trace diagrams can be displayed in a default setting that can be evaluated on every monitor. A complete recording can be displayed in a compressed format, by means of a zoom setting in a single view. However, this may result in a loss of information. Every detail is displayed in an optimized compressed display, but in the smallest possible view. The minimum level of precision that can be set for the graph view is the pixel level, but marking should allow a cycle level of precision to be set dynamically.
Diagram/table	A graphical or tabular display of the variable values can be selected.
PLC trace: Data display, Horizontal/vertical	The display of the data table can be changed from a horizontal (time/cycle axis) to a vertical (variable axis) view.
PLC trace: Marks	Markings can be set in the PLC trace display that are used for the difference calculation and display of the current values. The markings are retained when using the zoom function.

Function	Description
	Depending on the resolution, they can be positioned on a cycle-specific basis; the minimum level of precision that can be set is the pixel level, where all cycles appear between the markings. All cycles between the markings are included.
	The PLC trace data can be exported as a file for further processing.
	The PLC trace data can be printed on an installed printer.
	The window for the PLC trace display can be maximized/minimized.

Diagnostic data - PLC trace

Date 11/23/2005, 4:33 PM Event (DB221.DBB438>70[80]) Control monitor Critical Spindle Temp Change to -- Select diagnostic data --

PLC trace result

	DB221.DBB438.7	DB221.DBB438.6	DB221.DBB438.5	DB221.DBB438.2	DB221.DBB438.1
-440	0	0	1	1	0
-431	0	0	1	1	0
-418	0	0	1	1	0
-408	0	0	1	1	0
-397	0	0	1	1	0
-386	0	0	1	1	0
-375	0	0	1	1	0
-364	0	0	1	1	0
-352	0	0	1	1	0
-341	0	0	1	1	0
-330	0	0	1	1	0
-320	0	0	1	1	0
-308	0	0	1	1	0
-297	0	0	1	1	0
-287	0	0	1	1	0
-276	0	0	1	1	0
-264	0	0	1	1	0
-255	0	0	1	1	0
-242	0	0	1	1	0
-230	0	0	1	1	0
-218	0	0	1	1	0

Details of the PLC Trace

Records

Absolute address	Comment
DB221.DBB438	

Type: BYTE

Unit:

Conversion:

Bits: ☒ 7 ☒ 6 ☒ 5 ☒ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0

Display

Display options

Display data vertically

Zoom between the markers

Diagram ☒ Table

Display

Back

Exit Service, eps-emo Copyright Siemens AG, 2006/2007. All rights reserved

Fig. 2-12: PLC trace values displayed vertically

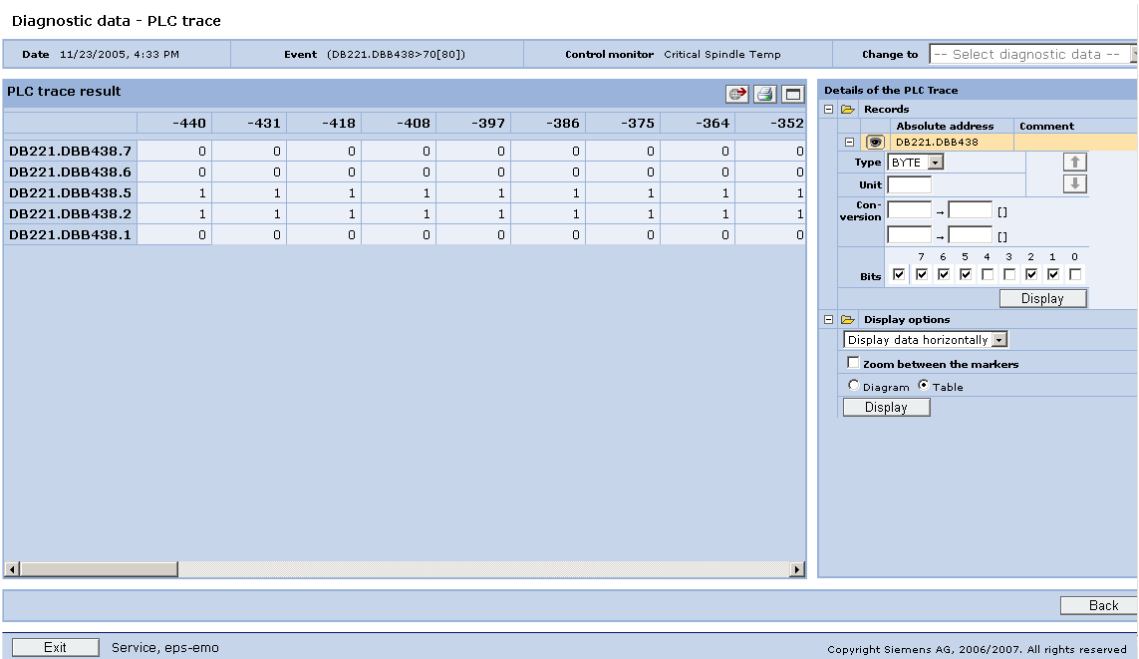


Fig. 2-13: PLC trace values displayed horizontally

PLC traces uploaded with an event can be displayed in the browser and evaluated with graphical tools. Incorrect signal curves can easily be found by displaying variable values in the graphical display, setting markings and zooming.

PLC data blocks / list

PLC data blocks uploaded from the control on an event can be saved to a data carrier.

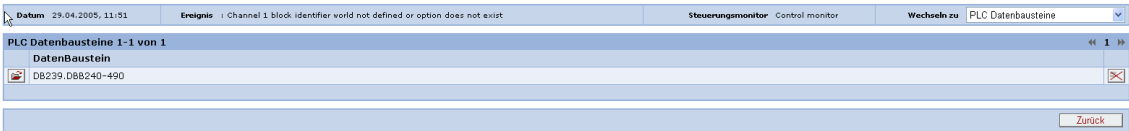


Fig. 2-14: PLC data block display

Function	Description
Save PLC data block	You can save a PLC data block to an external data carrier.
Delete PLC data block	You cannot delete individual PLC data blocks from machine events; it is only possible to delete the entire event entry. Note: Deleting individual details from an event constitutes illegal manipulation of the archived document.

Feedback messages to the PLC, see Section: Diagnostic actions.

Archives

Diagnostic data - Creating and uploading archives


Date	4/4/2013, 1:02 PM	Event	Error report: test	Control monitor	control monitor	Change to	-- Select diagnostic data --
Archive details							
Name	NC_PLC						
Comment	archive NC and PLC with compensation data						
Archivtyp	Series start-up						
Control components	PLC data, NC data with compensation data						
Created on	4/4/2013 12:24:27 PM						
Created by	eloper, dev						
Archive file	20130404-1224_NC_PLC.arc 						
Size	1017.5kB						
Back							

Fig. 2-15: Machine events - Detailed view for the series start-up (NC/PLC)


Date	4/4/2013, 1:02 PM	Event	Error report: test	Control monitor	control monitor	Change to	-- Select diagnostic data --
Archive details							
Name	HMI-data						
Comment	archive only HMI data						
Archivtyp	Series start-up						
Control components	HMI data						
Created on	4/4/2013 12:22:51 PM						
Created by	eloper, dev						
Archive file	20130404-1222_HMI-data.arc 						
Size	5.42MB						
Back							

Fig. 2-16: Machine events - Detailed view for archives (HMI data)



Date	4/4/2013, 1:56 PM	Event	Error report: test	Control monitor	control monitor	Change to	-- Select diagnostic data --
Archive details							
Name	generic data						
Comment	generic path: C:\temp\Persistence\archives						
Archivtyp	Generic						
Plade	C:\temp\Persistence\archives						
Created on	4/4/2013 1:17:26 PM						
Created by	eloper, dev						
Archive file	20130404-1317_generic data.arc 						
Size	6.5kB						
Back							

Fig. 2-17: Machine events - Detailed view for generic data backups

Function	Description	Type
Diagnostics data		
Date	Date and time of the event entry.	DISPLAY
Event	Triggering event.	DISPLAY
Control monitor	Triggering control monitor.	DISPLAY
Change to	Changes to the diagnostic data (only variables and time series).	SELECTION DISPLAY
Archive details		
Name	Name of the archive / data backup.	DISPLAY
 Download	Download function opens a window in Windows (save - storage location selection).	ACTION
Creator	Name of the author.	DISPLAY

Function	Description	Type
Date	Date and time of the archive creation or data backup.	DISPLAY
Size	Specifies the size of the archive.	DISPLAY
Type of archive	Archive type: <ul style="list-style-type: none"> NC and PLC with/without compensation data HMI data Generic data backup with path / file specification 	DISPLAY
Comment	Configured comment	DISPLAY
Back	Returns to the event overview	ACTION
Exit	Exits the current application and returns to the SINUMERIK Integrate login window.	ACTION

Conference/session recording

The participant in a session can record an Access MyMachine session fully or partly on video. Once recording has been completed, a recording event is generated and added to the event list.


Date	Control monitor/event	Prio
3/27/2013; 1:20:44 PM	Download files to machine	0
3/27/2013; 1:16:18 PM	Session recording - Start time: 3/27/2013 12:16:06 PM (UTC), Duration: 00:00:00	0
3/27/2013; 1:15:52 PM	Conference - Start time: 3/27/2013 12:15:20 PM (UTC), participants: ms, s	0

Fig. 2-18: Session recording/conference with Access MyMachine

The events can be filtered in the event history.

Date	Control monitor/event	Prio
3/27/2013; 3:39:57 PM	Session recording - Start time: 3/27/2013 2:16:04 PM (UTC), Duration: 00:00:00	0
3/27/2013; 2:15:59 PM	Session recording - Start time: 3/27/2013 1:15:50 PM (UTC), Duration: 00:00:00	0
3/27/2013; 1:16:18 PM	Session recording - Start time: 3/27/2013 12:16:06 PM (UTC), Duration: 00:00:00	0
3/27/2013; 12:48:26 PM	Session recording - Start time: 3/27/2013 10:46:44 AM (UTC), Duration: 00:00:00	0
3/27/2013; 9:42:03 AM	Session recording - Start time: 3/27/2013 8:40:19 AM (UTC), Duration: 00:00:00	0
3/27/2013; 9:40:09 AM	Session recording - Start time: 3/27/2013 8:37:21 AM (UTC), Duration: 00:00:00	0
3/27/2013; 9:37:08 AM	Session recording - Start time: 3/27/2013 8:35:47 AM (UTC), Duration: 00:00:00	0
3/27/2013; 9:35:06 AM	Session recording - Start time: 3/27/2013 8:20:09 AM (UTC), Duration: 00:00:00	0
3/26/2013; 1:45:12 AM	Session recording - Start time: 3/25/2013 4:22:25 PM (UTC), Duration: 00:00:00	0
3/25/2013; 4:50:55 PM	Session recording - Start time: 3/25/2013 3:50:46 PM (UTC), Duration: 00:00:00	0
3/25/2013; 4:50:22 PM	Session recording - Start time: 3/25/2013 3:21:14 PM (UTC), Duration: 00:00:00	0
3/25/2013; 4:20:35 PM	Session recording - Start time: 3/25/2013 3:17:47 PM (UTC), Duration: 00:00:00	0
3/25/2013; 4:16:19 PM	Session recording - Start time: 3/25/2013 2:20:14 PM (UTC), Duration: 00:00:00	0
3/21/2013; 5:24:02 PM	Session recording - Start time: 3/21/2013 4:23:57 PM (UTC), Duration: 00:00:00	0
3/21/2013; 1:24:32 PM	Session recording - Start time: 3/21/2013 12:24:25 PM (UTC), Duration: 00:00:00	0

Fig. 2-19: Session recording with Access MyMachine

Function	Description	Type
Filter period	Enter the time from which onwards you want to show the session recordings with AMM. <ul style="list-style-type: none"> Total lifetime From: date and time - DD.MM.YYYY hh:mm Till: date and time - DD.MM.YYYY hh:mm 	DISPLAY INPUT
Events		
	Opens the detailed view of the session recording.	ACTION
Date	Date and time of recording.	DISPLAY
Control monitor / event	Type and time of the event: session recording / conference.	DISPLAY
Priority	Shows the event priority.	DISPLAY

Sitzungsaufzeichnung mit Access MyMachine

Konferenz			
Sitzungsnummer	72-400-566-69		
Startzeit	11/16/2012 10:19:15 AM		
Aufzeichnung			
Startzeit	11/16/2012 10:19:18 AM	Dateigröße	90.715 MB
Endzeit	11/16/2012 10:19:30 AM	Dauer	00:00:11
Teilnehmer			
Teilnehmer	eloper dev (Test\Test), User Test (Test\TestUser1), TestUser2 (Test\TestUser2)		
Herunterladen			
Format	MPEG		
	Herunterladen		

Fig. 2-20: Detailed view of the session recording with Access MyMachine

Function	Description	Type
Conference		
Session number	Shows the session number.	DISPLAY
Start time	Shows the start time. Date: MM.DD:YYYY and Time: hh.mm.ss	DISPLAY
Recording		
Start time	Shows the start time of the conference. Date: MM.DD:YYYY and Time: hh.mm.ss	DISPLAY
End time	Shows the end of the recording. Date: MM.DD:YYYY and Time: hh.mm.ss	DISPLAY
File size	Shows the file size in MB.	DISPLAY
Duration	Shows the duration of the conference.	DISPLAY
Participants		
Participants	Shows all participants of the conference.	DISPLAY
Download		
Format	Shows the format of the recording. The following formats are supported: MPEG, AVI, WMV, FLV, RFB (raw/original format)	DISPLAY
Download	The recording file can be downloaded and saved in any directory.	ACTION

2.2 Variable monitors – time Series – measurements and measurement series

2.2.1 Visualization on the Internet PC

Function description

The performance and status of a machine and its modules can be analyzed with measurements and measurement series that have been performed on the machine. This includes measurement curves generated from the measurements and characteristics, as well as additional information about the measurement result. Trend curves can be generated from characteristics in measurement series. The machine operator can use the measurement results to make an analysis at a later point, while away from the machine. Status changes can be derived from the trend curves. Limit values will show whether any maintenance work is necessary at an early stage.

Selection and filter area



Fig. 2-21: Overview of the time series for the machine selected

Function	Description
Select time series	Measurement series / time series can be selected from the machine axes in the selection tree. It is possible to select several measurement series.
Display	The "Display" function shows the selected measurement series in diagrams.

Function	Description
Filter time series Variable monitors and Axis test types: <ul style="list-style-type: none"> • Equability test • Circularity test • Universal axis test 	This function opens the menu for the purpose of filtering the measurement series displayed in the selection. Measurement series can be filtered according to the type of measurement series.
Filtering	The "Filter" function causes the selected filter setting to take effect.
Show/hide filter areas	This function shows or hides the entire filter area.

Displaying diagrams of the selected time series

If you click the "Display" text button under the time series selection tree, the graphs for the selected time series are displayed.

Displaying the measurement results

You can view measurement results both on the machine operator panel and on the PC. Trend curves produced by measurement series can only be viewed on the PC.

The warning and critical limits of the characteristics can give the machine operator evaluation information about how far the qualitative state of the machine is from the limit criterion.

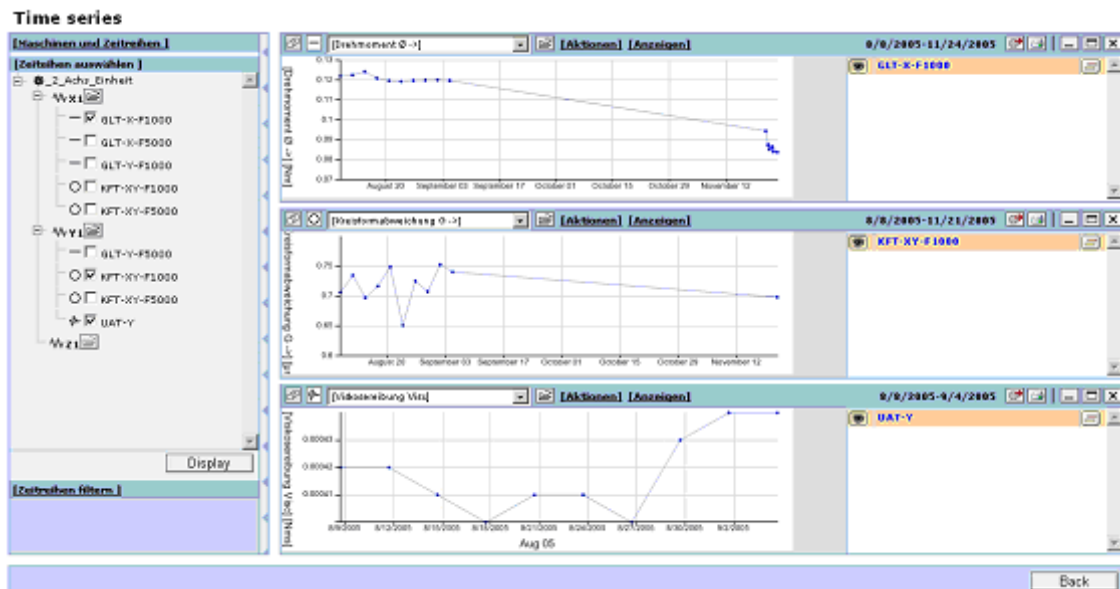


Fig. 2-22: Examples of time series




The trend curve can be generated from the measuring type-specific characteristics (characteristic over time) by cyclic repetition of individual measurements. This is used in particular as a basis for condition-oriented maintenance. For this, measurement series can be generated based on existing individual measurements. This ensures that the measurement series is based on the same measurement.

How each test is conducted is described in the following Section: Test series on the machine.

The machine operator can view the measurement results on the operator panel of the machine and on the PC. Trend curves derived from measurement series can only be viewed by the operator on the PC.

2.2.2 Operating diagrams

General control elements

Function	Description
	Reduces the diagram so that only the header line is visible.
Restore diagram	Restores the minimized diagram to its standard size.
	Magnifies the diagram so that it fills the entire diagram space.
	Closes the diagram
Setting and displaying markings	<p>A pair of markings can be set in the diagram. Left-click to set the first marking. Move the cursor without pressing any buttons to position the second marking, and then left-click. The markings can be reset if you wish.</p> <p>The markings are deleted by means of the "Delete markings" function in the "Display" menu.</p>
Display in new diagram	<p>If you click the "Display in new diagram" button on the right-hand side next to the drop-down list box, a new diagram of the same type will be displayed below the diagram that is already shown.</p> <p>The newly generated diagram adopts all display properties of the original diagram (selected characteristic, marks, display, selection and sequence of time series, etc.).</p>
Export diagram	The data points represented in the diagram are saved in a file in "XLS" format. If Excel is not available, an XML file is created.

Changing the characteristic

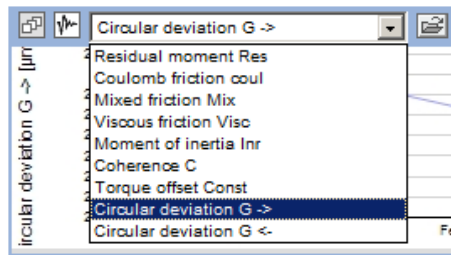


Fig. 2-23: Drop-down list box for circularity test characteristics

The drop-down list box contains the list of characteristics for each test type. If you select a characteristic, the diagram that has been displayed up to this point will be replaced by the time series diagram for the characteristic selected.

"Actions" menu

Entries menu	
Reload	Regenerates the diagram.
All parameters	A table containing the parameters for all of the measurement series shown in the diagram is displayed.
Scaling	Selection of the diagram scale (only for the equability test). In the case of the diagrams for the circularity test and universal axis test, the "Actions" menu does not contain "Scaling". See Section: Equability test
Delete measurement	Deletes the data points in a specified interval or value range.

"Display" menu

The display settings of the diagram can be influenced via the "Display" menu.

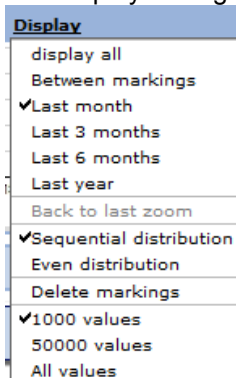


Fig. 2-24: Display settings

Function	Description
Display all	Displays the complete progression over time of the time series.
Between markings	Displays the time range between the two markings.

Function	Description
Last month Last 3 months Last 6 months Last year	Selects a display area. When the display area is changed, the diagram is regenerated to reflect this; however, all of the other settings (in particular, the markings) remain the same. The following time stamps can be selected: <ul style="list-style-type: none"> • Last month • Last 3 months • Last 6 months • Last year
Back to previous zoom	Generates the diagram with the previous zoom setting.
Time-based distribution	The horizontal axis represents a time axis. The measuring points are plotted along this according to their date.
Equal distribution	The measured values are distributed equally along the X axis; it is not possible to draw any further conclusions about the time of the measurement from the points on the X axis.
1000 values	Shows 1000 relevant filtered values from the database.
5000 values	Shows 5000 relevant filtered values from the database.
All values	Shows all relevant filtered values from the database.
Delete markings	The marks are removed from the diagram.

List of machines and time series with control elements



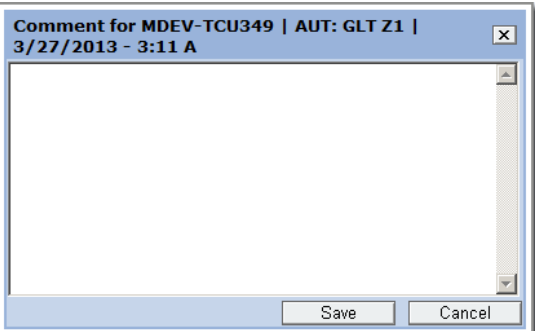
Fig. 2-25: Displaying/hiding individual measurement series

Function	Description
	This function removes the measurement series graph from the diagram. The diagram is redrawn, which involves recalculating the scale.
	This function plots the limit values of the selected measurement series in a line in the diagram. If the limit values are outside the range of values displayed, an icon indicating this will appear.

Context menu of the time series diagram

If you point the cursor to an individual measuring point within the time series in the diagram and right-click, a context menu containing actions relating to that measuring point appears. The functions executed via the context menu relate to either the entire measurement range to which the measuring point belongs (i.e. the measurement range and the measurement), or simply the measurement represented by the data point.

Function																																																																																						
Measurement series comment	Displays the measurement series comment. This can be changed and saved.																																																																																					
Measurement / measurement series parameters	<div><div>MDEV-TCU349 AUT: KFT YZ 3/28/2013 - 9:32</div><div>A</div><table><thead><tr><th></th><th>Measurement</th><th>Measuring series</th></tr></thead><tbody><tr><td>Channel</td><td>CHAN1</td><td>CHAN1</td></tr><tr><td>Checked axes</td><td>Y1/Z1</td><td>Y1/Z1</td></tr><tr><td>Center point</td><td>9/2 mm</td><td>9/2 mm</td></tr><tr><td>Diameter</td><td>585 mm</td><td>585 mm</td></tr><tr><td>Feedrate</td><td>5214 mm/min</td><td>5214 mm/min</td></tr><tr><td>Meas. direction</td><td>Bidirectional</td><td>Bidirectional</td></tr><tr><td>Number of meas. points</td><td>1763</td><td>1763</td></tr><tr><td>Distance between measuring points</td><td>1.042 mm</td><td>1.042 mm</td></tr><tr><td>Service engineer</td><td>ePS-System, Machine</td><td>ePS-System, Machine</td></tr></tbody></table></div>		Measurement	Measuring series	Channel	CHAN1	CHAN1	Checked axes	Y1/Z1	Y1/Z1	Center point	9/2 mm	9/2 mm	Diameter	585 mm	585 mm	Feedrate	5214 mm/min	5214 mm/min	Meas. direction	Bidirectional	Bidirectional	Number of meas. points	1763	1763	Distance between measuring points	1.042 mm	1.042 mm	Service engineer	ePS-System, Machine	ePS-System, Machine																																																							
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Characteristic/limit values measurement	<div><div>MDEV-TCU349 AUT: GLT Z1 3/27/2013 - 2:11</div><div>A</div><div>X</div><table><thead><tr><th>Characteristic value</th><th>Value</th><th>WL</th><th>CL</th><th>[]</th></tr></thead><tbody><tr><td>Maximum torque -></td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Maximum torque <-</td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Minimum torque -></td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Minimum torque <-</td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Torque Ø -> LL</td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Torque Ø -> UL</td><td></td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Torque Ø <- LL</td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Torque Ø <- UL</td><td></td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Trend lead -> LL</td><td>0</td><td>-</td><td>-</td><td>Nm/mm</td></tr><tr><td>Trend lead -> UL</td><td></td><td>-</td><td>-</td><td>Nm/mm</td></tr><tr><td>Trend lead <- LL</td><td>0</td><td>-</td><td>-</td><td>Nm/mm</td></tr><tr><td>Trend lead <- UL</td><td></td><td>-</td><td>-</td><td>Nm/mm</td></tr><tr><td>Torque σ -></td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Torque σ <-</td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Ramp -></td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr><tr><td>Ramp <-</td><td>0</td><td>-</td><td>-</td><td>Nm</td></tr></tbody></table></div>	Characteristic value	Value	WL	CL	[]	Maximum torque ->	0	-	-	Nm	Maximum torque <-	0	-	-	Nm	Minimum torque ->	0	-	-	Nm	Minimum torque <-	0	-	-	Nm	Torque Ø -> LL	0	-	-	Nm	Torque Ø -> UL		-	-	Nm	Torque Ø <- LL	0	-	-	Nm	Torque Ø <- UL		-	-	Nm	Trend lead -> LL	0	-	-	Nm/mm	Trend lead -> UL		-	-	Nm/mm	Trend lead <- LL	0	-	-	Nm/mm	Trend lead <- UL		-	-	Nm/mm	Torque σ ->	0	-	-	Nm	Torque σ <-	0	-	-	Nm	Ramp ->	0	-	-	Nm	Ramp <-	0	-	-	Nm
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Function	
Measurement comment	
Display measurement	Displays a diagram with the individual measurement selected below the time series diagram.

2.2.3 Control elements of the diagrams for individual measurements



Fig. 2-26: Header line for individual measurement diagram

Selecting the characteristic

The drop-down list box contains the list of characteristics that are available for each type of test. If you click a name of the characteristic, then the characteristic that has been displayed up until this point is replaced by the new one.

New characteristic in a separate diagram

If you click the "Display in new diagram" button on the right-hand side next to the drop-down list box of characteristics, a new diagram of the same type will be displayed below the diagram that is already shown.

The new diagram adopts all display characteristics of the original diagram (marks, zoom, etc.).

Where individual measurement diagrams are concerned, the "Actions" menu and context menu have the same options:

Function	Description
Parameters	Shows the pop-up window with the list of measurement parameters. The same pop-up window can be opened from the context of the time series.
General conditions	Shows the pop-up window with the list of measurement parameters.
Comment	Pop-up with measurement comment.
Scaling	Selection of the diagram scale (only for the equability test). In the case of the diagrams for the circularity test and universal axis test, the "Actions" menu does not contain "Scaling".

Scaling for the equability test

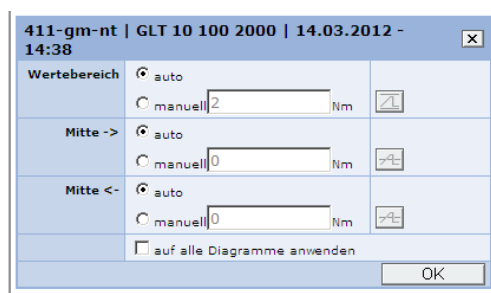
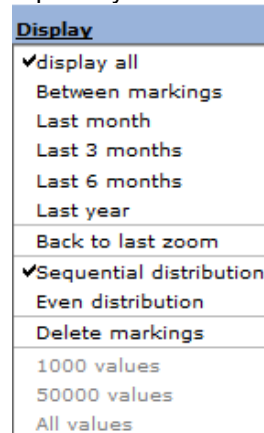


Fig. 2-27: Scaling for the equability test

"Display" menu

This menu is only available for the individual measurement diagram of the equability test.



Function	Description
Between the markings	Adjusts the zoom factor of the diagram at the area between the markings. Prerequisite is that both markings have been set.
Delete markings	Removes the marking bars from the display.
Reset display	Displays the diagram in the previous range selection display again.

Navigating to previous/next measurement

The two buttons for this function can be used to navigate to the previous or next measurement of the measurement series in question.

2.2.4 Circularity test

Function description

The circularity test produces a polar plot of the circular path and circularity-specific characteristics:

Characteristic	Description
Circular deviation	The circular deviation is measured on the basis of ISO 230-4 as difference between the maximum and minimum radius at movement of a circle in one direction. A value is calculated for each direction of movement.
Circular hysteresis	As defined in ISO 230-4 the circular hysteresis is determined by establishing the maximum difference of measured radii on an angular position between the two directions of movement.

The measurement type-relevant parameters are also specified. The goal is to test the drive dynamics and accuracy of the two axes involved.

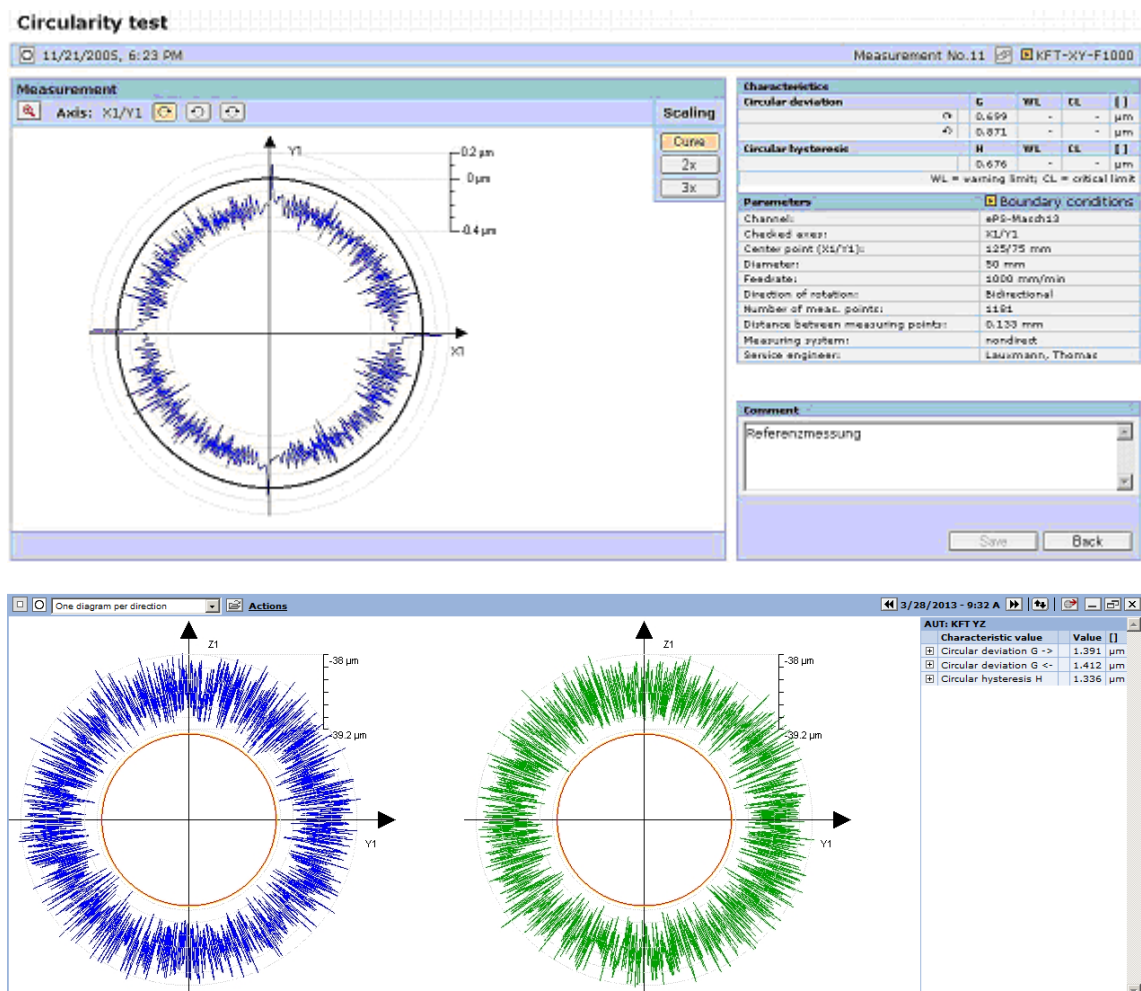


Fig. 2-28: Measuring result of a circularity test

2.2.5 Equability test

Function description

The equability test result returns the torque/force measurement curve over the axis position and various torque characteristics. The characteristics are determined for each direction of movement separately. If nothing else is described for the characteristics, the characteristics refer to the position range without the acceleration and braking ramps.

Characteristic	Description
Maximum torque	The maximum returns the maximum torque in the measured position range. For torque characteristics with linear trend, the proportion of the trend is calculated to determine the maximum torque.
Minimum torque	The minimum returns the minimum torque in the measured position range. With torque characteristics with linear trend, the proportion of the trend is computed for determining the minimum torque.
Average torque	The characteristic returns the mean torque in the measured position range with the configured speed. Independently of the direction, a larger value always corresponds to a larger torque in the direction of movement.
Standard deviation	The characteristic represents the standard deviation of the torque characteristic in the measured position range at the configured speed. With torque characteristics with a linear trend, the proportion of the trend is eliminated from the standard deviation.
Gradient of the linear trend of the torque characteristic	The characteristic indicates the increase in the change to the torque at position changes.
Maximum torque in the acceleration ramp	The characteristic indicates the maximum torque which is run in the acceleration ramp.

For axes that also have a direct measuring system the overall rigidity curve over the axis position is also displayed. The rigidity is determined independently of the direction. The following rigidity characteristics are calculated:

Characteristic	Description
Maximum rigidity	The characteristic returns the maximum rigidity value via the rigidity characteristic in the measured position range at the configured speed.
Minimum rigidity	The characteristic returns the minimum rigidity value via the rigidity characteristic in the measured position range at the configured speed.
Average rigidity	For calculating the characteristic, the mean rigidity value is determined in the measured position range at the configured speed.
Standard deviation of the rigidity	For calculating the characteristic, the standard deviation of the rigidity is determined in the measured position range at the configured speed.

The equability test notifies the machine operator of faults and interference resistances from feed axis elements. The curve of the recorded values indicates at which axis position the disturbance is located. A trend analysis of the characteristics will indicate any change in the status of the drive train.

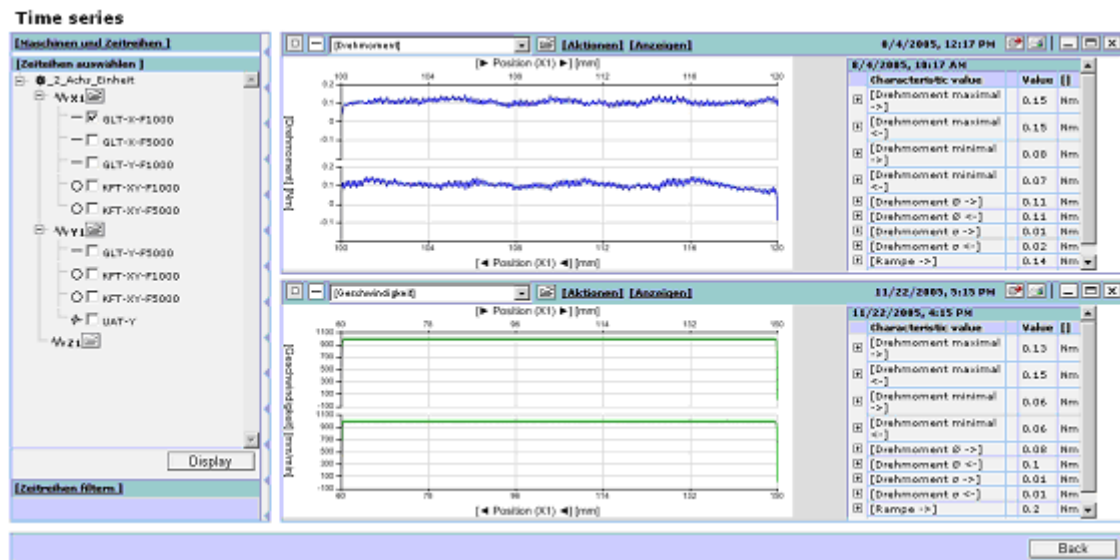


Fig. 2-29: Measurement results of an equability test

2.2.6 Universal axis test

Function description

With the universal axis test, different characteristics are calculated which describe the mechanical properties of an axis.

Characteristic	Description
Residual torque (Res)	This characteristic is not supported.
Coulomb friction (Coul)	The Coulomb friction describes the proportion of the friction which is independent of the speed.
Mixed friction (Mix)	This characteristic is not supported.
Viscous friction (Visc)	This characteristic describes the proportion of the friction which increases linear to the speed.
Moment of inertia (Inr)	The characteristic describes the entire moment of inertia that needs to be moved by the electrical drive. This includes the moment of inertia of the motor.
Torque offset (Const)	With axes which are pretensioned in one direction (e.g. vertical axes) the characteristic indicates the torque required for compensating for this pretension.
Coherence (K)	The coherence indicates how much a model parameterized with the calculated characteristics can simulate the measured torque characteristics.
Circular deviation (G)	The characteristic describes the maximum position deviation with axis movement on the basis of a velocity profile. The calculation of the characteristic is based on ISO 230-4 as is the case with the circularity test.

The measurement type-relevant parameters are also specified.

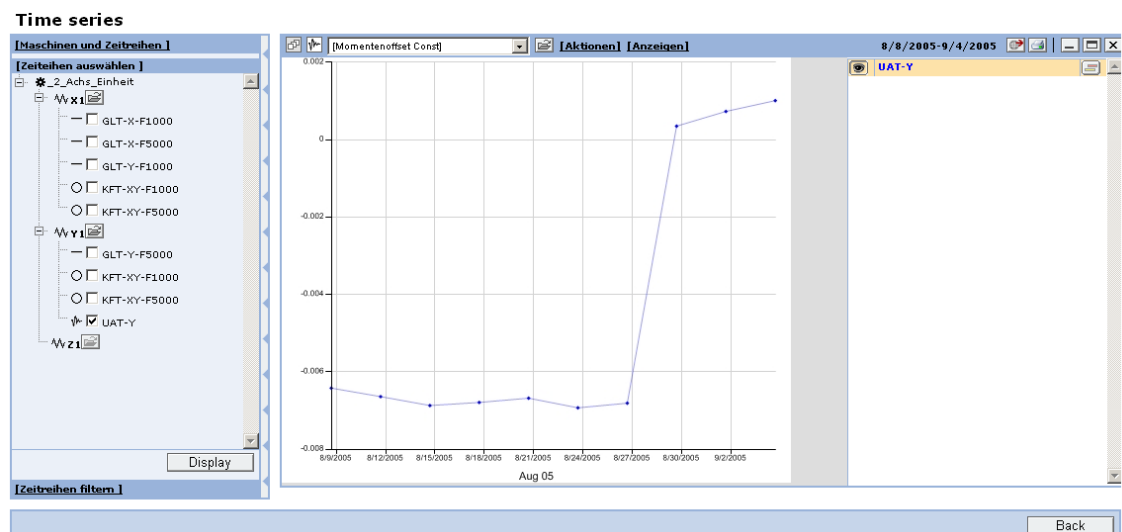


Fig. 2-30: Time series for a universal axis test

2.2.7 Variable monitors

Function description

Variable monitors enable the recording in the control of changes over time of any status data. The variable monitors are essentially for long-term recording in slow data recording cycles (as opposed to the PLC trace).

Variables can be recorded in a variable monitor. Depending on the variable type, the recording cycle is not absolutely synchronous. The PLC variables recorded can be from the PLC environment: inputs, outputs, counters, flags, and any data addresses in PLC blocks. From the NC environment, they can be machine data, setting data, system variables and others.

The variables recorded can be scaled and assigned freely definable units. Individual variables of a variable monitor can be identified as counting variables (e.g. workpiece counters). These variables can be used in the configuration of interval triggers to trigger recurring actions after a certain number of counting units have elapsed. Counting variables are counted up monotonically. Resetting of the variables in the control is compensated for by the system because the count is resumed on the basis of the last value before reset.

Limit values can be configured for each variable for automatic monitoring of the state. Actions can be triggered when limit values are violated. This is the same as described for the control monitors.

Selection and filter area

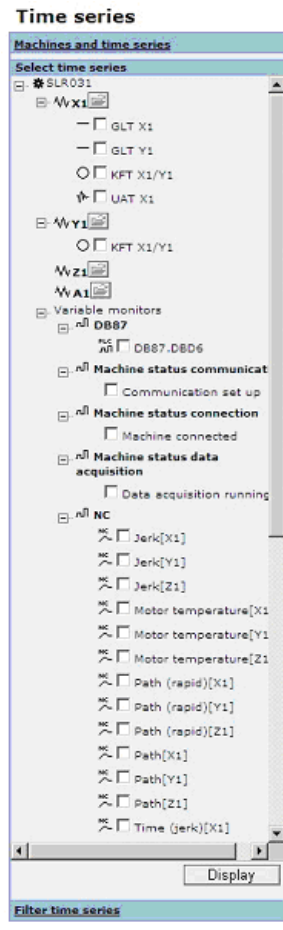


Fig. 2-31: Select variable monitors

Displaying diagrams of the selected variables

To display variables in a diagram, select them in the selection area. Activate the "Display" field to display all selected variables in one common diagram in graphs. Any variables from different variable monitors can be displayed together in one diagram. If you select additional variables and activate the "Display" button, a new diagram is created which displays the newly selected variables. Any number of diagrams can be generated.

Operating the diagrams

The diagrams for displaying variable monitors are operated in the same way as the diagrams for displaying measurement series. Some of the available functions may differ slightly due to the differences between measurement series and variable monitors. These differences are described in more detail in the following sections.

List of displayed variable monitors and variables with control elements

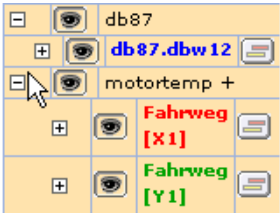
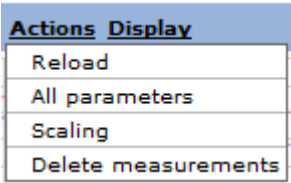
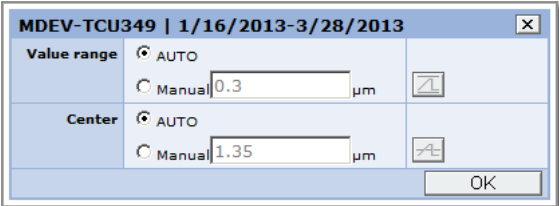
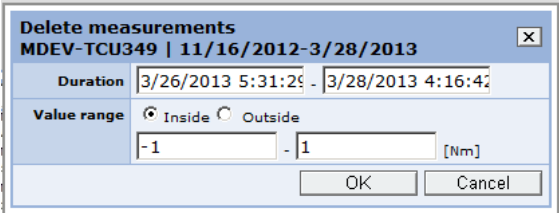


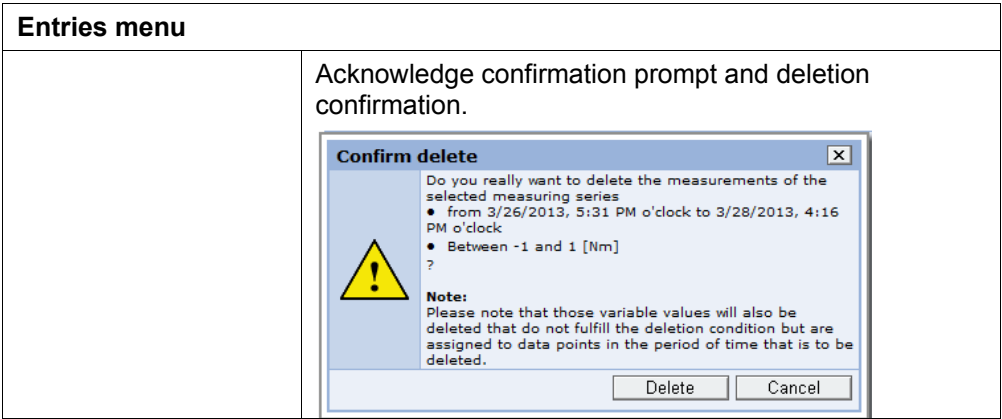
Fig. 2-32: List of displayed variables

Function	Description
	This function removes all variable monitor graphs from the diagram. The diagram is redrawn, which involves recalculating the scale. A maximum of eight values can be simultaneously displayed.
	This function removes the variable graph from the diagram. The diagram is redrawn, which involves recalculating the scale.
	This function plots the limit values of the selected variable in a line in the diagram. If the limit values are outside the range of values displayed, an icon indicating this will appear.

"Actions" menu



Entries menu	
Reload	Creates a new diagram.
All parameters	Displays all parameters in the diagram.
Scaling	Settings for the display. <div></div>
Delete measurements	Specification of the value range and time range for the deletion of measurements and data points. <div></div>



2.2.8 Deleting measurements and data points

Deleting measurements

Measurements that are not to be saved by time or the value range can be deleted. Deletion is performed via the "Actions" menu and in the "Delete measurements" drop down list.

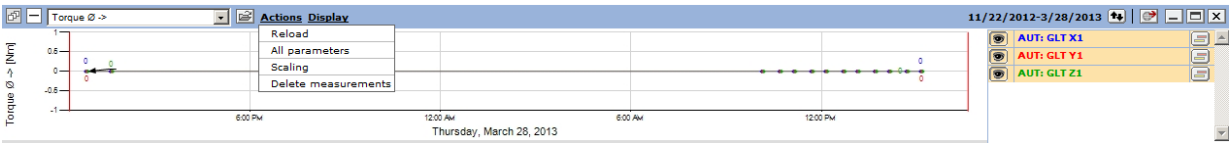


Fig. 2-33: Deleting measurements

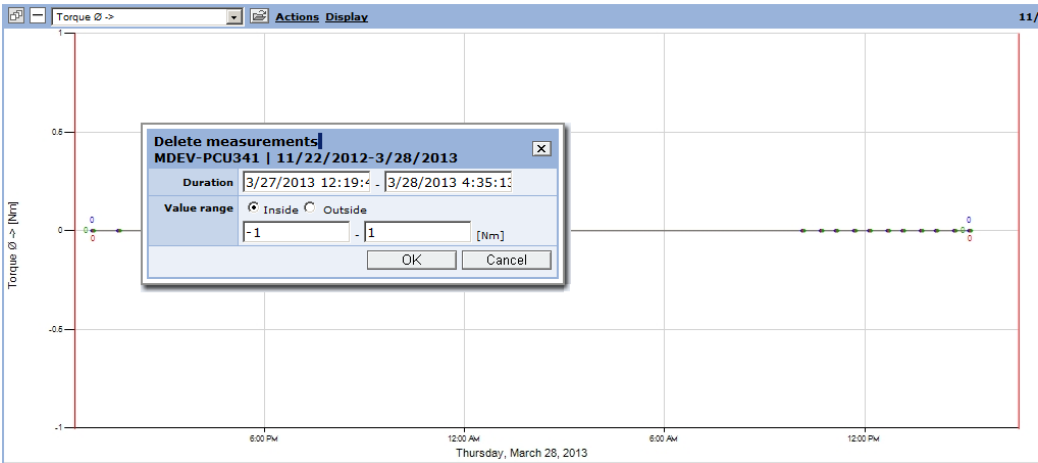


Fig. 2-34: Restricting delete measurements

Function	Description	Type
Deleting measurements	Display of the selected machine.	DISPLAY

Function	Description	Type
Time period	Enter the period as of which time deletions of measurements and data points are to be carried out. Date and time - DD.MM.YYYY hh:mm	DISPLAY INPUT
	Enter the period up to which time deletions of measurements and data points are to be carried out. Date and time - DD.MM.YYYY hh:mm	
Value range		DISPLAY SELECTION
• Within	Delete all data entries that are in the defined range of values.	
• Outside	Delete all data entries that are above and below the defined range of values.	
Cancel	Return to the previous menu without deleting the measurements.	ACTION
OK	The deletion is prepared.	ACTION

Before the data is finally deleted, a confirmation prompt appears.

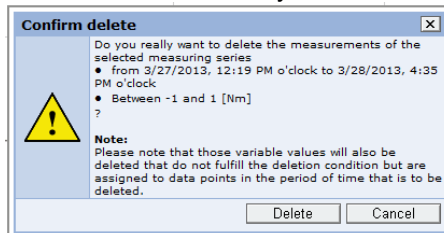


Fig. 2-35: Confirm deletion

Function	Description	Type
OK	The deletion is executed.	ACTION
Cancel	Return to the diagram display without deleting the selected measurements.	ACTION

Deleting data points

If data has been recorded that is not to be saved by time or the value range, it can be deleted.

Deletion is performed via the "Actions" menu and in the "Delete data points" drop down list.

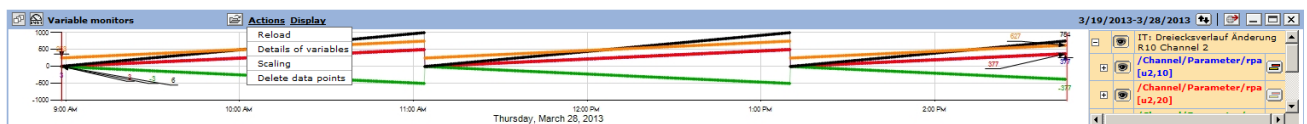


Fig. 2-36: Deleting data points

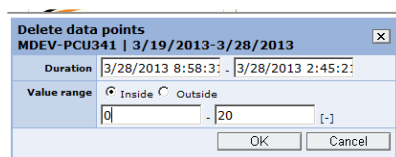


Fig. 2-37: Restrict delete data points

Function	Description	Type
Deleting data points	Display of the selected machine.	DISPLAY
Time period	Enter the period as of which time deletions of measurements and data points are to be carried out.	DISPLAY INPUT
	Date and time - DD.MM.YYYY hh:mm	
	Enter the period up to which time deletions of measurements and data points are to be carried out.	DISPLAY INPUT
	Date and time - DD.MM.YYYY hh:mm	
Value range		DISPLAY SELECTION
• Within	Delete all data entries that are in the defined range of values.	
• Outside	Delete all data entries that are above and below the defined range of values.	
OK	The deletion is prepared.	ACTION
	Before the data is finally deleted, a confirmation prompt appears.	
Cancel	Return to the previous menu without deleting the data.	ACTION

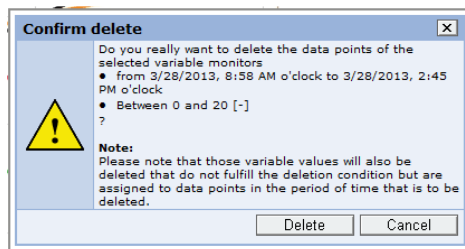


Fig. 2-38: Confirm deletion

Function	Description	Type
Cancel	Return to the diagram display without deleting the selected data points.	ACTION
OK	The deletion is executed.	ACTION

2.3 Test series on the machine

2.3.1 Performing measurement series

Perform measurement

The following alternatives are available for performing measurements on the machine:

- Performing a single measurement with manual entry of parameters before performing the actual test
- Performance of a single measurement as the repetition of an existing measurement without changing the parameters
- Performance of a further measurement as part of a series of measurements, based on the parameters predefined in the measurement series
- Performance of a measurement of a measurement series prescribed by a maintenance job
- Performance of measurements configured in a test series
- Performance measurements of a test series using a maintenance job
- Performance of measurements in a test series without a machine operator, by means of a maintenance job under the control of the PLC

Availability and privileges

Measurements, measurement series, and test series can only be performed on the operator panel. The authorization required to perform measurements, measurement series, and test series is described in detail in the Appendix.

Measuring procedure

The sequence is performed as follows independently of the different types of execution and type of test:

- Machine operator selects measurement, measurement series, or test series
- Confirmation of the parameters of the measurement and display of the measurement series contained in the test series
- A contour test to check collision can be performed before the actual measurement
- Check release by the PLC
- Machine operator sets AUTO mode and feedrate override to 100% on the control
- Machine operator presses NC START on the control
- Perform machine-specific prolog of the measurement movement
- Perform the measurement movement with data recording
- Perform machine-specific epilog of the measurement movement
- Result display
- Save the result

Notice

Please observe the information on the operator panel!

2.3.2 Test requirements

Requirements on the control

When making measurements, the machine axes must be moved with precisely the motion profile that is defined in the NC program. In addition, it must also be guaranteed that the motion is also executed in the machine coordinates. The following functions in the NCK could be problematical when carrying out measurements (sample selection):

- Asynchronous subprograms
- Static synchronized actions
- Axis couplings
- Kinematic transformations
- Superimposed (overlaid) motion, such as DRF, external work offset
- Tool length compensation
- Functions that influence the velocity, such as G95
- Functions that change the position, such as DIAMON
- Axis replacement / geometry axis replacement
- Axis is passed over to the PLC (PLC axis)

The NC program for performing the measurement does not affect the functions listed above. Only the zero offsets are disabled and the offset produced by DRF and external zero offset is compensated statically, i.e. the value is corrected by the value that applies at the beginning of the measurement.

Orientation transformations are a special case. It is possible to execute measurements with the geometry axes when transformation is active. However, the offset of the geometry axis coordinates produced by the orientation axes is not compensated for. It is therefore advisable to deactivate transformation.

Couplings between axes should be separated before the measurement movement (e.g. in the prolog program). The NC program of the system does not disconnect couplings. SINUMERIK Integrate assumes that it is possible in a channel on the machine to load, select, and start an NC program (with subprograms) that was downloaded from the system. With machines where the PLC prevents the operator from selecting or starting an NC program, the PLC can communicate with the SINUMERIK Integrate system via DB10.DBB90 or DBB91.

Machine data must be set in the control to acquire data for the condition monitoring measurements. Not only Trace Server machine data but also MD 36730: DRIVE_SIGNAL_TRACKING must be set.

Drives that are linked via PROFIBUS must be handled differently. Here the PROFIBUS configuration must be changed so that the torque values can be transmitted to the control cyclically.

Prerequisites of the machine

The measurements for condition monitoring assume that the machine axes can be traversed separately with precisely the motion profile that is defined by the NC program for performing the measurements.

Machine designs with parallel kinematics, for example, that do not allow this process, are not suitable for SINUMERIK Integrate condition monitoring.

Note

Axes that can only be programmed as positioning axes can only undergo the synchronized axis test. The circularity test or universal axis test cannot be performed on these axes.

NC programs are downloaded to the control to carry out the axis tests. There must be approximately 100 KB free NC program memory available.

A variable \$AC_MARKER is used for executing the NC programs. You can configure the variable index. The default setting for the index is value 5. You must ensure that the \$AC_MARKER variable of the configured index is not used by other control functions.

Note

SINUMERIK Integrate does not check whether the configured \$AC_MARKER variable is also used by other control functions.

2.3.3 Prolog and epilog program for a measurement

Function description

To prepare the control making it suitable for the test, an NC program that has been specially adapted to the machine by the machine manufacturer or end user is executed at the beginning of the test. This means that machine settings can be specifically changed so that the test can be performed (example: Disabling transformations and couplings, resetting pre-set G codes).

Suitable programming of the prolog and epilog program can influence how the test is performed. When a test series is carried out, individual measurement series can only be hidden under the tested conditions (e.g. due to a risk of collision).

The prolog and epilog program is reloaded into the control with name "N_EPS_PROLOGEPILOG_SPF" every time a test is run. The NC program editor of the operator panel can be used to modify this program.

After the test has been performed, SINUMERIK Integrate automatically checks whether the prolog/epilog program was changed. If required by the machine operator, it saves the program permanently.

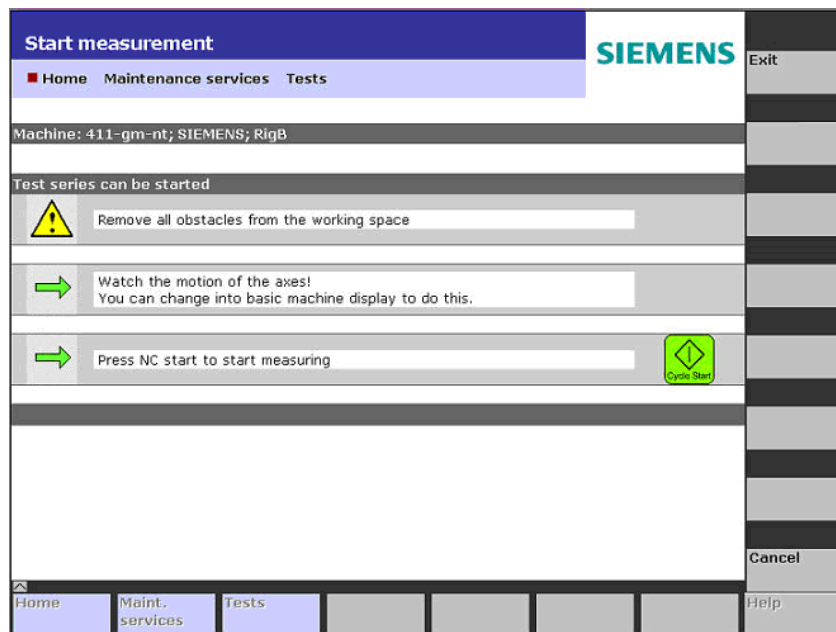


Fig. 2-39: Prompt for NC-START

The following prompt is displayed if a manual axis test is not performed after changes in the prolog and epilog as well as of axis test-specific parameters:

The screenshot shows a Siemens 'Query' dialog box. At the top, there is a navigation bar with 'Home', 'Maintenance services', 'Tests', and 'Measuring series'. The 'Tests' tab is selected. The main area displays a message: 'You have changed the parameters of measuring series. After a change, the axes should be tested again for safety reasons.' Below this, it asks 'Please select one of the following actions:'. There are three options, each with a 'Select' button: 'Accept changes with check' (Do you want to accept the changes, and check with an axis test?), 'Accept changes without check' (Do you want to accept the changes, but not check with an axis test?), and 'Reject changes' (Do you want to reject the changes?). The bottom of the dialog has a status bar with 'Home', 'Maint. services', 'Tests', 'Meas. series', and 'Help'.

Fig. 2-40: Permanently saving the prolog/epilog program

Message	Meaning
"Do you want to accept the changes and check with an axis test?"	If the axis test has already been performed successfully, it is marked as "Tested". If you press the "Select" softkey, "Tested" is reset and a one-time successful execution of the axis test is required in order to be able to also execute this automatically (e.g. via maintenance schedules).
"Do you want to accept the changes, but not check with an axis test?"	If the axis test has already been performed successfully, it is marked as 'Tested'. If you press the "Select" softkey, "Tested" is not reset and a new axis test is not required.
"Do you want to reject the changes?"	Currently executed changes are rejected. If the axis test has already been performed successfully, it is marked as "Tested". If you press the "Select" softkey, "Tested" is not reset and a new axis test is not required.

Note

The option not to perform a manual axis test again in order to retain the 'Tested' marking despite changes to data relevant for the axis test, must be enabled in the organizational data.

Call sequence of the NC programs

The prolog and epilog program is executed before and after each measurement movement. The program is also called at the start of a test series and at the end of a test series.

Example of a call sequence:

```
Prolog for test series (testType == "FRAME")
Prolog for measurement series1 (testType == "CIRCULARITY")
Checking the return parameters
Measurement1
Epilog for measurement series1 (testType == "CIRCULARITY")
Prolog for measurement series2 (testType == "EQUABILITY")
Checking the return parameters
Measurement2
Epilog for measurement series2 (testType == "EQUABILITY")
Prolog for measurement series3 (testType == "UNIVERSAL")
Checking the return parameters
Measurement3
Epilog for measurement series3 (testType == "UNIVERSAL")
Prolog for measurement series4 (testType == "CIRCULARITY")
Checking the return parameters
Measurement4
Epilog for measurement series4 (testType == "CIRCULARITY")
...
Epilog for test series (testType == "FRAME")
```

testType == "FRAME" marks the call at the start and end of the test series. The other parameters with this call are irrelevant. testType == "CIRCULARITY" identifies a circularity test measurement. "EQUABILITY" stands for the equability test and "UNIVERSAL" for the universal axis test.

In the calls placed before and after a measurement, the further call parameters of the program contain the specific information about the measurement in accordance with the table.

Description of the call parameters

All position values refer to the machine coordinate system (MCS).

	Equability test	Circularity test	Universal axis test
	Return parameters, see below: Description of the return parameters		
	TRUE = Call as prolog FALSE = Call as epilog		
	FRAME = Prolog/epilog of the test series (The following parameters are irrelevant.)		
	EQUABILITY	CIRCULARITY	UNIVERSAL
	Name of the measurement series (in UPPER CASE)		
	Channel axis number of the traverse axis	Plane selection (1 = G17, 2 = G18, 3 = G19)	Channel axis number of the traverse axis
	Channel axis number of the measurement axis	Reserved	Reserved
	Reserved	Reserved	Reserved
	Reserved	Reserved	Reserved
	Reserved	Reserved	Reserved
	Reserved	Reserved	Reserved
	Starting position	1st center point coordinate of the circle	Starting position
	End position	2nd center point coordinate of the circle	Maximum position
	Reserved	Circle diameter	Reserved
	Feedrate	Feedrate	Reserved
	Reserved	Reserved	Reserved
	Reserved	Reserved	Reserved
	Channel axis (traverse axis)	Channel axis 1 (traverse axis)	Channel axis (traverse axis)
	Machine axis (measurement axis)	Channel axis 2 (traverse axis)	Reserved
	Machine axis (traverse axis)	Reserved	Reserved
	Reserved	Reserved	Reserved
	Reserved	Reserved	Reserved
	Reserved	Reserved	Reserved

Description of the return parameters

You can influence the measurement via the return parameters. The return values are always queried after call with `doProlog = True` and `testType = ""`, i.e. after the prolog is called for each measurement series. The process then continues according to the returned values.

	Equability test	Circularity test	Universal axis test
<code>ePS_error</code>	0 = (default setting) execute measurement 1 = Suppress execution of measurement, continue with the next measurement series. Errors are not displayed.		
<code>ePS_errMsg</code>	Reserved for future expansions		

2.3.4 Program example

Description

Here is a commented example program to illustrate how the prolog and epilog program can be used to prepare the machine specifically for a certain test. The structure of the program is as follows:

Prolog for the test series:

This section of the program is only executed once at the beginning of a test series and also on each single measurement outside a test series. This block contains everything that has to be executed irrespective of the type of test or the axis that is to be measured. For example, G codes that are preset on the machine via machine data (G95, DIAMON, ...) can be deactivated, the tool can be unloaded, the workpiece can be removed from the working space, and all axis can be moved to a safe initial position.

Prolog for each measurement:

This section of the program is executed before each measurement, irrespective of whether the measurement is part of a test series or is performed individually. This block can be used with call parameters to check which axis is to be tested, which test type is to be conducted, and with which parameters the measurement will be performed. For example, when testing certain axes, it may be necessary to move other axes to another position than the basic position, or the starting point for the measurement cannot be approached directly (circularity test). Certain actions could also be performed depending on the position range in which the measurement is performed.

When programming axis movements, it is important to ensure that the parameters of a measurement always refer to the machine coordinate system if they represent positions. The example program shows how the axis movement can be offset into the machine coordinate system using the command SUPA.

It is possible to test the name of the measurement series in the program and to execute special functions for a certain measurement series. However, that should be limited to special cases because the parameters of a measurement series can be changed at any time without its name having to be changed.

Epilog for the test series:

This section of the program is only executed once at the end of a test series and also after each single measurement made outside a test series. The actions that are necessary for minimizing the work the machine operator must do in order to resume the machining process after performing measurements should be executed in this block.

Epilog for each measurement:

This section of the program is executed after each measurement, irrespective of whether the measurement is part of a test series or has been performed individually. It is useful for undoing actions performed before the measurement. It may be necessary to move all axes back to their safe initial position.

```

PROC EPS_PROLOGEPILOG(BOOL doProlog, ePS_error,          ; user DEF area
ePS_errMsg, STRING[32] testType,
STRING[32] measSeriesName, INT intParam1,
INT intParam2, INT intParam3, INT intParam4,
INT intParam5, INT intParam6, REAL realParam1,
REAL realParam2, REAL realParam3, REAL realParam4,
REAL realParam5, REAL realParam6, AXIS axParam1,
AXIS axParam2, AXIS axParam3, AXIS axParam4,
AXIS axParam5, AXIS axParam6)
IF (doProlog == TRUE)
  MSG("Start of Prolog ... ")          ; start of Prolog - user section start
  IF ( testType == "FRAME")
    MSG("Frame Prolog ...")           ; Frame prolog user section actions at the
                                     ; start of a test series

    T0 M6                             ; Unload tool
    GRUNDSTELLUNG                     ; all axes to safe position
    TRAFOOF                           ; Deactivate transformation
    G94                               ; for lathes, G95 is often placed in front
    DIAMOF
    G90
  ELSE
    MSG(testType << " Prolog ...")     ; prolog for a specific series of
                                     ; measurements
                                     ; handling irrespective of type of
                                     ; measurement
                                     ; procedure when measuring specific axes:
    IF (axParam1 == C) OR             ; if axis A or C are to be measured, Q must
      (axParam1 == A)                 ; be set to 0
      IF ($AA_IW[Q] != 0)             ; M code for Q rotation
        ENDIF
      ENDIF
    IF (axParam1 == U) OR             ; if axis U or W are to be measured, Q must
      (axParam1 == W)                 ; be set to 180
      IF ($AA_IW[Q] != 180)           ; M code for Q rotation
        ENDIF
      ENDIF
  ENDIF

```

<pre> IF (testType == "CIRCULARITY") G1 F1000 SUPA AX[axParam1]=realParam1 G1 F1000 SUPA AX[axParam2]=realParam2 IF (measSeriesName == "KFT_FFWON") FFWON ENDIF ENDIF </pre>	<pre> ; specific procedure for circularity test ; actions for all circularity tests: to avoid collision, the two axes are moved to the circle center one after the other. A particular sequence may be required. ; SUPA, therefore target position in the machine coordinates ; specifically this series of measurements should be performed using the pre-control FFWON </pre>
<pre> IF (testType == "EQUABILITY") IF (axParam1 == C) AND (realParam1 > 300) ePS_error = 1 ENDIF IF (measSeriesName == "") ENDIF ENDIF </pre>	<pre> ; actions for all equability tests, e.g., approaching the start position ; example of using the return parameter ePS_error ; skip the equability test with the C axis ; specific actions for individual series of measurements </pre>
<pre> IF (testType == "UNIVERSAL") IF (measSeriesName == "") ENDIF ENDIF MSG(" ... finished Prolog.") GOTOF PROG_END ELSE MSG("Start of Epilog ... ") IF (testType == "FRAME") MSG("Frame Epilog ...") ELSE MSG(testType << " Epilog ...") G90 GRUNDSTELLUNG MSG(" ... finished Epilog.") ENDIF ENDIF </pre>	<pre> ; actions for all universal axis tests, e.g. approaching the start position ; specific actions for individual series of measurements ; end of Prolog - user section end ; start of Epilog - user section start ; epilog of test series ; Frame Epilog user section ; Epilog specifically for the last meas. series conducted ; all axes back to safe position after measurement ; end of Epilog - user section end </pre>

PROG_END:

G4 F1

; is required for synchronization

M17

2.3.5 Measurement commissioning

Function description

The prolog and epilog program must be edited in order to perform measurements. If measurements are performed on a machine for the first time, or if the prolog and epilog program has been deleted, then a preconfigured prolog and epilog program takes effect, which prevents the further execution of the NC programs as the NC program code runs in an endless loop. This part of the preconfigured prolog and epilog program must be deleted. A program code adapted to the requirements of the machine must be used for the prolog or epilog.

Leader and trailer for taking the measurements

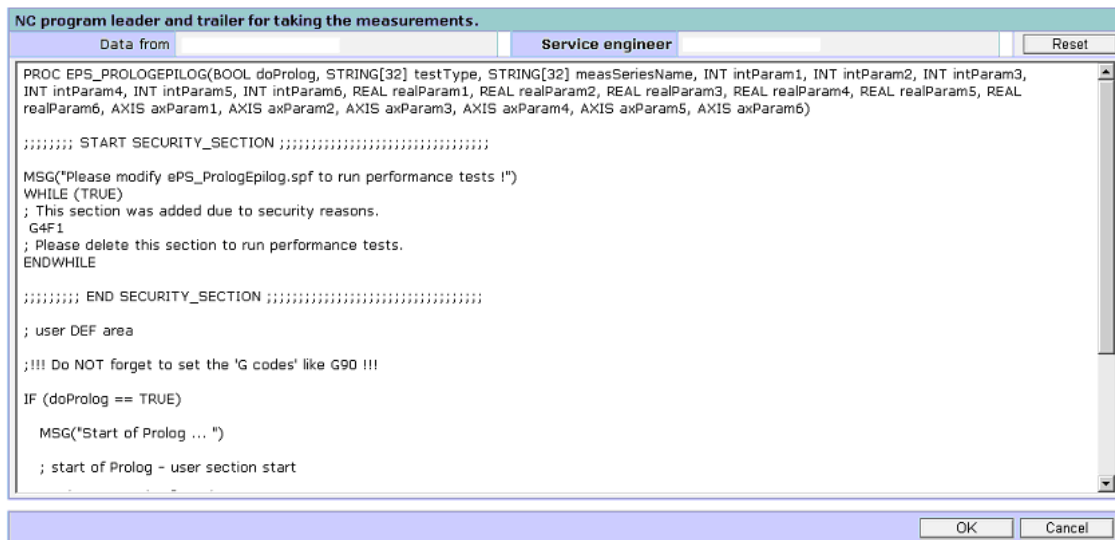


Fig. 2-41: Prolog and epilog program

2.3.6 Release protocol between PLC and SINUMERIK Integrate

Function description

During a test, there is communication between the SINUMERIK Integrate system and the PLC. The system signals that a test with axis movements shall be executed. The PLC puts the machine in a suitable state and signals to the system that the test can be performed.

The protocol allows test series that are to be carried out with a maintenance schedule to be executed in a fully automatic manner while being monitored by the PLC.

2.3.7 Contour test

Function description

A dry run is possible to ensure measurements can safely be performed on the machine. The machine operator has the option of executing a dry run with reduced velocity before beginning the test run configured to a specific type. This allows the operator to test for safety path motions (contour monitoring) of the machine axes to avoid collisions, etc.

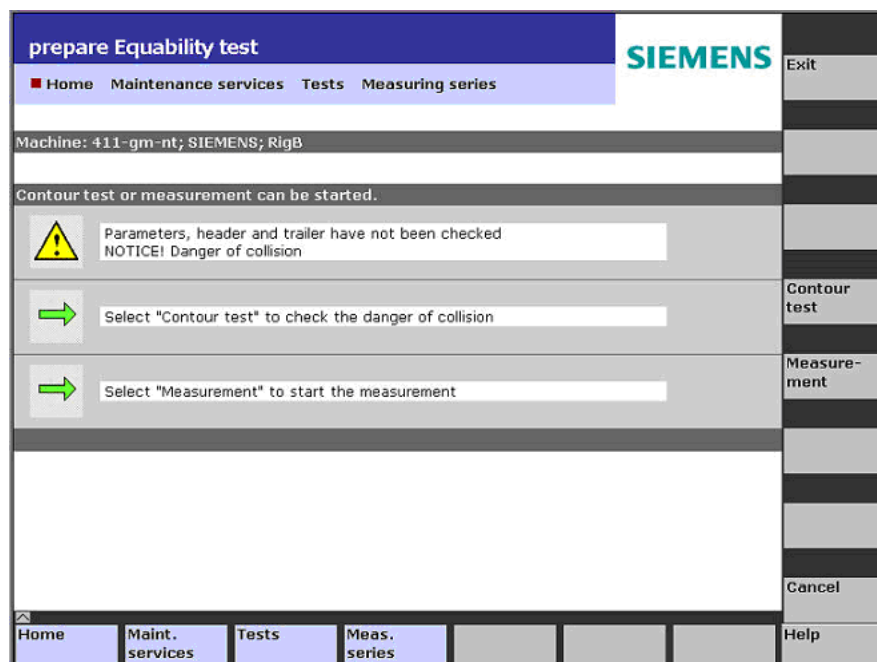


Fig. 2-42: Selecting the contour test

Note

Contour test:

Running-in the axis test - motion sequence, without data acquisition, in order to ensure that there are no collisions. Stop start, operating mode and override may be used as required.

Measurement:

Execute the axis test with 100% override and NC automatic, no stop.

Function	Description	Type
Contour test	A contour test can be run to check that the measurement part program is collision-free before actual measurement. The contour test can also be carried out with the function "single block execution" active.	ACTION
Measurement	Selection of the "Measurement type" tab. The measurement can be performed once the notes have been read and understood.	ACTION

The screenshot displays the Siemens Test series interface. At the top, there is a navigation bar with 'Home', 'Maintenance services', and 'Tests'. Below this, the machine information 'Machine: 411-gm-nt; SIEMENS; RigB' is shown. The main area contains a table titled 'Testserie 2' with columns for 'No.', 'Name', 'Axis', and 'Parameters'. The table lists three series: '3 GLT Z1 10 / 1000' (Z1 axis), '1 GLT 10 100 2000' (X1 axis), and '2 Y 10 200 2000' (Y1 axis). To the right of the table, there are buttons for 'Exit', 'Comment', 'Execute measmts.', 'Contour test all', 'Cont. test unchecked', 'Back', and 'Help'. At the bottom, there is a status bar with 'Home', 'Maint. services', 'Tests', 'Page backward', 'Page forward', and 'Help'.

No.	Name	Axis	Parameters
3	GLT Z1 10 / 1000	Z1	S= 10 mm; E= 2000 mm; F= 1000 mm/min;
1	GLT 10 100 2000	X1	S= 20 mm; E= 100 mm; F= 2000 mm/min;
2	Y 10 200 2000	Y1	S= 10 mm; E= 200 mm; F= 2000 mm/min;

Fig. 2-43: Measurement series of a test series

2.4 Archives

Constraint

The full range of functions to configure archive functions and reload archives is available only with the SINUMERIK Operate operating software.

Function description

The control monitors in SINUMERIK Integrate permit archives (data backups) of control systems to be created and saved in the server.

See also Section: Setting up functions, creating and uploading archives.

For SINUMERIK pl, archives can be created and uploaded locally on the HMI Advanced.

Machine information






Fig. 2-44: Measurement series of a test series

Filtering archives

The list of archives or data backups is supported by filter functions.



Fig. 2-45: Filtering archives

Function	Description	Type
Archives		
Search	Search and filter tree that can be displayed and hidden for the following archives: <ul style="list-style-type: none"> • Types • Last time periods - OR - <ul style="list-style-type: none"> • From • To 	DISPLAY
<< x >>	The number in the display indicates the number of lines per window that are shown in this menu. 1 to 200 lines can be selected. If the window content is larger than the visible display, a scroll bar is displayed.	DISPLAY SELECTION
Free text filter	The free text filter lets you search for the partial text of a name. A multiple selection for filtering can be made for each archive type.	DISPLAY SELECTION INPUT
Archive type	A multiple selection of the archive types is possible.	SELECTION
Filtering	The filter selection is activated via the "Filter" button.	ACTION
	Archives or data backups can be imported into the SINUMERIK Integrate archiving system. The data is then available for a "Restore" on the machine. Any files can be stored via an Import menu as archives, see below: Importing archives.	ACTION
<input type="checkbox"/>	All archives are set as selected with the checkbox in the header. The archive of the line is selected or deselected with the checkbox in front of each archive.	SELECTION
	Opens the window with the details of the archive type.	DISPLAY
Name	Shows the name entered during the configuration.	DISPLAY
Archive type	Shows the name of the archive type entered during the configuration.	DISPLAY
Comment	Shows the name of the comment entered during the configuration.	DISPLAY
Date created	Date and time of the archiving event. The archives can sorted according to date, in ascending or descending order, via the header.	DISPLAY
	Deletes each archive in the line. The identifier "Deletable" must be set for the respective archive.	ACTION
Delete	All the selected archives are deleted via the "Delete" button. Archives for which the identifier "Deletable" has not been set are retained.	ACTION

Function	Description	Type
Back	Returns to the overview of the machine information.	ACTION
Exit	Closes the view of the archives and returns to the login window.	

Importing archives

Archives and data backups can be imported into the archiving system so that additional data is available for loading to the machine.

Fig. 2-46: Importing a series start-up archive

Fig. 2-47: Importing a data backup

Function	Description	Type
Name	Individual input of a name for the archive. The archive is identified in the archive list, the machine events and for the restoration of the data by this name.	DISPLAY INPUT (max. 200 characters)
Comment	Individual input of a comment to describe the archive.	DISPLAY INPUT (max. 200 characters)
Archive type <ul style="list-style-type: none"> Series start-up Generic 	Selection between a series start-up or a generic data backup.	SELECTION DISPLAY
Deletable	Selects a deletable archive or a data backup. Only archives marked as deletable can be deleted in the archive overview.	SELECTION

Function	Description	Type
Series start-up archive		
Archive components (only for series start-up archives)	The following archives are available for selection: <ul style="list-style-type: none"> • NC data with/without compensation data • PLC data • Drive data • HMI data Multiple selection is also possible.	SELECTION
Upload archive file		
Path	Path to the accessible file system from which the archive or the data backup is to be imported.	INPUT SELECTION DISPLAY
Browse...	The Windows browse function is available for support of import.	SELECTION ACTION
OK	Starts the import and ends with the return to the archive overview.	ACTION
Cancel	Returns back to the previous window without accepting the entries made.	ACTION

Importing archive

Name	<input type="text"/>
Comment	<input type="text"/>
Archive type	<input checked="" type="radio"/> Series start-up <input type="radio"/> Generic
	<input checked="" type="checkbox"/> Deletable

Series start-up

Control components	<input type="checkbox"/> NC data <input checked="" type="checkbox"/> With compensation data <input type="checkbox"/> PLC data <input type="checkbox"/> Drive data <input type="checkbox"/> HMI data
--------------------	---

Upload archive file

Path	<input type="text"/> <input type="button" value="Browse..."/>
------	---

Fig. 2-48: Details archive

Archive details

Name	ePS
Comment	kein
Archive type	Generic
Paths	<input type="text"/>
Created on	12/28/2011 2:21:29 PM
Created by	dev, eloper
Archive file	20111228-1421_ePS.arc <input type="button" value="Browse..."/>
Size	144.27kB
	<input checked="" type="checkbox"/> Deletable

Fig. 2-49: Detailed view of the data backup

Function	Description	Type
Name	Individual input of a name for the archive to organize individual archives and data backups.	INPUT (max. 200 characters)

Function	Description	Type
Comment	Individual input of a comment for the archive.	INPUT (max. 200 characters)
Archive type	Displays the archive type of the data backup: Series start-up - OR - Generic data backup.	DISPLAY
Control components	Displays the components or the archive types that have been configured.	DISPLAY
Paths	Generic archives can have been created from any configured paths.	DISPLAY
Created on	Displays the date and time of the archiving.	DISPLAY
Created by	Displays the name of the author.	DISPLAY
Archive file	Displays the name of the archive file. The file name is made up of the date, the name and the ".arc" type.	DISPLAY
Size	Displays the file size of the archive.	DISPLAY
Deletable	Indicates whether or not the archive can be deleted. Only archives marked as deletable can be deleted in the archive overview.	DISPLAY
OK	The entries are accepted and the window is closed.	ACTION
Cancel	The window is closed and the previous "Archive Overview" window is displayed. Changes/entries that have been made are not accepted.	ACTION
Exit	Closes the view of the archives and returns to the login window.	ACTION

Exporting archives / data backups

You can export the archive or backup file or save it to a local drive.

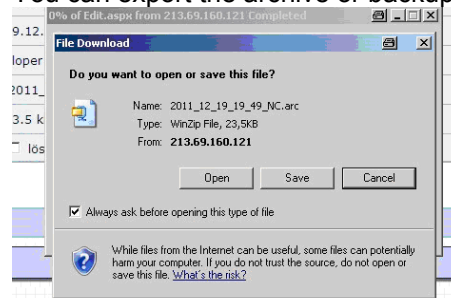


Fig. 2-50: Exporting the archive file

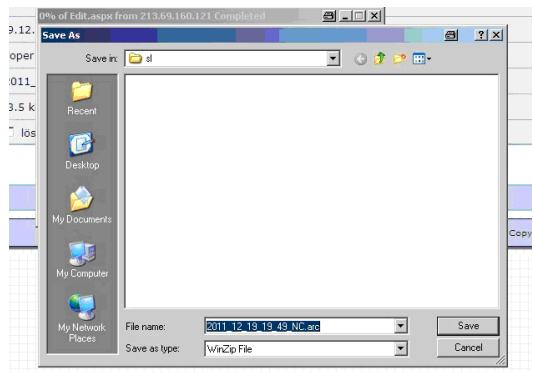



Fig. 2-51: Saving the archive file locally

Function	Description	Type
	Exporting the archive file	ACTION

Importing archives

Importing archives can only be executed on the control. Depending on the archive or data backup, certain operating states must be established on the machine in order to be able to restore the data correctly.

1. Press the "SINU INTE" softkey.
The "Home" window appears on the control.
2. Press the "Select" softkey next to "Maintenance services".

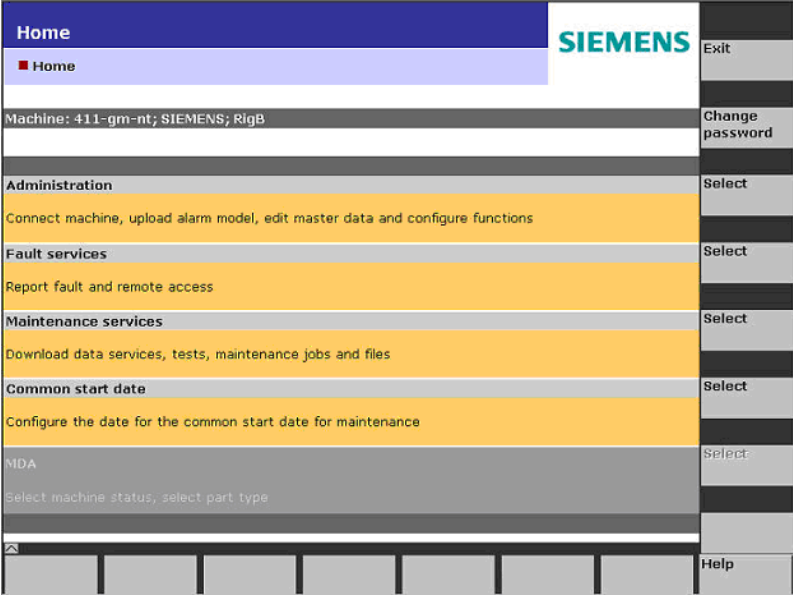


Fig. 2-52: SINUMERIK Integrate on the control

3. The "Maintenance Services" window is opened.
Press the "Select" softkey behind "Maintenance jobs".

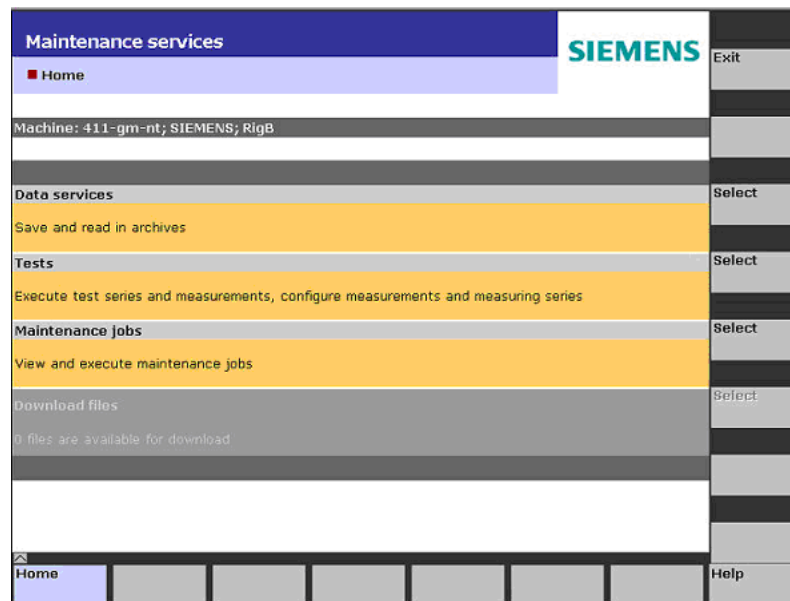


Fig. 2-53: Maintenance jobs

4. The "Data Services" window is opened and the archive files are displayed.

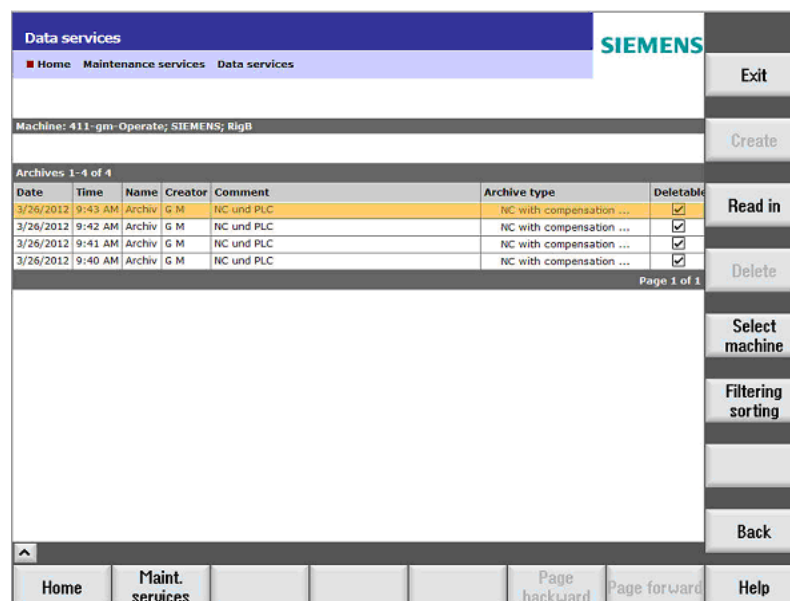


Fig. 2-54: Data services

Softkey	Description
Exit	Closes the view of the archives and returns to the login window.
Create	Archives can only be created with HMI Advanced. Otherwise the softkey cannot be selected.
Read in	The selected archive is loaded from the server into the machine,

Softkey	Description
	and made available for import with the SINUMERIK standard functions.
Delete	The selected archive is deleted on the server if it has the identifier "Deletable".
Select machine	To be able to view and select the archives from other controls that are available in the same organization.
Filter Sort	Opens the Filter and Sort menu.
Back	Closes the current window and opens the previous one.

Filtering and sorting

The screenshot shows the 'Data services' window in the Siemens interface. The top bar includes 'Data services' and the Siemens logo. Below the bar, there are navigation tabs: 'Home', 'Maintenance services', and 'Data services'. The main area is titled 'Machine: 411-gm-Operate; SIEMENS; RigB'. Under the heading 'Specify which control components are to be displayed', there are two sections: 'Archive type' and 'Deletable'. The 'Archive type' section has a list of checkboxes: 'NC data', 'NC data with compensation data', 'PLC data', 'HMI data', 'Drive data', and 'Generic'. The 'Deletable' section has checkboxes for 'Yes' and 'No'. To the right of these sections is a 'Free text' input field. Below the input field, there are 'Sorting by date' options: 'Ascending' (selected) and 'Descending'. Below that is a 'Date of creation' section with 'of' and 'to' input fields. On the right side of the window, there are buttons for 'Exit', 'OK', and 'Cancel'. At the bottom, there is a navigation bar with buttons for 'Home', 'Maint. services', 'Data services', and 'Help'.

Fig. 2-55: Filtering and sorting

Function	Description	Type
Machine	Name of the selected control.	SELECTION
Archive type	The following archive types are available for selection: <ul style="list-style-type: none"> • NC data • NC data with compensation data • PLC data • HMI data • Drive data • Generic Multiple selection is also possible.	SELECTION
Deletable	Yes No Displays only the deletable archive types. Displays only the archive types that cannot be deleted.	SELECTION
Free text	Shows all archive types in which the entered text occurs.	INPUT

Function	Description	Type
Sort by date	<ul style="list-style-type: none"> • Ascending • Descending 	ACTION
Creation date	<ul style="list-style-type: none"> • From • To 	INPUT

Softkey	Description
Exit	Closes the view of the archive data and returns to the login window.
OK	Saves the filter and sort selection and displays the selected archive components.
Cancel	Returns back to the previous window without saving the filter and sort selection.

Importing an archive

After selecting an archive, press the "Import" softkey.

The "Import Start-up Archive" window is opened and shows archive details as well as the import process on a status bar.

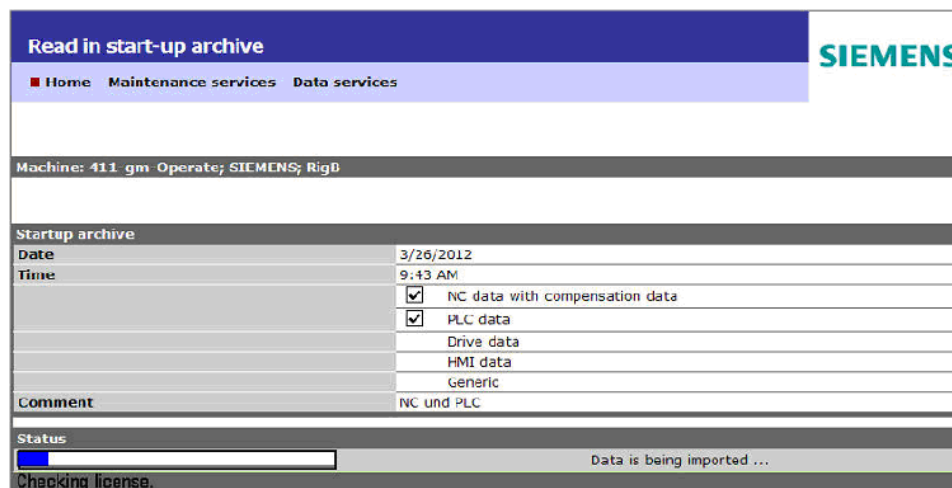


Fig. 2-56: Importing the start-up archive

Function	Description	Type
Machine	Displays the name of the selected control.	DISPLAY
Start-up archive		
Date	Shows the archive creation date.	DISPLAY
Time	Displays the time of day.	DISPLAY
	Shows the data that is to be read.	
Comment	Displays the entered comment.	DISPLAY
Status	Displays the progress of the import process.	DISPLAY

Softkey	Description
Exit	Closes the window after the import process.
Cancel	Cancels the import process and returns to the previous window.

2.5 Maintenance

Function description

Entering via "Machine information" → "Maintenance jobs" provides an overview of the jobs that are pending or complete for the single machine that is currently selected.

The description of this menu can be found in the Organizational tasks section; in this, it is not only possible to view the maintenance schedules of a machine, but in addition, a group of machines that can be individually compiled as required.

The overview of the maintenance jobs on the PC is used for the following purposes:

Obtaining an overview	Of the jobs that are pending and already complete; progress monitoring, planning service applications.
Editing jobs	<p>Automatic editing of controlled maintenance jobs on an individual basis, via control monitors and maintenance schedules.</p> <p>Changes made to the job here are on a one-off basis and do not affect the original maintenance schedules.</p> <p>Editing maintenance jobs is only possible for new jobs that are not due, not opened or not closed.</p>
Changing work instructions	<p>If other tasks that were not known at the time of planning must be completed along with those specified in the maintenance schedule.</p> <p>When you change the work instruction, please remember that this is only valid for the selected maintenance job. Any necessary modifications to the underlying maintenance schedule must be made via the "Set up function" menu → "Maintenance schedules".</p> <p>Editing maintenance jobs is only possible for new jobs that are not due, not opened or not closed.</p>
Changing execution time	<p>E.g. planning tasks on the same day that can or should be performed together.</p> <p>Editing maintenance jobs is only possible for new jobs that are not due, not opened or not closed.</p>

Editing comments	<p>Adding comments for the tasks that have been performed or have not been performed; attaching detailed service report files to the job</p> <p>Editing comments is only possible for new jobs that are not due, not opened or not closed.</p>
Acknowledging jobs	<p>The maintenance procedures carried out are acknowledged as OK or Not OK and then closed.</p>
Deleting jobs	<p>Jobs can be deleted in their entirety.</p> <p>This does not affect the underlying maintenance schedules and control mechanisms.</p> <p>Deleting maintenance jobs is only possible for new jobs that are not due, not opened or not closed.</p>

Maintenance jobs

Search

Free text filter

Job status

New

Open

Closed, OK

Closed, error

Due date status

Not announced

Announced

Due

Edited

Due date scheduled for open jobs

days

Note: This filter applies to jobs with status New and Open only!

Closed in the period

of to

Specified in format: 5/2/2012

Note: This filter applies to closed jobs only!

Responsible organization

epsinternal

Filter

Maintenance jobs 1-10 of 864

Job no.	Name	Status	Schedule	Responsible org.
M-1-2562	IHA auto		-93 d Thu, 2/9/2012 11:05 AM	epsinternal
M-1-863	IHA auto		0 d Wed, 12/28/2011 3:25 PM	epsinternal
M-1-862	IHA auto		0 d Wed, 12/28/2011 3:15 PM	epsinternal
M-1-861	IHA auto		0 d Wed, 12/28/2011 3:05 PM	epsinternal
M-1-860	IHA auto		0 d Wed, 12/28/2011 2:55 PM	epsinternal
M-1-859	IHA auto		0 d Wed, 12/28/2011 2:45 PM	epsinternal
M-1-858	IHA auto		0 d Wed, 12/28/2011 2:35 PM	epsinternal
M-1-857	IHA auto		0 d Wed, 12/28/2011 2:25 PM	epsinternal
M-1-856	IHA auto		0 d Wed, 12/28/2011 2:15 PM	epsinternal
M-1-855	IHA auto		0 d Wed, 12/28/2011 2:05 PM	epsinternal

Back

Fig. 2-57: Maintenance jobs

See also Section: Selecting a maintenance job on a machine

Overview of the maintenance jobs

Filter options are available for simple and fast searching to rationally process maintenance jobs. Using filters, a search can be made for all relevant information associated with a maintenance job using filters.

The filter result corresponds to the selectable criteria in so much that for each criteria group, all maintenance jobs can be included in the result, which only correspond regarding just one detail (or logic operation).
The criteria groups are logically combined with one another so that the filter result must correspond to each selected and active group (and logic operation).

For an unfortunate selection it is possible that no maintenance job appears in the filter result; e.g. display all new maintenance jobs that are processed.

Function Search	Additional function	Description	Type
Free text filter		Only those maintenance jobs are included in the selection result which have the specified partial text in their name.	INPUT DISPLAY
Job status New	Jobs due soon in ... days	Maintenance jobs which have the new status, appear in the selection result of the group for the job status. If a time period is entered for soon, then the new jobs are displayed restricted to those that will be due in the specified time period.	SELECTION INPUT DISPLAY
Open		Maintenance jobs which have the open status, appear in the selection result of the group for the job status. If a time period is entered for soon, then the open jobs are displayed restricted to those that will be due in the specified time period.	SELECTION INPUT DISPLAY
Job status Closed, OK	Only closed in time period from → to	Maintenance jobs which have the closed OK status, appear in the selection result of the group for the job status. If a time period is entered for from - to, then the closed jobs are displayed, restricted to those that have been closed in the specified time period.	SELECTION INPUT DISPLAY

Function Search	Additional function	Description	Type
Job status Closed, error		<p>All maintenance jobs which have the closed with error status, appear in the selection result of the group for the job status.</p> <p>If a time period is entered for from - to, then the closed jobs are displayed, restricted to those that have been closed in the specified time period.</p>	SELECTION INPUT DISPLAY
Due status Not Announced		<p>If a maintenance job is initiated by a time trigger in the server rather than by a current status event of the machine, the next maintenance job can already be viewed after the current one has been closed.</p> <p>In order that jobs that have not been announced do not appear in the selection list, the due status filter can be activated and preselected with all other statuses, except those for the "still not announced" maintenance jobs.</p> <p>The due status can specifically be used to select the maintenance jobs that shall be contained in the selection result.</p> <p>If the due status is set as filter, but no status is selected, then the result list will be empty.</p>	SELECT DISPLAY
Due status Announced		<p>If a maintenance job is initiated by a time trigger in the server rather than by a current status event of the machine, you can check whether the next maintenance job has already reached the preview time after the current one has been closed.</p> <p>The filter can also be used to select the other statuses and precisely not this "announced" one, in order that these jobs do not appear in the selection list.</p> <p>The due status can specifically be used to select the maintenance jobs that shall be contained in the selection result.</p> <p>If the due status is set as filter, but no status is selected, then the result list will be empty.</p>	SELECT DISPLAY

Function Search	Additional function	Description	Type
Due status Due		<p>Irrespective of the activation - event-controlled or time-controlled - of a maintenance job, setting the filter to "due" permits the jobs to be selected that should now be done.</p> <p>The filter can also be used to select the other statuses and precisely not this "due" one, in order that these jobs do not appear in the selection list.</p> <p>The due status can specifically be used to select the maintenance jobs that shall be contained in the selection result.</p> <p>If the due status is set as filter, but no status is selected, then the result list will be empty.</p>	SELECT DISPLAY
Due status edited		<p>No matter how the maintenance jobs were once initiated, only the completed jobs can be selected.</p> <p>The filter can also be used to select the other statuses and precisely not this one, in order that these jobs do not appear in the selection list.</p> <p>The due status can specifically be used to select the maintenance jobs that shall be contained in the selection result.</p> <p>If the due status is set as filter, but no status is selected, then the result list will be empty.</p>	SELECT DISPLAY
Due date scheduled for open jobs		<p>Starting at the specified time, only the open maintenance jobs are included in the selection result.</p> <p>Note: This filter only has an effect on new and open maintenance jobs.</p>	INPUT 1 to 999,999
Closed in time period		The selection result only contains the closed maintenance jobs after the entered date.	INPUT DD.MM.YYYY
Responsible organization		In order that specific plans can be made, the selection list can be generated specifically for a certain organization.	SELECT DISPLAY

2.6 Remote access

Overview

Remote access is an efficient and low-cost way of providing support for machine tools and production equipment via the Internet.

In the event of a fault, the service organization of the machine manufacturer has fast access to important machine control data and diagnostic functions. In that way, the machine manufacturer or maintenance department of the end user can immediately analyze the current condition of the machine in which a fault occurred.

Remote access avoids time-consuming on-site service assignments or at least helps prepare for them better. Machine manufacturers can therefore reduce their warranty costs while providing more efficient service support for their end users.

If a connection already exists to the machine, then the system automatically identifies which remote access has been installed.

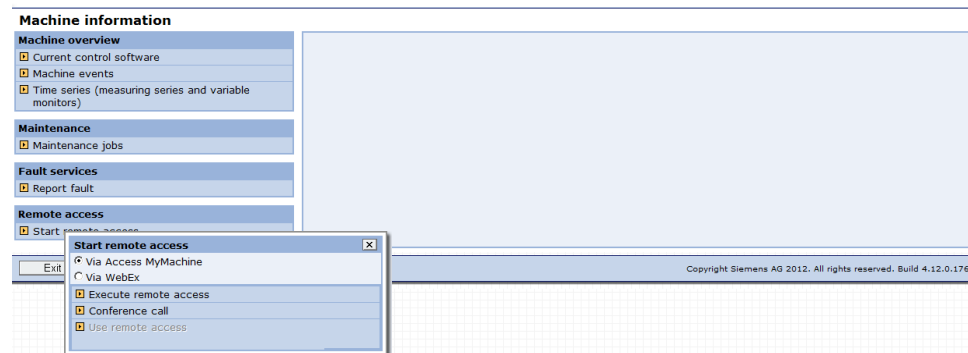


Fig. 2-58: Selecting remote access via Access MyMachine

References

Further information on installation and application can be found in the following documentation:

Software Installation Manual: SINUMERIK Integrate MMT, MMP, AMB, AMC, AMM, AMP

Operating Manual: SINUMERIK Integrate MMT, MMP, AMC, AMM, AMP

3

3 Setting up functions

Overview

The functions below are set up, defined and executed in the "Set up functions" area for a selected machine and its maintenance and monitoring tasks:

Setting up functions

Maintenance		[Display overview] Display an overview of all functions set up
▶	Maintenance schedules	
▶	Variable monitors	
▶	Measurement series	
▶	Test series	
▶	Prolog and epilog for measurement	
▶	User-defined variables	
▶	Data memory	
Fault services		
▶	Control monitors	
Global settings		
▶	PLC and NC settings	
▶	Notification limit	
Copying function settings		
▶	Copying function settings	
▶	Copying function settings to multiple machines	
Client-Server communication		
▶	Synchronization times	
▶	Offline synchronization	
▶	Monitoring the services	
▶	Preparing data for download into the machine	

All functions and user configurations set up

In the configurations overview, the first column shows the configuration type. The "Name" column shows the configuration names (in alphabetic order). The "Required for" column shows other configurations that use this subconfiguration. The "Dependent on" column shows which other configurations are used as subconfigurations in this configuration.

A gradual fading is used for configuration names that cannot be displayed in full. The overview can be completely printed out for documentation purposes (printer icon ①).

The overview can be exported for the purpose of comparing the configurations and names, and can be compared with overview exports of other machines in a spreadsheet program, for example (② icon).

Note

The icons are only available if a machine is selected.

As soon as a machine is selected, the function for displaying a group-based overview of all the configurations that the user has created for the machine becomes available. If required, the selection for display can be set up in the "Set Up Functions" window.

Machine information **Configure functions** Organization tasks Statistic/Export Administration

Select machine: **SLR001C_V411PL; TZ; Renningen** No synchronization, machine not connected **SIEMENS** Help

Configure functions

Configure functions

- Maintenance**
 - Maintenance plans
 - Variable monitors
 - Measuring series
 - Test series
 - Leader and trailer for taking the measurements
 - User-defined variables
 - Data memory
- Fault services**
 - Control monitors
- Global settings**
 - PLC and NC settings
 - Notification limitation
- Copy function settings**
 - Copy function settings
 - PLC and NC settings to several machines
- Client/Server communication**
 - Synchronization schedules
 - Monitoring of ePS Services
 - Making files available for download to the machine

Configured functions - Overview

Type	Name	Required for	Dependent on
Measuring series	IT: KFT		Axis configuration
Measuring series	IT: UAT		Axis configuration
Maintenance plan	AUT: Testserie	AUT: Testserie GLT/KFT/UAM	AUT: Testserie
Maintenance plan	IT: KFT	IT: KFT	IT: KFT
Maintenance plan	Maschine reinigen	IT: Maschine reinigen	
Maintenance plan	Maschine überprüfen		
Variable monitor	IT: Cosinus	IT: Dreiecksverlauf Änderung R10 Channel	Axis configuration
Variable monitor	IT: Sinus	IT: Sinus	
Variable monitor	IT: Testfunktionen	IT: Testfunktion	
Variable monitor	IT: Dreiecksverlauf Zeit R10 Channel 2	IT: Dreiecksverlauf Zeit R10 Channel 2	Axis configuration
Variable monitor	TriggerTest	IT: Dreiecksverlauf Änderung R10 Channel	Axis configuration
User-defined variable	AC marker - Value:5 (Default value)		
PLC and NC settings	PLC data blocks		
PLC and NC settings	PLC performance identification number - New		
Global settings	Leader and trailer for taking the measurements		
Global settings	Monitoring of ePS Services - Not active - New		
Global settings	Participation on common start date - New		
Global settings	Repetition strategy		
Global settings	Synchronization settings		

Fig. 3-1: Displaying overview

3.1 Maintenance

3.1.1 Creating maintenance schedules

Function description

The maintenance schedules contain the maintenance-related tasks to be performed on the machine (maintenance, inspection, and servicing).

Maintenance procedures may be logged in the schedule in a purely text-based format; alternatively, "intelligent" maintenance procedures, which automatically determine data via axis tests in order to performing purposeful status-oriented maintenance, may also be logged.

- The schedules are activated in a control monitor either on a time- or event-triggered basis or as a combination of both (time- or event-triggered). The maintenance schedule is then set as a maintenance job and is due for the responsible organization. A schedule always applies to just one machine.
- The maintenance jobs are produced on a time-controlled basis, in time intervals, on an event-triggered basis, or in event-triggered intervals. This is executed via the universal trigger of a control monitor. (The triggers are not only to control maintenance jobs, but is those that can also be used for any other action → universal trigger.)
- A maintenance job is created on a control monitor. Server time-controlled maintenance jobs can be immediately seen in the unfiltered total list together with their associated status. Event-controlled maintenance jobs, that are created by a machine-related trigger (events, that are detected in the field next to the machine and are also evaluated there with the client in the PC front end), are not displayed in the list until they are due (since the due status results when the job is generated).
- Maintenance schedules can be updated at any time. This has no effect on maintenance jobs that have already been opened, are due or closed, but only the following ones after the change. This also applies if a schedule is deleted.

Note

If users are logged on to the control as machine operator, they can process the status of the pending jobs there and, if required, add comments. For version V3 machines, the user need not be a member of the target organization. For version V4 machines, the user requires authorization to act as a machine operator (MO) for the machine to open the windows.

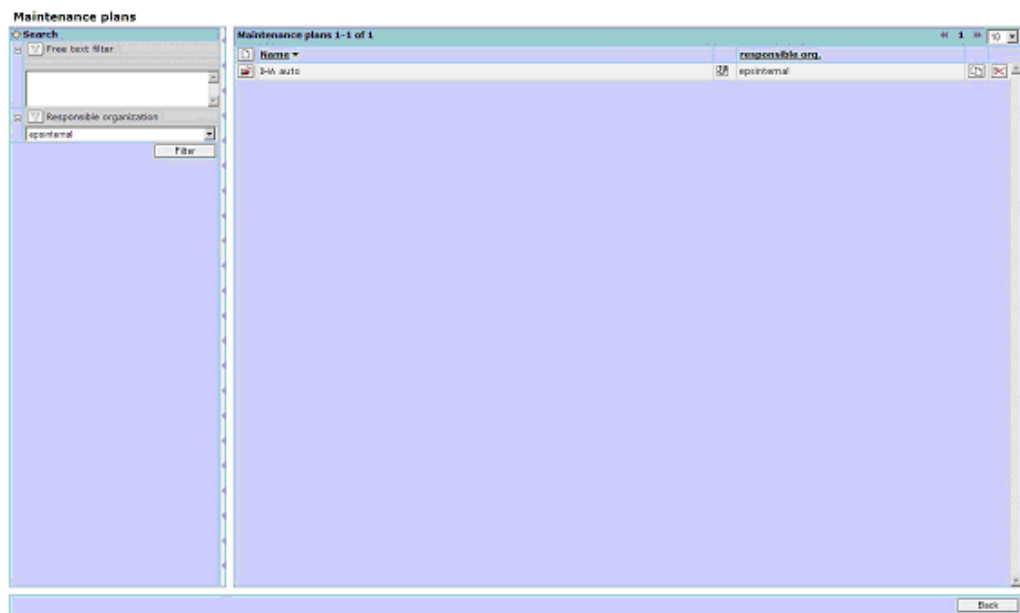








Fig. 3-2: Maintenance schedules - List view

Function	Description	Type
Search		
 Free text filter	Expandable window for filtering maintenance schedules.	DISPLAY INPUT
Input window	Entries in the search window must be manually removed in order that all maintenance schedules are displayed unfiltered. The window remains, but the content is updated.	ACTION
Filtering	Entries in the search window are used for filtering and only the maintenance schedules corresponding to the filter are displayed. The window remains, but the content is updated.	ACTION
 Responsible organization	In order to be able to further limit the display of maintenance schedules, a filter can be set to the responsible organization, who are intended for the maintenance activity.	DISPLAY SELECTION
Number of lines	The number in the display indicates how many maintenance jobs per window can be shown in this menu. You can select up to 200 lines. A scroll bar will then be displayed in the window.	DISPLAY SELECTION

Function	Description	Type
Search		
Maintenance schedule		
	Switch to the window to create a new empty maintenance schedule.	ACTION
	Switch to the window to edit an existing maintenance schedule.	ACTION
Name	Name of the maintenance schedule.	DISPLAY
Icon "..."	Display of an icon. For example, hand icon is displayed if the maintenance schedule requires activities to be performed manually.	DISPLAY
Responsible organization	Displays the organization responsible for the maintenance schedule.	DISPLAY
	Copies the maintenance schedule. The next time you save the maintenance schedule, it will be saved as a new maintenance schedule. If you do not change the name, a consecutive number will automatically be added.	ACTION
	Deletes the maintenance schedule after a prompt. If you cancel the prompt, the deletion will not take place.	ACTION

Maintenance plan

Planning data

Name: MP

Responsible organization: Integration

Announcement: 2 days Prior to the scheduled date

Test suite linked

Name	Channel	Number	Measuring series	Date
AUT: Testserie	CHAN1	9	3 3 3	3/28/2013

☒ Test series can be executed under PLC control

☐ Waiting period: 0 Minutes

Work instruction

Files

File

no data found

Please fill in the (*) fields

Delete OK Cancel

Fig. 3-3: Editing a maintenance schedule

Function	Description	Type
Name	Short name for the maintenance procedure. The name can also be found in the overview of the maintenance jobs in the PC and in the control.	DISPLAY INPUT (max. 100 characters; all characters are permissible)
Responsible organization	Organization allocated to carry out the job in this schedule.	DISPLAY SELECTION

Function	Description	Type
	Note: This information is added to the jobs from this schedule. However, any organization with access to this machine can change or delete the jobs in this schedule.	
Announcement	The number of hours, days, weeks or months can be specified, where the schedule is announced before its due date in order to carry out preparatory measures in plenty of time, such as placing orders.	INPUT DISPLAY
Linked test series	Select the Condition Monitor measurement series which are to be performed within the scope of the maintenance schedule and are to be included with the measurement results. Note: Precisely one test series / measurement series can be selected from those available at the machine.	SELECTION optional
Name	Name of the test series.	SELECTION
Channel	Shows the channel.	DISPLAY
Number	The number in the display indicates the number of lines per window that can be shown in this menu. You can select up to 20 lines. A scroll bar will then be displayed in the window.	DISPLAY SELECTION (4 to 20)
Measurement series	Shows the number of measurement series.	DISPLAY
Date	Shows the date of the measurement series.	DISPLAY
Separate test series	Separates the measurement series from the test series.	ACTION
The test series can be PLC-controlled	Specifies that the axis tests included with the maintenance job should be automatically performed without any manual operation, assuming that the machine is in the appropriate operating state (controlled by the PLC).	DISPLAY
Waiting time	Activating the due time of the maintenance job - that has become due from the maintenance schedule - in which this was not executed. (only for test series to be automatically executed)	SELECTION optional
Minutes, waiting time	Due time, after which the maintenance job is deleted although it was not executed.	DISPLAY INPUT
Work instructions	Explanatory description of the maintenance task	DISPLAY INPUT

Function	Description	Type
File	<p>To provide more details about the task, documents with more information can be appended.</p> <p>An attached file can be marked as being safety-relevant in order to draw the attention of the operator.</p> <p>Note: The machine operator at the operator panel can only view documents in PDF format.</p>	<p>DISPLAY ACTION</p> <p>SELECTION (Toggle)</p>

Notice

Changes to maintenance schedules are not applied to pending maintenance jobs.

Changes to maintenance schedules are accepted in all maintenance jobs that have still not been opened, are not due and not closed (also before they are due, if available) at the latest when they become due (this can be identified as a result of the missing pin symbol).

Security note on displaying PDF documents

Notice

PDF documents to be displayed on the operator panel of the control must not contain any active contents (Java script, e-mail fields, etc.) nor have any HTML Links!

Otherwise you run the risk of navigating from the SINUMERIK Integrate system to other web sites.

At the operator panel of the control, SINUMERIK Integrate only supports the display of PDF documents that are compatible with Acrobat 1.3 (Reader Version 4.x).

For optimum display, please create your PDF documents with the option "Initial View: Page Only/ Magnification Fit Width".

3.1.2 Configuring variable monitors

Overview

You configure a variable monitor in the following steps:

1. Select the variable monitor or create a new variable monitor.
2. Name the variable monitor; comments and icons can be added as an option.
3. Define variables (PLC, NC, SINAMICS drives, generic variables, user-defined variables) that can be addressed in SINUMERIK Integrate.
4. Use a control monitor to execute the variable monitor.

Selecting or creating variable monitors

Since it is possible for each machine to have several variable monitors, there is the option of sorting them in the overview display either by their names or by the two classification fields. Additionally, you can use a search text with text segment specifications that are related to the name and variable columns to filter the representation.

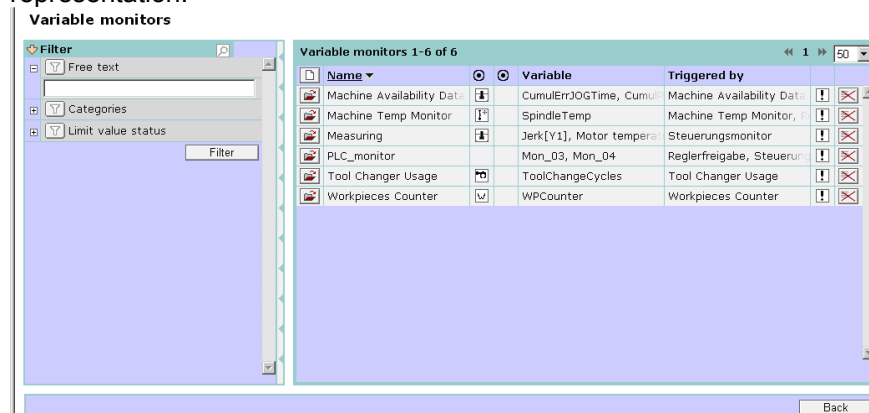


Fig. 3-4: Select the variable monitor

Variable monitors

Variable monitors 1-5 of 5

Name	Variable	Triggered by
DB87	DB87.DB06	Test Zeittrigger
Machine status connection	Machine connected	
Machine status communication	Communication set up	
Machine status data acquisition	Data acquisition running	
NC	Jerk[X1], Jerk[Y1], Jerk[Z1], Motor temperature[X1], Motor	Test Zeittrigger

Fig. 3-5: Machine status variable monitor

These variable monitors are available automatically if the machine status identification is activated in the management for the machines. As in all the other diagnostics actions of the control monitors, they can be activated for recording.

Variable monitor

Settings

Name:

Symbol and text:

Comment:

Delete values: ☐ active

Delete values after: 14 weeks

Maximum number of values per variable: 10000

Last measurement: ..

Variables

Name	Warning limit	Critical limit

Edit variables

Time series

Triggered by control monitor

Control monitor

Save Cancel

Fig. 3-6: Configure the variable monitor





Notice

The automatic deletion of data does not result in the retention of the available memory space on the server. The values are only no longer visible on the UI and are no longer available for evaluations.

To optimize the memory space after deletion, the database administrator must manually create a database backup so that a shrink can then be carried out.

The variable monitor can be configured as follows:

Function	Description	Type
Settings		
Name	Name of the variable monitor	DISPLAY INPUT (max. 195 characters, all characters are permissible)
Symbol and text	Selection of an icon stored in the system and naming the icon selected. Notice: The text entered applies to the entire machine and overwrites any existing text.	DISPLAY SELECTION INPUT (max. 200 characters, all characters are permissible)
Comment	Individual text for the variable monitor.	DISPLAY INPUT (max. 200 characters, all characters are permissible)
Delete values Active	The values in the specified time period are only deleted after you have selected "active". Values are not deleted if "active" is not selected.	SELECTION
Delete values after	Automatically deletes all values after the specified time. The following units are available for the time specification: <ul style="list-style-type: none"> • Days • Weeks 	DISPLAY SELECTION INPUT 1 to 999,999
Maximum number of values per variable	In addition to a time limit for the number of values, a quantitative limit can be entered. When the maximum number of desired values has been reached, the oldest values are deleted. Thus the limit is observed.	DISPLAY INPUT 0 to 1,000,000
Last measurement	Time stamp of last data acquisition.	DISPLAY

Function	Description	Type
Triggered by control monitor		
Control monitor	Selection of a control monitor that is to trigger the variable monitor. Creation of a new control monitor that is to trigger the variable monitor.	DISPLAY SELECTION
Variables x – y of y		
Variables	Table of the variables configured in the variable monitor.	DISPLAY
Edit variable	Change to a window to record and insert the following variable: <ul style="list-style-type: none"> • Predefined NC variables or <ul style="list-style-type: none"> • Freely definable variable of PLC, NC, S7, S5, etc. Note: An appropriate OPC driver or GenTec adapter is required for freely definable variables. For more information, contact your Siemens sales representative.	ACTION
Time series	Displays the time series of the selected variables.	DISPLAY
Name	Name of the variable.	DISPLAY
Warning limit	Displays the configured values for the warning limits.	DISPLAY
Critical limit	Displays the configured values for the critical limit.	DISPLAY
	Activates the limit value of type upper limit.	ACTION
	Activates the limit value of type lower limit.	ACTION
	Displays the time series of the variable as diagram.	ACTION
	Deletes the variable from the configuration of the variable monitor.	ACTION
Edit variable	Changes to the variable editing window to <ul style="list-style-type: none"> • Select • Add • Delete • Change 	ACTION
Save	Saves the changes to the configuration and returns to the calling page.	ACTION
Cancel	Discards the changes to the configuration and returns to the calling page.	ACTION

Configuring a variable

The system provides a selection of predefined variables. The variables can be added to the variable monitor configuration simply by selecting them.

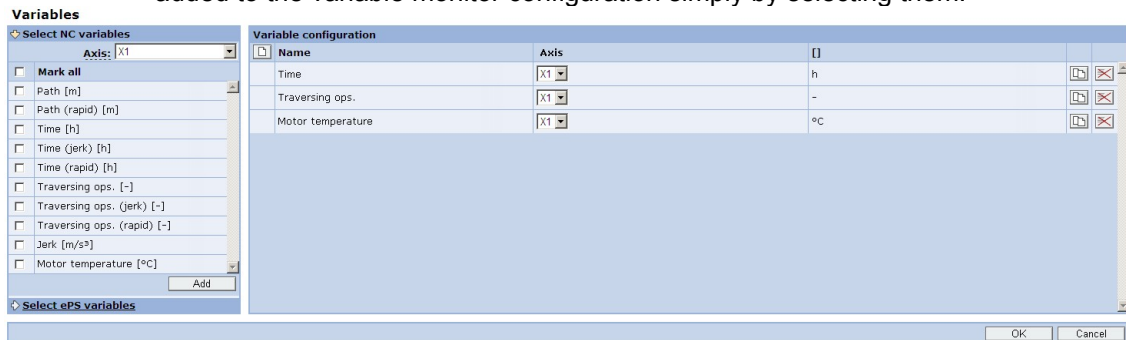


Fig. 3-7: Variable monitor - configuring an NC variable

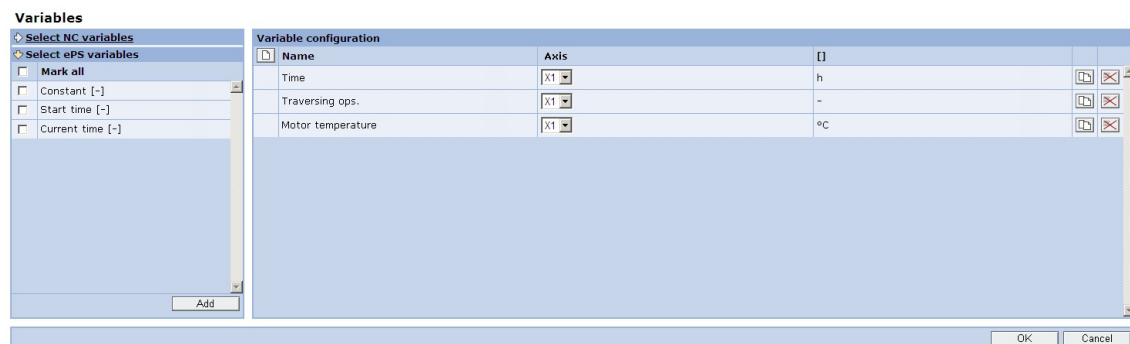




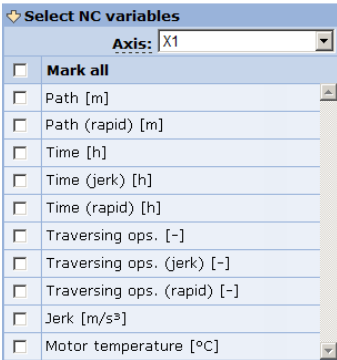
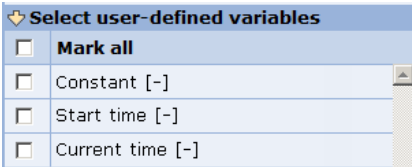


Fig. 3-8: Variable monitor - configuring an NC variable

Function	Description	Type
Selection	The predefined variables whose values are to be recorded must be selected in the variable tree.	DISPLAY SELECTION
Variable configuration		
	Opens a form to configure a new variable.	ACTION
	Edits the configuration of a freely defined variable	ACTION
Name	Name of the variable.	DISPLAY
Axis	With variables that refer to an axis, the name of the machine axis is displayed here. The reference to an axis can be changed as long as no data was captured for this variable.	DISPLAY SELECTION
[]	The unit of the variable is displayed in this column.	DISPLAY
	Creates a copy of a variable.	ACTION
	Removes the variable from the configuration and deletes the data of this variable	ACTION

Add variables by selecting them from predefined variables:

Function	Description	Type
Axis	The variables that can be selected refer to one axis each. This axis is defined with this selection field.	DISPLAY SELECTION
Select all	All variables that are available are selected.	SELECTION
Add	The selected variables are added to the configuration of the variable monitor.	ACTION
Select NC variables		
	<p>Changeover in the variable tree between predefined variables.</p>  <p>The variables are described in detail in the SINUMERIK documentation.</p>	Function
Select user-defined variables		
	<p>Changeover in the variable tree between predefined variables.</p>  <p>Constant: The constant is always 1 and is used to check the variable monitors.</p> <p>Start time: The start time is the time stamp as of which variables can be recorded (client runs on the frontend PC).</p> <p>Current time: The current time is the time stamp of the frontend PC at the time of recording via the variable monitor.</p>	

As an alternative a form can be used to configure any variables.

Fig. 3-9: Variable monitor - selecting variable

Function	Description	Type
Address	Absolute address in the original syntax of the data source. If block or generic is selected as data type, not only an address can be specified, but also a range and/or list. Address, number specifies a range starting from the specified address. Address+address is a list. Combinations of range and list are possible.	DISPLAY INPUT
Name	Optional name of the variable, which will then be used in the window of the variables instead of the absolute address	DISPLAY INPUT (max. 40 characters, all characters are permissible)
Counter type	<ul style="list-style-type: none"> No counter: The variable is always processed with the current variable value. The variable can also be a counter. The actual counter status is always processed. Up counter: The variable is used by the system as an endless difference totalizer. This means that the entire variable value is added to the SINUMERIK Integrate counter variable if the value of the variable is smaller than the preceding value. Only the difference between the current value and the preceding value is added to the SINUMERIK Integrate counter variable if the current value is greater than the preceding value. <p>Notice: Bit variables cannot undergo format changes and cannot be defined as counters.</p>	DISPLAY SELECTION

Function	Description	Type
	Note: Except for bit variables, all variable formats can be changed.	
Data source	For example <ul style="list-style-type: none"> • PLC Address is interpreted in S7 syntax. • NC Address in the syntax of the NC interface. (DocOnCD/DocOnWeb - List Manual 2 or NC Varselector toolbox - help for OPI variables). • SINAMICS: Address defined in SINAMICS for a variable. • Generic address for any OPC expression, which is supported by a driver/server. • User-defined variable Address expression that was defined in SINUMERIK Integrate for a variable. 	DISPLAY SELECTION
Data type	Interpretation of the variable value in permissible S7 syntax. In addition to the S7 data types, there is the block type for data of all the variables specified in the address. If inputs, outputs or bit memory are to be recorded in the block, the generic type must be selected. A graphic display of a block in a diagram is not possible. Note: The type can always be matched to the variable and modified within the permissible formats.	DISPLAY SELECTION
Unit	Unit of the variables to be recorded.	DISPLAY INPUT
Conversion	<ul style="list-style-type: none"> • Output: Input of 2 values for the real variable value. • Converted: Specification for the related dimensioned values. 	DISPLAY INPUT (max. 32 digits)

Function	Description	Type
Value	Display of the current variable value and the converted variable value. Input and display of the dimension in a unit for the converted value.	DISPLAY INPUT (max. 5 characters, all characters are permissible)
Raw data format	Only applies for the generic data type in order to correctly interpret the contents. Boolean, 8 - 64-bit, floating point, character string	DISPLAY SELECTION

Changes to the configuration are not effective until the machine is synchronized.

Notice

PLC data source:

By default, PLC addresses are restricted to the address range of the smallest PLC.

To remove this restriction if you are using a more powerful PLC and want to use the addresses in SINUMERIK Integrate, increase the related values in the trigger DB (DB239 in SINUMERIK Integrate Standard) in DW8 for inputs, DW10 for outputs, DW12 for flags, DW14 for timers, and DW16 for counters, to the available address ranges. Restarting the PC that holds the client is necessary.

Warning

PLC data source:

Using the trigger DB with an increased address range can cause the PLC to stop when you use the higher addresses in SINUMERIK Integrate configurations, and this address range is not really available in the connected PLC.

Using (a) control monitor(s) to execute the variable monitor

The "Trigger variable monitor(s)" diagnostic action is used to capture the PLC variable values promptly and store them in the server. It is only possible to access the data manually via the machine events or variable monitor data series. Limit value triggers can be used to react automatically to the variable values via control monitors.

See also Section: Control monitors - list view
and

Section: Diagnostic actions

3.2 Configuring measurements and measurement series

Function description

Configuration of measurements and measurement series it when you define the parameters required for measurement. The configurations created are always stored with the measurements and can be used again to repeat the measurements. That especially applies to measurement series. The configuration of a measurement series ensures that measurements are made with the same settings every time. This permits evaluation of the progression of characteristics over time.

In addition to parameters for performing a measurement, the limit values of the characteristics are also configured. Limit values can be configured for measurement series. The configuration is only possible on the PC. Individual measurements that do not belong to a measurement series cannot have limit values.

Availability and privileges

On the operator panel, a measurement is configured or a measurement series configuration changed only during the measurement procedure. On the operator panel, it is only possible to create a measurement series based on a measurement being performed.

On the PC, it is possible to configure measurement series. The authorization required to configure measurements and measurement series is described in detail in the Appendix.

3.2.1 Equability test

Parameter description

Parameters for conducting an equability test:

Function	Description	Type
Name	Name of the measurement series (measurements do not have a name).	INPUT
Channel	Selection of the required channel. The channel defines the possible machine axes in the "Axis" selection list.	SELECTION
Axis	Selection from the possible machine axes that can be programmed in the selected channel.	SELECTION
Start point	The axis position at which the first partial movement of the measurement begins.	INPUT
End point	The axis position at which the first partial movement of the measurement ends.	INPUT
Feedrate	Speed per minute at which the axis is moved.	INPUT

The screenshot shows the 'Enter parameters' screen for a 'Bidirectional circularity test' on a Siemens operator panel. The screen is divided into a main parameter entry area and a right-hand navigation column. The main area includes fields for Channel (set to CHAN1), Axis 1/2 (set to X1/Y1), Center point Axis 1 (75 mm), Center point Axis 2 (75 mm), Diameter (100 mm), and Feedrate (10000 mm/min). The right-hand column contains buttons for Exit, Channel, ISO values, OK, and Cancel. At the bottom, there is a row of buttons for Home, Maint. services, Tests, Measuremts., and Help.

Fig. 3-10: Equability test on the operator panel

Configuring the limit values

With the equability test, one movement is carried out each forwards and backwards. The characteristics are calculated separately for each direction. As standard limit values are defined for the characteristics and are the same for both directions of movement.

Optionally limit values can be entered which can have different values for both directions for each characteristic.

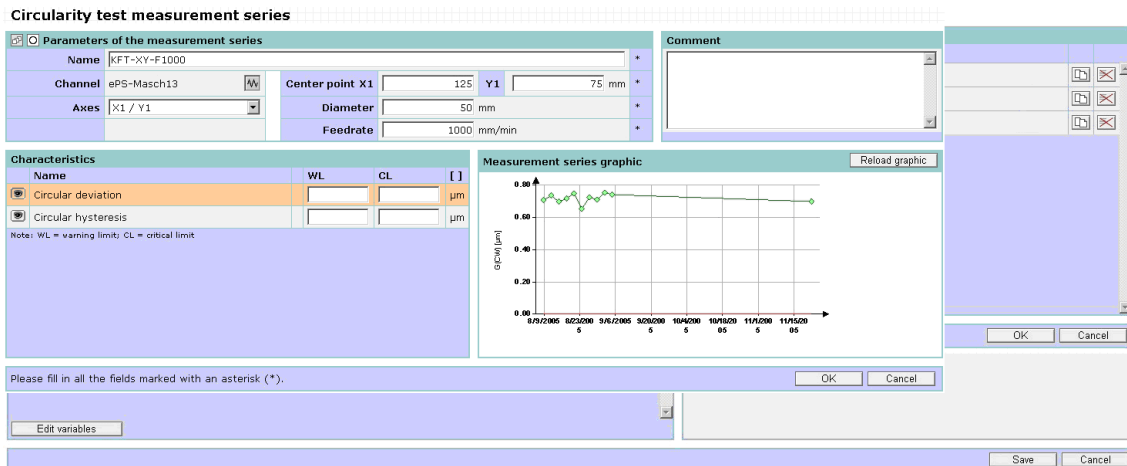


Fig. 3-11: Measurement series of a equability test on the PC

3.2.2 Circularity test

Parameter description

Parameters for conducting a circularity test:

Function	Description	Type
Name	Name of the measurement series (measurements do not have a name).	INPUT
Channel	Selection of the required channel: The channel defines the possible axis pairs in the "Axes" selection list.	SELECTION
Axes 1/2	Selection from the possible pairs of geometry axes.	SELECTION
Center point 1	Specification of the center coordinates of the circle for the first axis.	INPUT
Center point 2	Specification of the center coordinates of the circle for the second axis.	INPUT
Diameter	Diameter of the circle.	INPUT
Feedrate	Path velocity of the circular movement.	INPUT

Enter parameters SIEMENS

■ Home Maintenance services Tests Measurements

Machine: 411-gm-Operate; SIEMENS; RigB

Bidirectional equability test

Channel	CHAN1	
Axis	X1	
Start point	20	mm
End point	100	mm
Feedrate	2000	mm / min

Navigation buttons: Home, Maint. services, Tests, Measurements, Exit, Channel, Use trav_range, OK, Cancel, Help

Fig. 3-12: Circularity test on the operator panel

Equability test measuring series

Parameters of the measuring series

Name		
Channel	CHAN1	
Axes	X1	
Start point		mm
End point		mm
Feedrate		mm/min

Limit values ☐ Separated according to direction of motion

Characteristics

Name	WL	CL	[]
Maximum torque			Nm
Minimum torque			Nm
Torque Ø UL			Nm
Torque Ø LL			Nm
Torque σ			Nm
Ramp			Nm
Trend lead UL			Nm/mm
Trend lead LL			Nm/mm

Note: WL = warning limit; CL = critical limit; LL = lower limit; UL = upper limit; decimal numbers must be entered with a decimal point.

measuring series - graphic Reload graphic

no measurement data present

Please fill in all the fields marked with an asterisk (*).

OK Cancel

Fig. 3-13: Measurement series of a circularity test on the PC

3.2.3 Universal axis test

Parameter description

Parameters for conducting a universal axis test:

Function	Description	Type
Name	Name of the measurement series (measurements do not have a name).	INPUT
Channel	Selection of the required channel: The channel defines the possible machine axes in the "Axis" selection list.	SELECTION
Axis	Selection from the possible machine axes that can be programmed in the selected channel.	SELECTION
Start point	The axis position at which the various movements of the measurement begin. The position value is never lower than this value during measurement.	INPUT

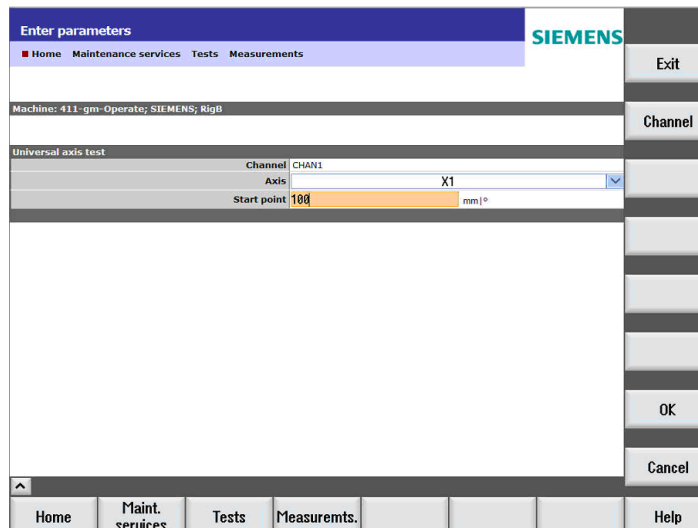


Fig. 3-14: Universal axis test on the operator panel

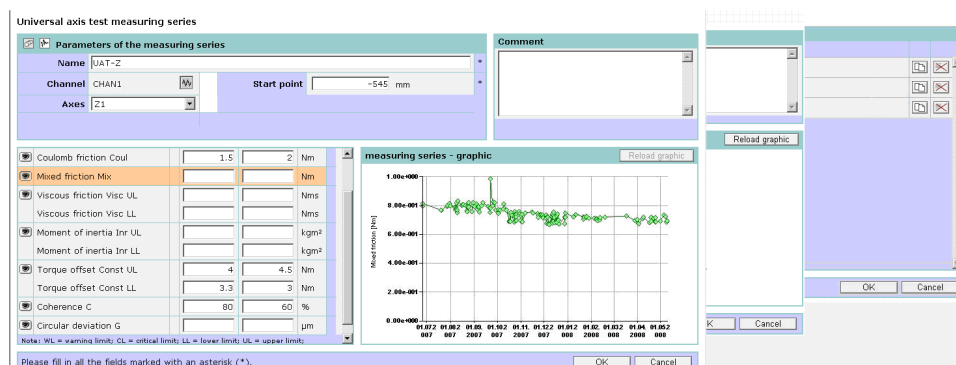


Fig. 3-15: Measurement series for a universal axis test at the PC

3.2.4 Performing test series

Overview

Test series are used to automate measurements for condition monitoring to a great extent. A test series can contain any number of measurement series. These measurement series are performed one after the other in the defined order when a test series is run. An machine operator is only required at the machine for the purpose of starting the test series.

The measurements are made and measurement results stored without any further operator actions.

Function description

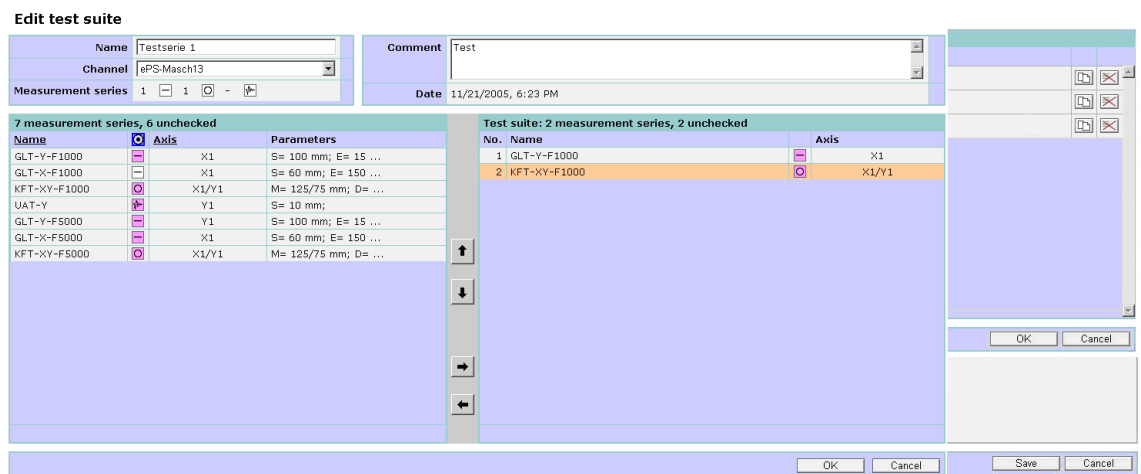


Fig. 3-16: Changing the configuration of a test series

The following entries have to be made to configure a test series:

Function	Description	Type
Name	Name of the test series. The system suggests an automatically generated name, which you can change. The names of test series must be unique within the context of the machine. The system adds another element to the name automatically if the name entered by the machine operator has already been assigned to another test series.	INPUT
Channel	Selection of the required channel.	SELECTION
Comment	Text that can be freely entered for a detailed description of the test series.	INPUT

To add, remove, or change the sequence of measurement series, these are selected in the overview displayed and moved by dragging and dropping or using the arrow buttons on the form.

A test series can only contain measurement series in one channel. It is not possible to change the channel of a test series.

Availability and privileges

Test series can only be configured on the PC. The authorization required for configuring the test series is described in detail in the Appendix.

Saving axis test data

Depending on the setting in the organizational data, changes can be made to the data relevant for the axis test (prolog and epilog, as well as parameters) while retaining the identifier for an already successfully performed manual axis test. In this case, activate the checkbox and click "OK".

If the checkbox is not set and you click "OK", the identifier for the performed axis test is reset. It must be performed manually again.

The following prompt is displayed if a manual axis test is not performed after changes in the prolog and epilog:

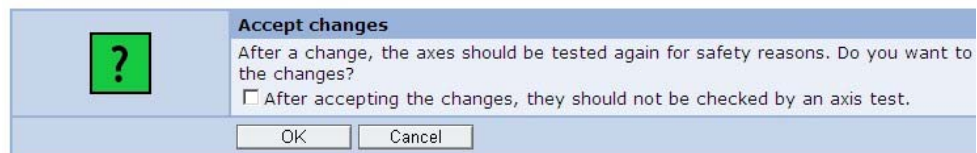


Fig. 3-17: Prompt after changes in the prolog and epilog

The following prompt is displayed if a manual axis test is not performed after changing axis-specific parameters:

The screenshot shows a Siemens 'Query' dialog box. At the top, there is a navigation bar with 'Home', 'Maintenance services', 'Tests', and 'Measuring series'. The 'Measuring series' tab is active. Below the navigation bar, the machine name 'Machine: 411-gm-nt; SIEMENS; RigB' is displayed. The main area contains a message: 'You have changed the parameters of measuring series. After a change, the axes should be tested again for safety reasons.' Below this message, it says 'Please select one of the following actions:'. There are three options, each with a 'Select' button: 'Accept changes with check' (Do you want to accept the changes, and check with an axis test?), 'Accept changes without check' (Do you want to accept the changes, but not check with an axis test?), and 'Reject changes' (Do you want to reject the changes?). At the bottom, there is a status bar with 'Home', 'Maint. services', 'Tests', 'Meas. series', and 'Help'.

Fig. 3-18: Prompt after changing axis-specific parameters

Message	Meaning
"Do you want to accept the changes and check with an axis test?"	If the axis test has already been performed successfully, it is marked as "Tested". If you press the "Select" softkey, "Tested" is reset and a one-time successful execution of the axis test is required in order to be able to also execute this automatically (e.g. via maintenance schedules).
"Do you want to accept the changes and not check with an axis test?"	If the axis test has already been performed successfully, it is marked as 'Tested'. If you press the "Select" softkey, "Tested" is not reset and a new axis test is not required.
"Do you want to reject the changes?"	Currently executed changes are rejected. If the axis test has already been performed successfully, it is marked as "Tested". If you press the "Select" softkey, "Tested" is not reset and a new axis test is not required.

NOTICE

The option not to perform a manual axis test again in order to retain the "Tested" marking despite changes to data relevant for the axis test, must be enabled in the organizational data.

3.3 User-defined variables

3.3.1 User-defined variables – List view

Function description

User-defined variables permit values to be processed that were created by the user in SINUMERIK-Integrate configured logic. These values are defined as user-defined variables so that they can be addressed in the downstream logic.

The "stop watch" is a user-defined variable. The stop watch permits a time to be measured that can be started and stopped with any signals. The same signal can be used for both the start and the stop. The measured time is recorded as a time series (variable monitor). It can automatically be checked against limit values. A variable monitor must be set up for this. Any variable can be used for the start and stop signals. If a PLC variable is used in the S7 syntax (not OPC), the determined time cycle is exact to the millisecond. The maximum repeat frequency for a subsequent stop should lie in the higher double-digit seconds range.

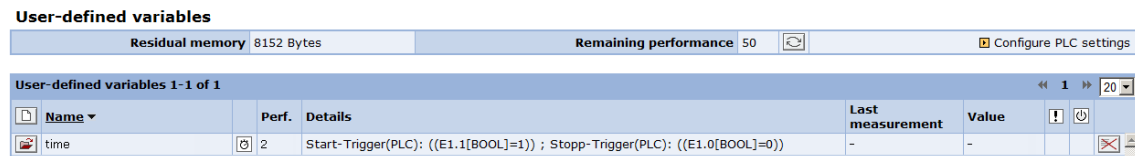





Fig. 3-19: User-defined variables – list view

Function	Description	Type
Residual memory Remaining performance PLC settings	See: PLC triggers	DISPLAY
	Changes to the window to create the logic for a user-defined variable.	ACTION
Number of lines	The value shown here specifies the lines per window that shall be represented in this menu. You can select up to 200 lines. A scroll bar will then be displayed in the window.	DISPLAY SELECTION
	Switches to the window to edit the created user-defined variable of the line.	ACTION
Name	User-assigned name for the user-defined variable.	DISPLAY
	Each type of user-defined variables has its own icon.	DISPLAY
Perf	The performance required from the PLC.	DISPLAY
Details	Logic to determine the value of the user-defined variable.	DISPLAY
Last measurement	Time at which a value was last determined for the variable	DISPLAY

Function	Description	Type
Value	Current, last determined variable value.	DISPLAY
	An exclamation mark shows that a user-defined variable is defined here, but is not in use. A warning triangle indicates that values have not yet been determined for the variable because the logic has not yet been activated by means of synchronization with the machine client.	DISPLAY
	Shows that the variable is being used.	DISPLAY
	Deletes the variable in the line in which the "Delete" icon is clicked. The window does not change, but the variables move up one line.	ACTION
Back	Closes the window and changes to the main screen to "Set up functions".	ACTION

3.3.2 User-defined variables – Detailed view

Configuring user-defined variables



The following window is provided for creating and editing a user-defined variable:

General

Name

time

Details

Trigger	Name	Condition
	Start-Trigger	((E1.1[BOOL]=1))
	Stopp-Trigger	((E1.0[BOOL]=0))

Comment

Fig. 3-20: Editing a user-defined variable - detailed view

Function	Description	Type
Trigger Names Condition Comment	See: Timeout trigger	See: Timeout trigger

3.4 Fault services

3.4.1 Control monitors - List view

Function description

Events occurring directly in the control, or even as a result of evaluations of control values or a machine operator's activities, can be evaluated by control monitors.

As a result, machine statuses can be acquired in order to draw general conclusions about errors (e.g. alarms), current machine states (e.g. about accuracy determined by circularity test), or use of resources; to collect production data (e.g. workpiece counters); to obtain statistical data; and to analyze individual events on a temporary basis.

Machine operators can use a control monitor to determine which signals they are interested in and, therefore, which automatic tasks they wish to trigger. When the SINUMERIK Integrate system detects such an event, it can automatically trigger actions which, in turn, trigger specific operating sequences or provide diagnostics data for further analysis.

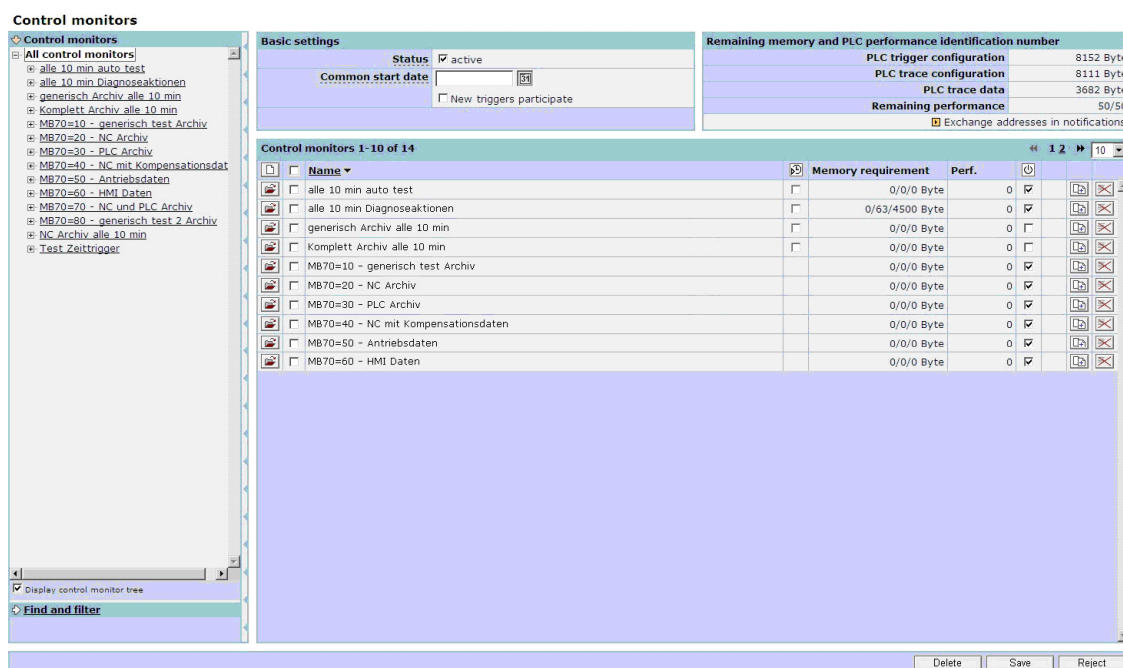





Fig. 3-21: Control monitors - List view

Note

To define the data that is to be created and the actions that are to be initiated by a given signal or a combination of signals from a machine at a given predefined state in the server, the machine operator creates one or more control monitors.

Function	Description	Type
Control monitors	Tree for selecting the control monitor to be processed. It can be expanded to show the triggers defined in it, which can be jumped to directly.	TREE
Basic settings		
Status	Switches the currently active control monitors on or off on the next synchronization. Note: Does not change the activation state of each monitor.	DISPLAY SELECTION
Common start date	The common start date defines the point at which the trigger will begin to execute the control monitor. Each time trigger can be set so that it responds to the start date. If a start time has not been specified, all triggers respond with the reaction identification to the common start time. Specifying dates in the past is not permitted. Dates that are no more than 2 years in the future can be specified.	DISPLAY SELECTION
New triggers participation	Default setting for the function setting for triggers: If an individual trigger setting has not been made for participation at the start date, the triggers will respond at the start date.	DISPLAY SELECTION
Remaining memory and PLC performance index		
	Overview of the remaining memory of the individual PLC blocks and overview of the PLC performance index currently in use and maximum PLC performance index: <ul style="list-style-type: none"> • PLC trigger configurations • PLC trace configurations • PLC trace data 	DISPLAY
Exchanging addresses in notifications	An address that is configured in one or more notifications of a control monitor can be replaced by another address from the organization's address book.	ACTION

Function	Description	Type
Control monitors x -y of y		
Number of lines	The number in the display indicates the number of lines per window that can be shown in this menu. You can select up to 200 lines. A scroll bar will then be displayed in the window.	DISPLAY SELECTION
Name	Names of the control monitors.	DISPLAY
	Display indicating whether the control monitor has triggers that are independent of the common start date: No display: No Faded display: Yes, at least one Normal display: Yes, all	DISPLAY
Memory requirement	Used memory requirement of monitor for: <ul style="list-style-type: none"> • PLC trigger configurations • PLC trace configurations • PLC trace data 	DISPLAY
Performance	Currently used PLC performance.	DISPLAY
	Monitor runs on the machine or is inactive.	DISPLAY
	An exclamation point indicates that the configuration currently stored is not yet effective on the machine.	DISPLAY

Note

Use the PLC performance index to define the performance that may be used for the PLC triggers. Each PLC trigger uses a certain number of performance points. This enables you to control the extent to which the PLC can be used by the PLC trigger.

The PLC performance index can be defined individually. The amount of memory and the cycle time granted for SINUMERIK Integrate can vary as the performance of the control and the processes executed in it vary.

Exchange addresses in notifications

Exchange addresses	
Person previously informed	Thomas, Lauxmann
E-Mail	laut@company.com
SMS	-
Replace with	Mustermann, WH
E-Mail	wh@mustermann.com
SMS	-
<input type="checkbox"/> Edit selected address <input type="checkbox"/> Create address	
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Fig. 3-22: Exchanging addresses in notifications

Function	Description	Type
Person previously notified	Opens the list of all addresses configured in notifications of the control monitors for this machine	SELECTION DISPLAY
• E-mail	Displays the e-mail address corresponding to the address selected, if one exists	DISPLAY
• SMS	Displays the telephone number corresponding to the address selected, if one exists	DISPLAY
Replace with	Opens the organization's address book so that a replacement address can be selected	SELECTION DISPLAY
• E-mail	Displays the e-mail address corresponding to the address selected, if one exists	DISPLAY
• SMS	Displays the telephone number corresponding to the address selected, if one exists	DISPLAY
Edit selected address	Corrections to the replacement address can be made, or it can be edited for completeness. The window described in the section dealing with creating addresses is used for this purpose. It should be noted that any changes made to a name affect all configurations within the entire organization, and that changes are accepted automatically in all configurations without a request being made to do so.	ACTION
Create address	If the replacement address does not yet exist in the address book, a new entry for it can be created. The window described in the section dealing with creating addresses is used for this purpose.	ACTION
OK	The address is replaced.	ACTION
Cancel	The address is not replaced.	ACTION

3.4.2 Control monitors - Detailed view

Function description

The detailed view of a control monitor is accessed by selecting an existing control monitor or creating a new one.

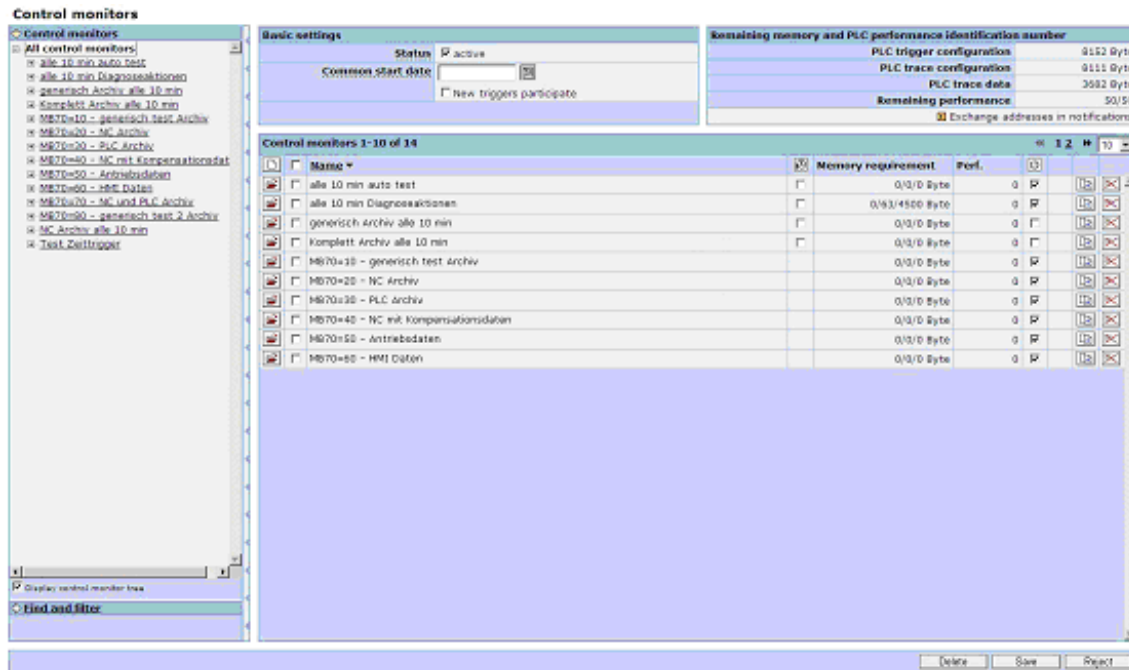


Fig. 3-23: Control monitor overview

Control monitors are divided into three modules:

1. Trigger and conditions module
2. Action module
3. Workflow module

The general part deals with the function settings for a control monitor.

- To start actions and/or workflows with the triggers, logic is configured and information queries from NC PLC, database, or other intelligent components, that can be addressed via the OPC and other protocols, are linked.
- Workflows are notifications via e-mail or SMS and maintenance schedules.
- Diagnostic actions involve data acquired from the control (NCK, PLC; PC or another intelligent components, which can be addressed via OPC and other protocols).

Actions

After you have created a new control monitor or opened a control monitor for editing, you can perform the following actions:

- Select or change the trigger signals that will cause the monitor to run.
- Define or change the actions to be executed when a trigger is detected.

Fig. 3-24: Control monitor - Detailed view

Note

The automatic deletion of data does not result in the retention of the available memory space on the server. The values are only no longer visible on the UI and are no longer available for evaluations.

To optimize the memory space after deletion, the database administrator must manually create a database backup in order to perform a shrink.

Function	Description	Type
Details tab	Displays function settings on the control monitor, which can be edited.	TAB SELECTION
Name	Name of the control monitor: The names of the control monitors must be unique. If a name has not been entered, the system automatically assigns a name, e.g. control monitor (n), where n is the automatic consecutive number.	DISPLAY INPUT (max. 100 characters are permissible)
Control monitor active	Activate or deactivate the control monitor via the checkbox.	DISPLAY

Function	Description	Type
Delete events	Activate the checkbox to delete all the old events of this control monitor that correspond to the following specifications. This includes attachments recorded with the control monitor.	DISPLAY (Toggle)
Delete events after	Time after which the old events of this control monitor are automatically deleted. The following time units are available for selection: <ul style="list-style-type: none"> • Days • Weeks 	DISPLAY INPUT 1 to 999 999
Maximum number of events	In addition to a time limit for the number of values, a quantitative limit can be entered. When the maximum number of desired values has been reached, the oldest values are deleted. Thus the limit is observed.	INPUT 1 to 999 999 Display
Clipboard	The clipboard can be used to temporarily saved configurations and insert them at a different position/machine.	ACTION
Paste	The temporarily saved configurations can be inserted at the "same" position in other configurations/machines.	ACTION
Generate event entry	An entry in the machine events is not required for every control monitor.	SELECTION DISPLAY
Must not be deleted	If this option is selected, events cannot be deleted from the event history.	SELECTION DISPLAY
Priority	Definition of a class used to enter events in the machine event list, so that they can be specifically filtered.	SELECTION DISPLAY (Digits from 1 to 5)
Notification limit	For notifications, maintenance or acquisition of value series from the NC or PLC, there is no need for an entry in the history, since these actions are events in and of themselves.	
Number of lines	The number in the display indicates the number of lines per window that can be shown in this menu. You can select up to 200 lines. A scroll bar will then be displayed in the window.	DISPLAY SELECTION
Trigger		
Add	Opens the submenu for adding a trigger.	ACTION
Open	Opens the submenu for changing a selected trigger.	ACTION
Change	Deletes a trigger from the monitor configuration.	ACTION
Copy to clipboard	Stores the copied trigger in the clipboard.	ACTION

Function	Description	Type
Conditions		
Add	Opens the submenu to add a condition.	ACTION
Open	Opens the submenu to change the selected condition.	ACTION
Change	Deletes a condition from the monitor configuration.	ACTION
Copy to clipboard	Stores the copied trigger in the clipboard.	ACTION
Workflow actions		
Add	Opens the submenu for configuring notifications and maintenance schedules.	ACTION
Open	Opens the submenu for changing workflow actions.	ACTION
Change	Deletes a workflow action from the monitor configuration.	ACTION
Copy to clipboard	Stores the copied trigger in the clipboard.	ACTION
Diagnostic actions		
Add	Opens the submenu for adding actions.	ACTION
Open	Opens the submenu for changing actions.	ACTION
Change	Deletes an action from the monitor configuration.	ACTION
Copy to clipboard	Stores the copied trigger in the clipboard.	ACTION
Notification limit	Opens the submenu for setting the notification limit for SMS/e-mail messages.	ACTION
Send data as attachment	If data from the control is configured as an action in the control monitor for uploading purposes, it can be sent as an attachment to an e-mail. The uploaded data can also be selected for sending on an individual basis.	SELECTION
Delete	Deletes the selected control monitor following a query	ACTION
Save	Saves the changes made on the monitor.	ACTION
Reject	Rejects the changes made. The control monitor in place prior to opening remains unchanged.	ACTION

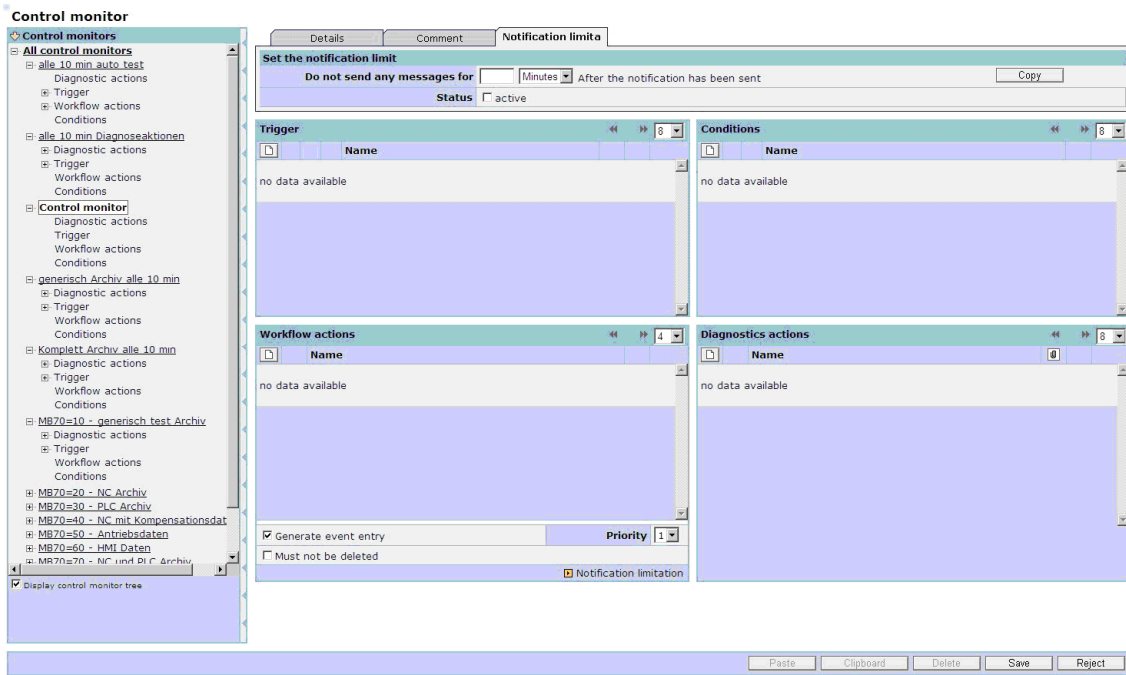
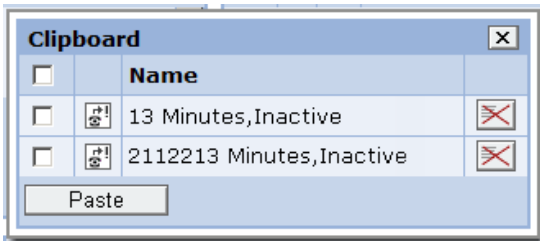


Fig. 3-25: Control monitor - notification

Function	Description	Type
Notification	Time restrictions of the notifications.	TAB SELECTION
Do not send any messages for ... After the notification	Earliest time after which another notification can be sent. Units: <ul style="list-style-type: none"> Hours Minutes 	INPUT DISPLAY (Digits from 1 to 99,999)
Copy	Copy the configuration of the notification limit to the clipboard and paste it in another control monitor. 	Function
Status	Activate/deactivate notification limit.	SELECTION DISPLAY

3.4.3 Machine trigger, server trigger and conditions

Function description, conditions

For triggers, a distinction is made between conditions and triggers.

- Conditions are the preconditions in order that a trigger is initiated. The condition must be available before the trigger signal or at the latest at the same time. If a condition is missing, then the trigger signal does not execute the control monitor. If the condition comes after the trigger signal, then the control monitor is not executed.
- Triggers executes the control monitor if the conditions are available at the instant in time that the trigger is fulfilled.

For pure machine triggers, the states of the signals are the logic operation of the trigger precisely in the cycle with the somewhat scattered query of the conditions.

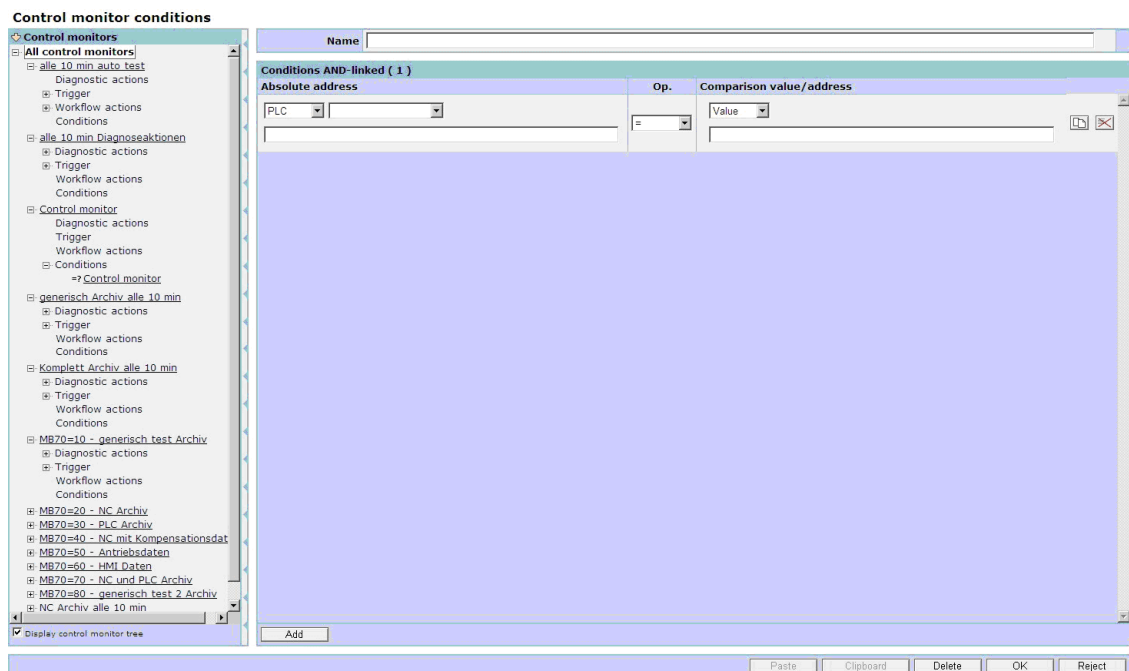





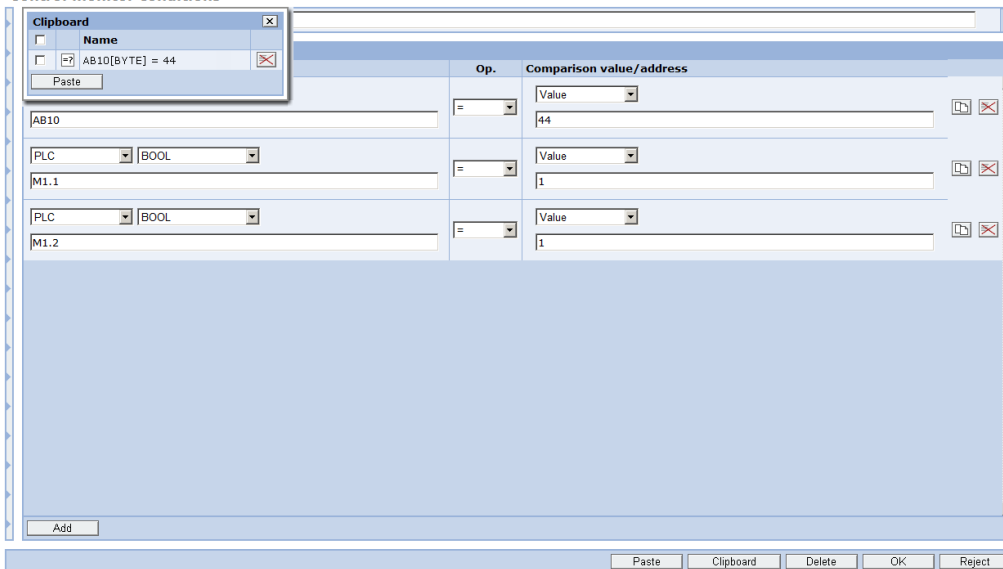
Fig. 3-26: Control monitor - conditions

Function	Description	Type
Name	<p>A name can be assigned to the AND'ed list of conditions. If the field remains empty or is deleted, the system generates a name from the parameters. The name varies according to the screen resolution.</p> <p>If the name already exists, a consecutive number is automatically added in parentheses.</p> <p>If the name is too long, the number added can only be seen in a tooltip.</p>	<p>DISPLAY INPUT</p> <p>(max. 40 characters, all characters are permissible)</p>

Function	Description	Type
Conditions AND-linked (x)		
Absolute address		
ePS-Var	BOOL, BYTE; CHAR; DINT; DWORD; INT; REAL; STRING; WORD - the address expression must be directly entered.	DISPLAY INPUT
Generic	REAL, STRING - the address expression must directly be entered.	DISPLAY INPUT
NC	Traversing path, traversing distance rapid traverse, traversing time, traversing time jerk, traversing time rapid traverse, traversing operations, traversing operations jerk, traversing operations rapid traverse, jerk, motor temperature - for each configured NC axis - no additional input is required.	DISPLAY
PLC	REAL - direct input or selection from the list of user-defined variables.	DISPLAY INPUT
SINAMICS	The system supports plausibility for the absolute addresses, their data types, or the possible comparison operations. If necessary, the user must adjust the interpretation variants of a data format so that they are compatible with the comparison value (BCD, ASCII, etc.).	DISPLAY INPUT
Operation	Only the operations possible for an address type are available. The following are possible: =, ≠, >, <, ≥, ≤, IN, OUT. The operations are applied according to their mathematical significance. IN is a comparison with two different comparison values, whereby the condition is fulfilled if the value lies within the two values. OUT is a comparison with two different comparison values, whereby the condition is fulfilled if the value lies above the higher of the two values and below the lower of the two values.	DISPLAY SELECTION
Comparison value or Comparison address	Any value in the format, which matches the absolute address. See: Absolute address User-defined variable, generic variable, NC variable, NC, PLC variable, SINAMICS variable - defined in the formats described under absolute address.	INPUT DISPLAY
	For each condition, the complete comparison expression can be saved in order to be able to insert it at another corresponding position.	SELECT-ACTION
	A complete comparison expression can be deleted for each condition.	ACTION

Function	Description	Type
Add	Creates additional edit boxes for an additional variable comparison with the same scope of functions that is described above. The comparison results are evaluated as an AND logic operation.	ACTION
Paste	Select a detailed configuration saved in the clipboard and copy it to the current configuration. The system only offers the detailed configurations that match the actual configuration.	ACTION
Clipboard	View the contents of the clipboard in order to copy a selection from this to the current configuration.	ACTION
	Copy a variable comparison line to the clipboard.	ACTION
Delete	Deletes the complete list with all conditions after a prompt and confirmation.	ACTION
OK	Saves the complete list with all conditions as configuration.	ACTION
Reject	The changes and entries, which have been made after opening or generating the actual configuration, are not saved in the configuration.	ACTION

Control monitor conditions



The screenshot shows the 'Control monitor conditions' dialog box. It contains a list of conditions with columns for 'Name', 'Op.', and 'Comparison value/address'. A 'Clipboard' window is open, showing a list of copied conditions. The main window has buttons for 'Add', 'Paste', 'Clipboard', 'Delete', 'OK', and 'Reject'.

Name	Op.	Comparison value/address
AB10	=	44
PLC [M1.1]	=	1
PLC [M1.2]	=	1

Fig. 3-27: Control monitor – Conditions – Clipboard

You can open the clipboard by clicking the "Clipboard" button:

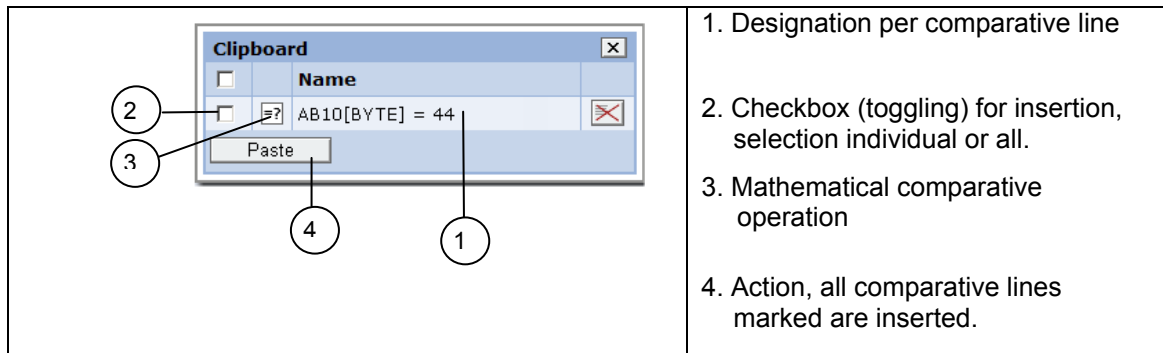


Fig. 3-28: Control monitor – Conditions – Clipboard

Description of the trigger function

We distinguish between machine triggers and server triggers:

- A machine trigger responds in the form of queries for signals from the control.
- A server trigger queries for values that have already been captured in the server, and do not depend on the communication between machine and server.

Any action can be executed with any trigger, regardless of whether it is of a machine or a server type. Fault help requests from the Internet PC and due maintenance jobs are an exception: They are monitored on the server, rather than being machine-triggered.

Initiating the trigger

A trigger can be assigned a label, which determines its behavior at the central start date for maintenance.

See Section: Editing the master data of a machine

- If a label has been set and a start date, which has not yet been reached, has been configured in the master data of the machine, the trigger will not be initiated.
- If the date has been reached or is in the past, the trigger will be initiated according to the conditions set for it.
- If a start date has not been configured, or the label has not been set, the trigger will be initiated according to the conditions set for it.

The label for an entire trigger relates to each individual condition linked in the trigger. "OFF" therefore indicates that no trigger conditions have been linked to the start time. "ON" indicates that all trigger conditions have been linked to the start time. A "faded ON" indicates that at least one trigger condition is linked to the start time.

Machine trigger

All actions that are available in the control monitor are initiated with a machine trigger. A machine trigger is initiated either by control variables or by events that take place in the control PC.

Select the required trigger type.

Add machine trigger	
▶	Alarm group
▶	PLC triggers
▶	PLC timeout triggers
▶	Trigger on a new value of a user-defined variable
▶	Combined machine trigger
▶	Fault message at HMI
▶	Time trigger
▶	Variable triggers
▶	Triggers on synchronization
▶	Trigger on control monitor script error (only for troubleshooting)

Add server trigger	
▶	A measurement of a series of measurements reaches a limit value
▶	Triggers when maintenance jobs are (over)due
▶	Variable monitor reaches limit value
▶	Cyclic trigger on variable monitor
▶	Fault message on PC
▶	Time trigger

3.4.4 Machine trigger on "alarm group"

Function description

The "alarm group" trigger can be used to respond to all alarms programmed in the control. These alarms also include the user area for alarm numbers that are used to program the machine functions for machine diagnostics purposes. If machine diagnostics are not performed on the basis of alarm numbers, these error messages can not be integrated here. The alarm numbers that initiate triggers can be entered individually, in groups or in series.

It is also possible to remove individual alarms or groups from a selection. In addition to this, conditions that are not meant to initiate a trigger on their own can be linked (e.g. if a particular alarm is only meant to initiate a trigger in Automatic mode).

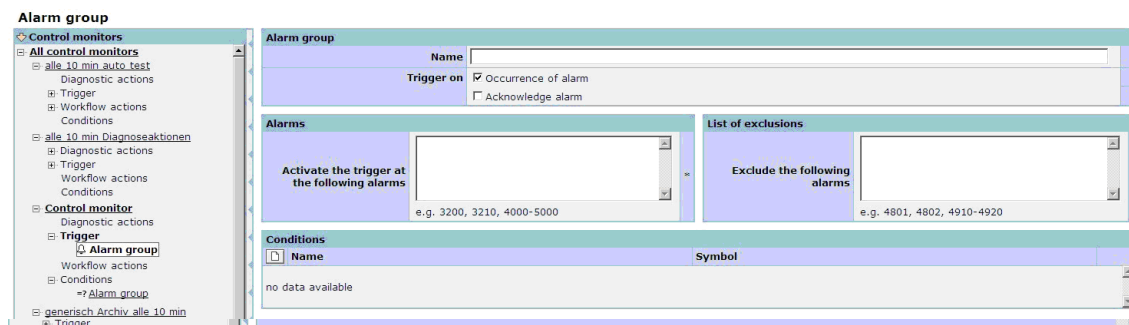



Fig. 3-29: "Alarm group" trigger

Function	Description	Type
Alarm group		
Name	<p>Name of the trigger; can be entered by the user. If the field remains empty or is deleted, the system generates a name from the parameters of the trigger. The name varies according to the screen resolution.</p> <p>If the name already exists, a consecutive number is automatically added in parentheses.</p> <p>If the name is too long, the number added can only be seen in a tooltip.</p>	<p>DISPLAY INPUT</p> <p>(max. 40 characters, all characters are permissible)</p>
Initiate trigger at	<ul style="list-style-type: none"> Alarm occurrence The alarm trigger works with the incoming alarm message for at least one alarm in the selection. Alarm acknowledgment The alarm trigger works with the outgoing alarm message for at least one alarm in the selection. 	SELECTION

Function	Description	Type
Alarms		
Initiate trigger for the following alarms	Enter the alarms to be initiated: List of individual alarms separated by commas, or alarm number ranges separated by "–".	DISPLAY INPUT (max. 200 characters; any numerals permissible) , and – are permissible special characters)
Exclusion list		
Exclude the following alarms	Enters the alarms that must not result in initiating: List of individual alarms separated by commas or alarm number ranges separated by "–".	INPUT
Conditions		
	Opens the submenu for entering a PLC condition.	ACTION

Note

If an alarm occurs, an action is only initiated if the PLC condition described here occurs at the same time. If an alarm is pending and the condition is met after this, the action will not be initiated.

See also Section: Machine trigger on "PLC variable"

3.4.5 Machine trigger on "PLC variable"

Function description

Complex logic operations and value comparisons for PLC variables can be set up with machine triggers on "PLC variable". PLC conditions for "alarm group" triggers are configured in the same way as triggers for "PLC variable".

Note

To be able to use triggers on PLC variables, PLC conditions (for conditional alarms), and PLC traces in monitors, you must set up the control accordingly. If it has not been set up correctly, you can set these functions in the monitors but you cannot activate them on the control.

You must also enter the settings for the data blocks used for the machine.
See also Section: Global settings

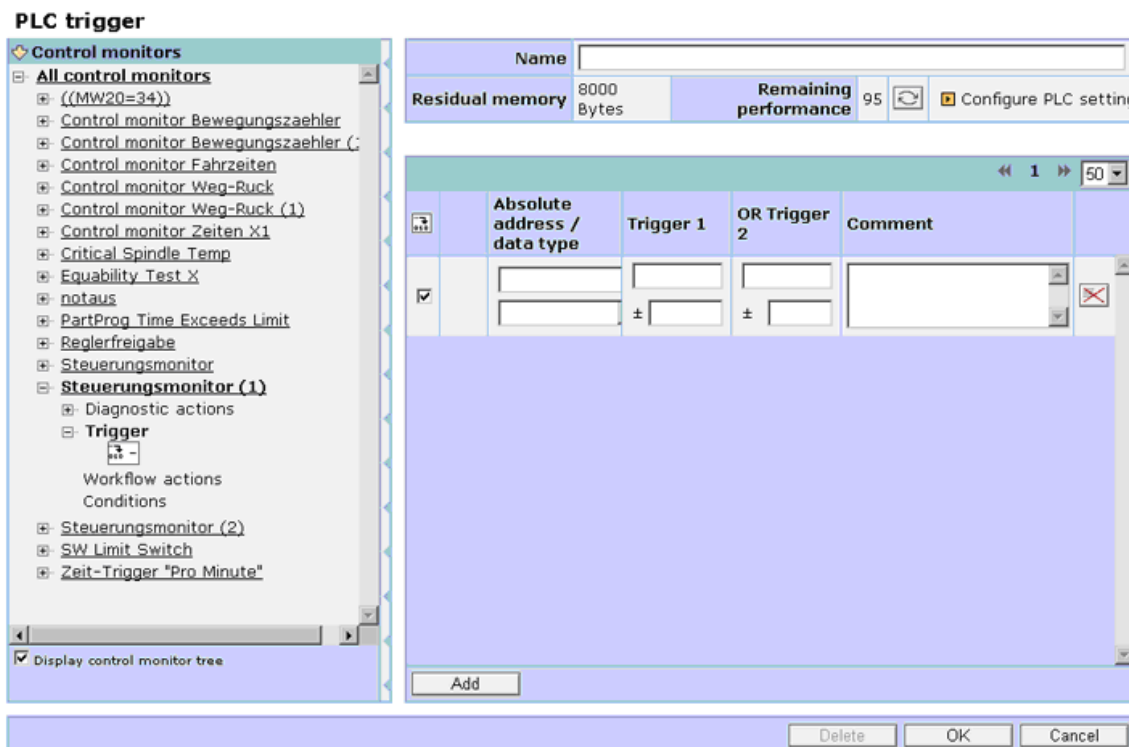


Fig. 3-30: Trigger on "PLC variable" - Adding addresses

Function	Description	Type
Name	<p>Name of the trigger; can be entered by the user. If the field remains empty or is deleted, the system generates a name from the parameters of the trigger. The name varies according to the screen resolution.</p> <p>If the name already exists, a consecutive number is automatically added in parentheses.</p>	INPUT

Function	Description	Type
	If the name is too long, the number added can only be seen in a tooltip.	
Residual memory	Indicates how much memory (in bytes) is left in the PLC data block for the "PLC variable" triggers and PLC conditions.	DISPLAY
Remaining performance	Shows the number (only in the case of bytes) of PLC variables that can still be used in triggers and as a condition. Depending on the size of the variable, it may be that 2 counts for one variable.	DISPLAY
Configure PLC settings	Since the PLC data blocks are required for the "PLC variable" trigger, it is possible to branch directly to the "PLC Settings" window from here.	ACTION

Each trigger can be assigned a label, which determines its behavior at the central start date for maintenance.

See also Section: Editing the master data of a machine and the general description of the trigger in Section: Setting up functions.


Definitions:

- If a label has been set and a start date, which has not yet been reached, has been configured in the master data, the trigger will not be initiated.
- If the date has been reached or is in the past, the trigger will be initiated according to the conditions set for it.
- If a start date has not been configured, or the label has not been set, the trigger will be initiated according to the conditions set for it.

"Icons" tab

The absolute address can be edited under "Icons".


Function	Description	Type
Icons	Displays the list of ANDed comparison operations in the trigger (in relation to the absolute addresses). These can be selected individually for editing purposes.	TAB
Edit absolute address Data type	<p>The system does not support plausibility for the absolute addresses, their data types, or the possible comparison operations.</p> <p>Notice: Subsequent correction of the absolute address data type is not possible. The variable must be deleted in its entirety, along with its comparison operation, and a new variable created.</p>	INPUT DISPLAY

Function	Description	Type
Force absolute address	To make it necessary for the trigger logic operations and comparison operations to be manipulated by deleting entries that have already been made (for testing purposes) each individual address can be forced, i.e. the address does not participate in the AND logic operation of the trigger.	SELECTION
	Deletes an absolute address and the associated comparison operation.	SELECTION
Add icon		
Absolute address	Entry of the address of a PLC variable via STEP 7 syntax.	INPUT DISPLAY
Data type	All simple file types are supported. Note: The addresses can be entered in German and English notation, e.g. E1.1 or I1.1	INPUT DISPLAY
Comment	Enters a comment for the absolute address.	INPUT
Add	Adds the edited address to the AND logic operation of the trigger conditions. Notice: The comparison operation must be entered separately. SINUMERIK Integrate permits saving without comparison operation. This leaves the trigger without effect.	ACTION

"PLC Trigger" tab

The comparison operation can be edited under "PLC Trigger".

Function	Description	Type
PLC triggers	Shows the comparison operations for the AND logic operations in the trigger, which can also be edited	TAB DISPLAY INPUT
Trigger 1 Trigger 2 ... Trigger n	The comparison operations for Trigger 1 and Trigger 2 are logic OR. The comparison operation consists of the comparison operation (>, <, =, <>) and the fixed comparison value (digit). Notice: SINUMERIK Integrate will not check the plausibility of the variable address for the potential comparison operation and actual comparison value.	INPUT DISPLAY

Function	Description	Type
	It is possible but not meaningful to compare a binary address M1.1 with greater than 9999.	
±	<p>Entry of a comparison value tolerance where the trigger condition is still fulfilled.</p> <p>Note: SINUMERIK Integrate does not check the plausibility of the specified tolerance. The tolerance is only advisable in = operations with values (no binary signals). With >, < operations, the comparison value can be specified correctly instead of the tolerance, as a tolerance direction has no effect.</p>	INPUT DISPLAY
	<p>Deleting a comparison operation in the PLC trigger does not result in the PLC variable being deleted along with it, but instead forces the variable to renounce its participation at the trigger and hides the logic operation.</p> <p>To undo the forcing, the variable is selected again. The comparison operation is also available again.</p>	SELECTION

Notice

If the next trigger is triggered before execution of the diagnostics actions is completed (e.g. save data), the diagnostics actions, e.g. record data, cannot be executed as parallel trigger evaluation is not possible. The missing of the trigger and of course the data for this type of event cannot be prevented by the system.

The repeat frequency is generally less than one second, with high interface demands it may be a few seconds.

3.4.6 Machine trigger for "PLC timeout trigger"

Function description

The Timeout Trigger offers the possibility to monitor actions and functions which could not take place in the time window intended or specified for them.

The real time difference which triggers the trigger if exceeded by the time configured here for comparison is determined with a definable start and stop signal from the PLC. The trigger can trigger all actions available in the control monitor. The same variable or different variables can be used as start and stop signal. All relational operators permissible for the PLC variables can also be used.

Notice

The logical evaluation whether or not the timeout value was exceeded, is time-delayed by the system. This must be taken into account if actions that can only capture realtime data are triggered by the timeout trigger. It is not possible to capture precisely timed data from the cycle in which the timeout took place (max. delay in the minute range).

Due to system dependencies, repeatability of the timeout function is also linked to the communication runtimes which depend on the demands placed on the interface between PLC and PC of the operator. Repetitions can usually be implemented in less than one second. With high interface traffic, however, they can take several seconds.

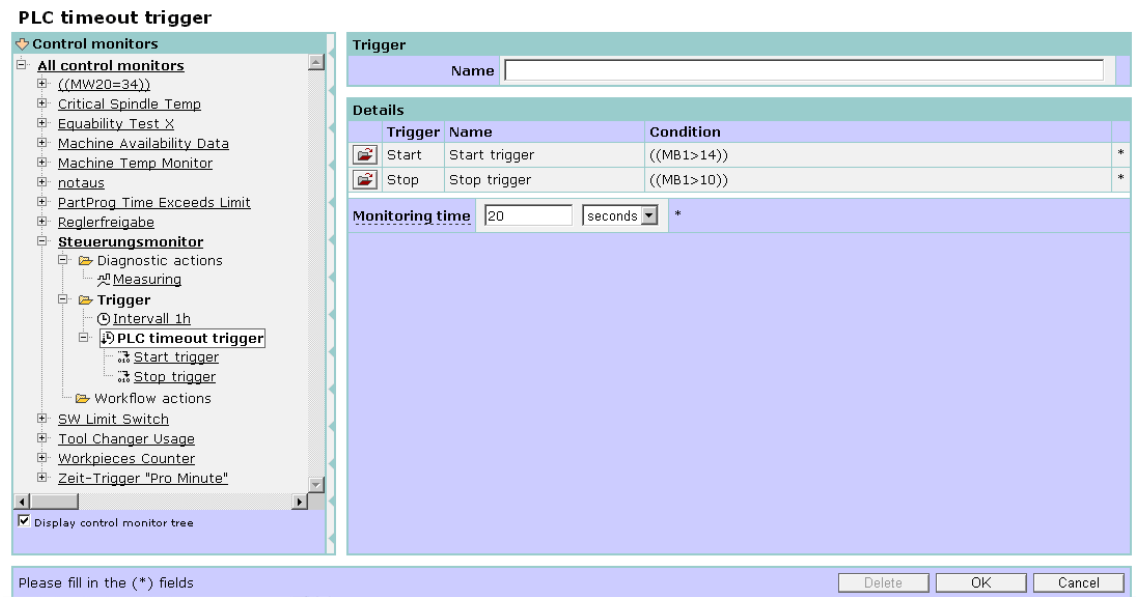


Fig. 3-31: Timeout trigger

Function	Description	Type
Name	Name of the trigger: If this is not entered, the trigger is called Timeout and assigned a consecutive number in brackets.	DISPLAY INPUT (max. 100 characters, all characters are permissible)
Trigger Start	If the logic conditions are fulfilled for start, monitoring starts for the specified time The logic operations are created as described for the PLC variables.	ACTION

Function	Description	Type
Start trigger name	Displays the name specified in the PLC variable configuration.	DISPLAY
Condition	Displays the condition specified in the PLC variable configuration.	DISPLAY
Trigger Stop	If the logic conditions are fulfilled for stop, monitoring stops. Independently, timeout times are also compared so that the trigger can be triggered. The logic operations are created as described for the PLC variables.	ACTION
Stop trigger name	Displays the name specified in the PLC variable configuration.	DISPLAY
Condition	Displays the condition specified in the PLC variable configuration.	DISPLAY
Monitoring time	The monitoring time is the threshold acting as a trigger if the time is exceeded for a started process which is not yet stopped. For all units, up to 3-digit numerical values can be specified. With days, the limit is 366. Available selection: <ul style="list-style-type: none"> - Milliseconds - seconds - Minutes - Hours - Days - Weeks 	DISPLAY SELECTION (digits from 1 to 999)

3.4.7 Machine trigger on "new value of a user-defined variable"

Function description

The stopwatch offers the possibility to monitor actions and functions that could not take place in the defined time window intended or specified for them. A potential overshooting or undershooting of the defined time window can be detected at an early stage.

Using a definable start and stop signal from the PLC, the real time difference is determined and maintained as a variable in a time series. The permissible time range can be delimited with additional triggers on upper and lower limits and for prewarning and warning. In addition to simply maintaining a time series via the variable monitor, the stopwatch trigger can also use it to trigger all other available actions. The same variable or different variables can be used as a start and stop signal, with all of the comparison operators that are permissible for PLC variables.

Notice

Due to system dependencies, repeatability of the stopwatch function is linked to the communication runtimes, which depend on the demands placed on the interface between PLC and PC of the operator. Repetitions can usually be implemented in less than one second. With high interface traffic, however, they can take several seconds.

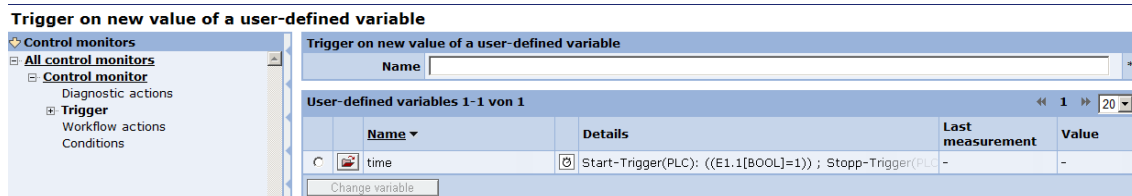





Fig. 3-32: Trigger on a new value of a user-defined variable

Function	Description	Type
	Trigger on a new value of a user-defined variable	
Name	Name of the trigger: If a name is not entered, the name of the user-defined variable is used for the trigger. The boxes marked with * must be completed.	DISPLAY INPUT (max. 100 characters, all characters are permissible)
<< x >>	The number in the display indicates the number of lines per window that are shown in this menu. You can select up to 50 lines. A scroll bar will then be displayed in the window.	DISPLAY SELECTION
User-defined variables x – y of y		
	Click on a user-defined variable to select: Only one variable can be selected. An additional user-defined variable must be selected on the trigger menu level to generate a logic OR operation.	ACTION DISPLAY
	Switches to the window for details of the selected user-defined variable.	ACTION
Name	Names of the user-defined variables. The user-defined variables can be sorted in ascending or descending order.	DISPLAY

Function	Description	Type
	Watch – Stopwatch variable	DISPLAY
Details	All details of the user-defined variable that can be displayed in the column.	DISPLAY
Last measurement	Indicates when a value was last determined for the variable.	DISPLAY
Value	Shows the last determined value for the user-defined variable.	DISPLAY

Detailed view of the new value of a user-defined variable

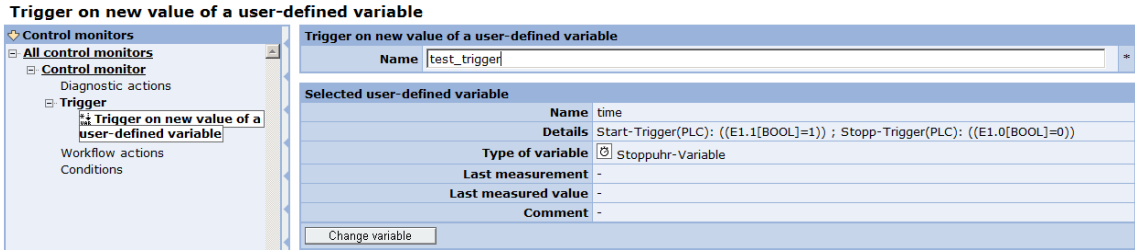


Fig. 3-33: Trigger - Detailed view

Function	Description	Type
Trigger on a new value of a user-defined variable		
Name	Name of the trigger: If a name is not entered, the name of the user-defined variable is used for the trigger.	DISPLAY INPUT (max. 40 characters, all characters are permissible)
Selected user-defined variable		
Name	Name of the user-defined variable.	DISPLAY
Details	Shows all details of the logic used for determining the user-defined variable.	DISPLAY
Type of the variable	The type of the variable, e.g. a stopwatch variable.	DISPLAY

Function	Description	Type
Last measurement	Indicates when a value was last determined for the variable.	DISPLAY
Last measured value	Shows the last determined value for the user-defined variable.	DISPLAY
Comment	Displays a comment entered for the variable.	DISPLAY
Change variable	Switches to the window for editing the logic for determining the variable.	ACTION

3.4.8 Combined machine trigger on "alarm group" and "PLC variable"


Function description

The combined machine trigger contains the trigger on a PLC variable and a selection of other triggers that are automatically interconnected with a logic "AND".

The special feature is a configurable temporal indeterminacy between the triggers in which the trigger is yet to be initiated. The individual trigger functions are the same as described with the related triggers.

Fig. 3-34: Combined machine trigger

Fig. 3-35: Combinable triggers

Function	Description	Type
Name	Name of the trigger; can be entered by the user. If the field remains empty or is deleted, the system generates a name from the parameters of the trigger. The name varies according to the screen resolution. If the name already exists, a consecutive number is automatically added in parentheses. If the name is too long, the number added can only be seen in a tooltip.	DISPLAY INPUT (max. 40 characters, all characters are permissible)
Trigger event tolerance	Time to be bridged between successive initiation of individual triggers and initiation of a total trigger.	DISPLAY INPUT SELECTION (Time values between 500 ms and 24 hours are possible.)
	Adding or changing any number of triggers until the limitation by the PLC data block can be ANDed. See also: PLC performance index	DISPLAY ACTION SELECTION
Add	Creates additional editing boxes for additional triggers.	ACTION
Paste	A trigger in the clipboard can be selected and pasted.	ACTION
Clipboard	The clipboard can be viewed to copy a selection from it.	ACTION

Notice

If the next trigger is triggered before execution of the diagnostics actions is completed (e.g. save data), the diagnostics actions, e.g. record data, cannot be executed as parallel trigger evaluation is not possible. The missing of the trigger and of course the data for this type of event cannot be prevented by the system.

The repeat frequency is generally less than one second, with high interface demands it may be a few seconds.

3.4.9 Trigger on "Fault message on HMI"

Function description

Service cases can be handled via SINUMERIK Integrate. A fault help request can be output at the machine via the control (machine trigger). However, the same can be done from any internet PC (server trigger).

To ensure that the fault help request reaches the correct contact person as quickly as possible, a control monitor can be used to set a trigger when fault help is requested. The control monitor should then inform the person responsible with an appropriate notification. An e-mail notification containing a description of the fault is sent automatically.

A special feature is the option of requesting any necessary remote access along with the fault help request from the machine control. The helper can then switch to the machine without any further assistance.

Request teleservice session

Anyone searching for help at the machine can request a teleservice session at the same time as he/she is requesting help for a fault. The session ID required to start teleservice is transferred directly by the PC of the remote service engineer and, provided that the window on the control is not exited, does not need to be entered manually at the machine. This function is especially useful if no phone connection is available to ask about the session ID or if other circumstances prevent communications of the session ID.

3.4.10 Machine trigger "Time trigger"

Function description

The time trigger permits trigger cycles in intervals of seconds up to 99 999 days. Various calendar functions are available for defining the trigger time.

To allow time-based triggers to be more easily coordinated in different intervals, it is no longer necessary to manually calculate each individual start date and time for the first trigger. Instead a uniform start date and time can be specified from which the trigger interval starts. The trigger time calculated from the start time and interval is immediately displayed for control.


Notice


Time data refers only to the local time set at the machine's PC regardless of whether the clock is correct or not.

Fig. 3-36: Time trigger

Function	Description	Type
Time trigger		
Name	Name of the trigger; can be entered by the user. If the field remains empty or is deleted, the system generates the "Time trigger" name. If the name already exists, a consecutive number is automatically added in parentheses. If the name is too long, the number added can	DISPLAY INPUT (max. 100 characters; all characters are

Function	Description	Type
	only be seen in a tooltip.	permissible, exception <)
Execution - On the client side - On the server side	<p>With the client-side execution, it is defined that when the time of the trigger on the PC at the machine expires, then this signals the server in order to execute the programmed actions in the control monitor. All actions can be selected.</p> <p>Triggering on the server side runs independently of the machine. The machine can even be switched-off. Only those actions can be selected, which do not require any online data from the machine.</p>	SELECTION DISPLAY
Reset - When closing a maintenance job When executing the control monitor	<p>Without a specifically selected reset function, the next maintenance job is always created again in the programmed time grid - independent of closing the maintenance job.</p> <p>The restart of the trigger time can be set so that this only starts again after the maintenance job has been closed.</p> <p>The next maintenance job is determined by the time interval set from the time of closing. It therefore does not make any difference whether a maintenance job procedure was performed early or late.</p> <p>A maintenance job can be initiated by the time trigger described here - and also by other ORed event triggers.</p> <p>The restart of the trigger time is realized by each trigger of the control monitor used which then generates the maintenance job.</p>	SELECTION DISPLAY
Start date	<p>A date can be entered individually to start the intervals.</p> <p>Once the interval has expired, the trigger is initiated.</p> <p>The date is limited to 24 months in the future and 24 months in the past.</p> <p>If there are no entries and no common start date is found, then a message is output to enter a date.</p> <p>If participation in common start date is selected, you cannot make any entries here.</p>	DISPLAY INPUT (Date format with leading zeros)

Function	Description	Type
	<p>When you select the calendar field, the calendar opens to display the current month.</p> <p>You can navigate through the months in the calendar via the arrows. Select a number to use the date as the start date.</p> <p>The date is limited to 24 months in the future and 24 months in the past.</p> <p>If participation in common start date is selected, you cannot make any entries here.</p>	SELECTION
Start time	<p>The starting time for the trigger can be specified in hours and minutes.</p> <p>If no entry is made, the actual clock time that is already pre-assigned is applied.</p>	DISPLAY INPUT (Time format with leading zeros)
Common start date	<p>If participation in common start date is selected, the time is automatically set.</p> <p>Even if the common start date is subsequently changed, it is automatically corrected.</p> <p>The start date can only be selected if trigger participates in common start date is deselected.</p>	DISPLAY SELECTION (Toggle)
Next tripping operation	To check the trigger instant, the instant in time of the next initiation is displayed with date and time.	DISPLAY
Type of the interval		
alternatively All Weekly Monthly	The type of interval must be clearly selected. You can only select one of the three options.	DISPLAY SELECTION (Toggle)
All	<p>Enter a cycle 'n' in the selected time unit</p> <ul style="list-style-type: none"> - Seconds (at least 5) or - Minutes or - Hours or - Days <p>The intervals that can be selected are restricted to one or more days of the week, Monday to Friday and a time window for the selected days of the week.</p> <p>The interval runs regardless of the deselect restriction.</p> <p>At the end of the interval, the trigger will be activated in the selected time window of the day and time.</p> <p>The next interval only starts once the trigger has been successfully triggered.</p>	DISPLAY INPUT SELECTION (1 to 99 999 minutes or hours)

Function	Description	Type
Weekly	Enter a cycle 'n' in - Weeks, by selecting a day of the week from Monday to Sunday.	DISPLAY INPUT SELECTION (1 to 99 999 minutes or hours)
Monthly	Enter a cycle 'n' in - Months. Either by selecting the - first - second - third or - fourth day of the week from Monday to Sunday in the month - OR - one day from 1 to 31 in the month (then, without a weekday).	DISPLAY INPUT SELECTION (1 to 99 999 minutes or hours)
Duration of the interval		
Last execution Undefined	There is no restriction pre-selected regarding a last initiation. If you deselect "Undefined", you need to select a date for the last execution.	DISPLAY SELECTION (Toggle)
- On the 	You can only make an entry if undefined is deselected for the last execution. The can only specify a date for the last execution via the calendar selection function.	DISPLAY SELECTION

Each trigger can be assigned a label, which determines its behavior at the central start date for maintenance.

See also Section: Editing the master data of a machine and the general description of the trigger in Section: Setting up functions.

Options:

- If a label has been set and a start date, which has not yet been reached, has been configured in the overview of the control monitors, the trigger will not be initiated.
- If the date has been reached or is in the past, the interval starts and a trigger is initiated at the end of the interval.
- If a start date has not been configured, or the label has not been set, the trigger will be initiated at the end of the interval according to the conditions set for it.

Notice


The starting time and start date are not the time of the first trigger, but the start of the interval at the end of which the trigger takes place.

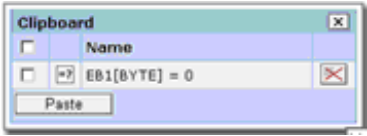
3.4.11 Variable triggers

Any variable - for which there is a communication mechanism - can be logically combined with the variable trigger. Among other things, this can be an OPC server or the DDE interface.

Fig. 3-37: Variable triggers

Function	Description	Type
Machine trigger		
Name	<p>Name of the trigger; can be entered by the user. If the field remains empty or is deleted, the system will generate a name.</p> <p>If the name already exists, a consecutive number is automatically added in parentheses.</p> <p>If the name is too long, the number added can only be seen in a tooltip.</p>	<p>DISPLAY INPUT</p> <p>(max. 75 characters, all characters are permitted)</p>
	<p>The device selection, to which the address should be referred, can be selected to correctly interpret the syntax.</p> <ul style="list-style-type: none"> • User-defined var. • Generic • NC • NC ePS • PLC 	<p>DISPLAY SELECTION</p>

Function	Description	Type
Variable triggers		
Absolute address	The address must be input in the syntax specified for the specific device.	DISPLAY INPUT
	If the format of the addressed variable is not clear, then it is possible to manually select in which format the variable should be interpreted.	DISPLAY SELECTION
Cond.	If the trigger is initiated for every change, triggering can be performed for changes in value ranges. For example, temperature range from 90 to 110° under or overshoot.	SELECTION
Oper.	Comparison operations that are restricted to the format of the variables can be selected. Equal to, unequal, greater than, great than equal to, less than, less than equal to, IN (in the range between two values), OUT (outside a range of two values)	DISPLAY SELECTION
Value(s)	Specifies the comparison value.	DISPLAY INPUT (restricted depending on the specified address format)
Hyst.	Specify a relative value, referred to the comparison value. A new trigger to the comparison value is only realized if the actual value differs from the comparison value by more than the specified hysteresis.	DISPLAY INPUT (restricted depending on the specified address format)
Paste	A detailed configuration, saved in the clipboard, can be selected and copied into the actual configuration. The system only offers the detailed configurations that match the actual configuration.	ACTION
Clipboard	The clipboard can be viewed in order to possibly copy a selection from this into the actual configuration.	ACTION
	A variable comparison line can be copied to the clipboard using the icon.	ACTION

Function	Description	Type
	 <ul style="list-style-type: none"> - Selects individual or all contents of the clipboard for pasting. - Deletes individual contents from the clipboard. <p>See also Section: Machine trigger, server trigger, and conditions</p>	
Delete	Deletes the complete list with all conditions after a prompt and confirmation.	ACTION
OK	Saves the complete list with all conditions as configuration.	ACTION
Cancel	The changes and entries, which have been made after opening or generating the actual configuration, are not saved in the configuration.	ACTION

3.4.12 Trigger on synchronization

With a trigger to the set synchronization, it is possible to check and also respond if a machine is no longer logged in to the server and is therefore not supplying any data.

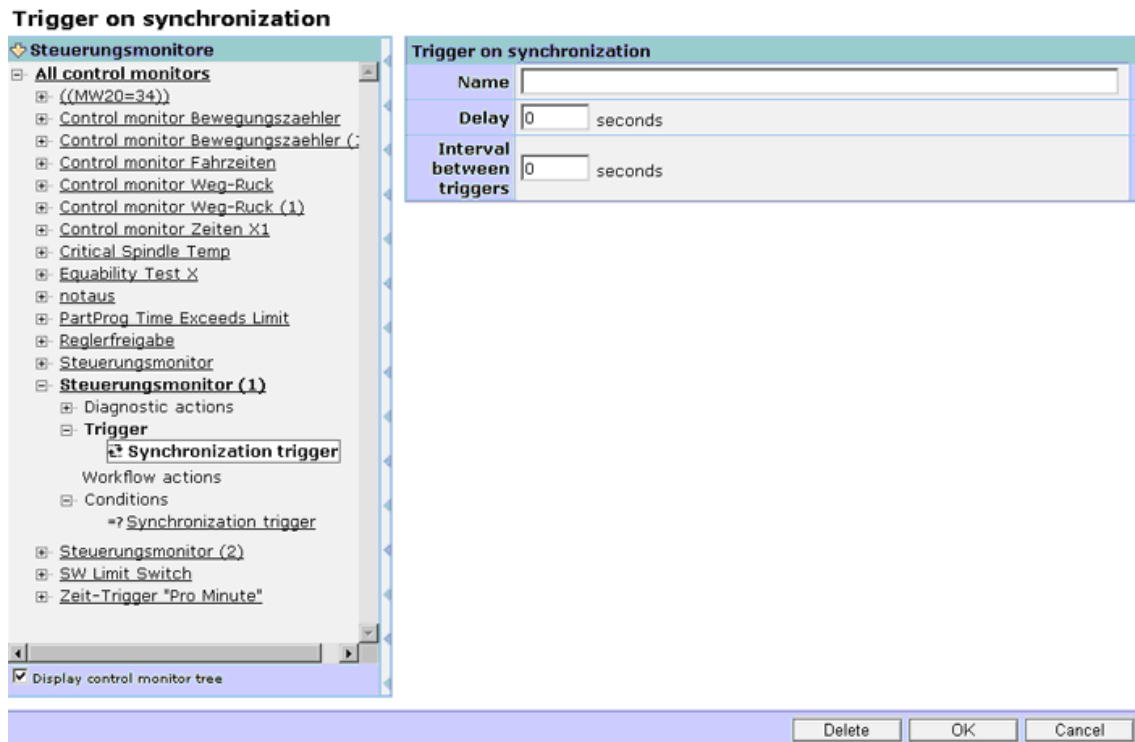


Fig. 3-38: Triggers on synchronization

Function	Description	Type
Name	Name of the trigger; can be entered by the user. If the field remains empty or is deleted, the system will generate a name. If the name already exists, a consecutive number is automatically added in parentheses. If the name is too long, the number added can only be seen in a tooltip.	DISPLAY INPUT (max. 100 characters, all characters are permissible)
Delay	Delay time in seconds after a missing synchronization, in which the trigger should still not respond. The value must be less than the interval time specified below.	DISPLAY INPUT (max. 10-digit)
Interval between triggers	This time should approximately correspond to the set synchronization time.	

3.4.13 Trigger on control monitor script error

To be able to automatically check malfunctions in the configuration for defective control monitors, you can set up the trigger on "control monitor script error".

This function is for troubleshooting only.

Each configured action, that does not provide the expected result, is signaled as a case. This can be an access to a non-existent variable or any other incomplete configurations.

Trigger on control monitor skript error (for troubleshooting only)

Control monitors

- All control monitors
 - ((MW20=34))
 - Control monitor Bewegungszaehler
 - Control monitor Bewegungszaehler (:
 - Control monitor Fahrzeiten
 - Control monitor Weg-Ruck
 - Control monitor Weg-Ruck (1)
 - Control monitor Zeiten X1
 - Critical Spindle Temp
 - Equability Test X
 - notaus
 - PartProg Time Exceeds Limit
 - Reglerfreigabe
 - Steuerungsmonitor
 - Diagnostic actions
 - Trigger
 - Intervall 1h
 - Test Trigger
 - Trigger on skript error
 - Workflow actions
 - Conditions
 - =? M1.1
 - Steuerungsmonitor (1)
 - Diagnostic actions
 - Trigger

☒ Display control monitor tree

Trigger on control monitor skript error (for troubleshooting only)

Name:

Log level*:

Max. number of reported cases per time interval.

☒ Default configuration

Max. number of reported cases:

Time interval in minutes:

*The log level corresponds to the error's severity.

Buttons: Delete, OK, Cancel

Fig. 3-39: Trigger on script error

Function	Description	Type
Name	Name of the trigger; can be entered by the user. If the field remains empty or is deleted, the system will generate a name. If the name already exists, a consecutive number is automatically added in parentheses. If the name is too long, the number added can only be seen in a tooltip.	DISPLAY INPUT (max. 100 characters, all characters are permissible)
Log level	Scripts can be monitored on - Normal error - Information - Warning - Critical error	DISPLAY SELECTION

Function	Description	Type
Max. number of signaled cases per time interval		
Default configuration	The default setting is 100 cases notified/signaled in one hour. If you select this, you cannot define the next two parameters yourself.	DISPLAY SELECTION
Max. number of signaled cases	If the default configuration is not selected, then the number of notified/signaled cases to be checked can be entered here, which may occur as a maximum in the time interval specified below without initiating this trigger.	DISPLAY INPUT
Time interval in minutes	If the default configuration is not selected, then the number of error cases specified above in the specified time interval is checked in order to initiate this trigger.	DISPLAY INPUT

3.4.14 Server trigger on "Measurement series reaches limit value"

Function description

Any actions can be initiated if at least one of them has exceeded the limit value in one of the measurement series configured in the trigger.

The trigger is only initiated if a limit value is violated at the point of the axis test. Subsequent modification of the limit values to below the violation limit does not trigger any actions.

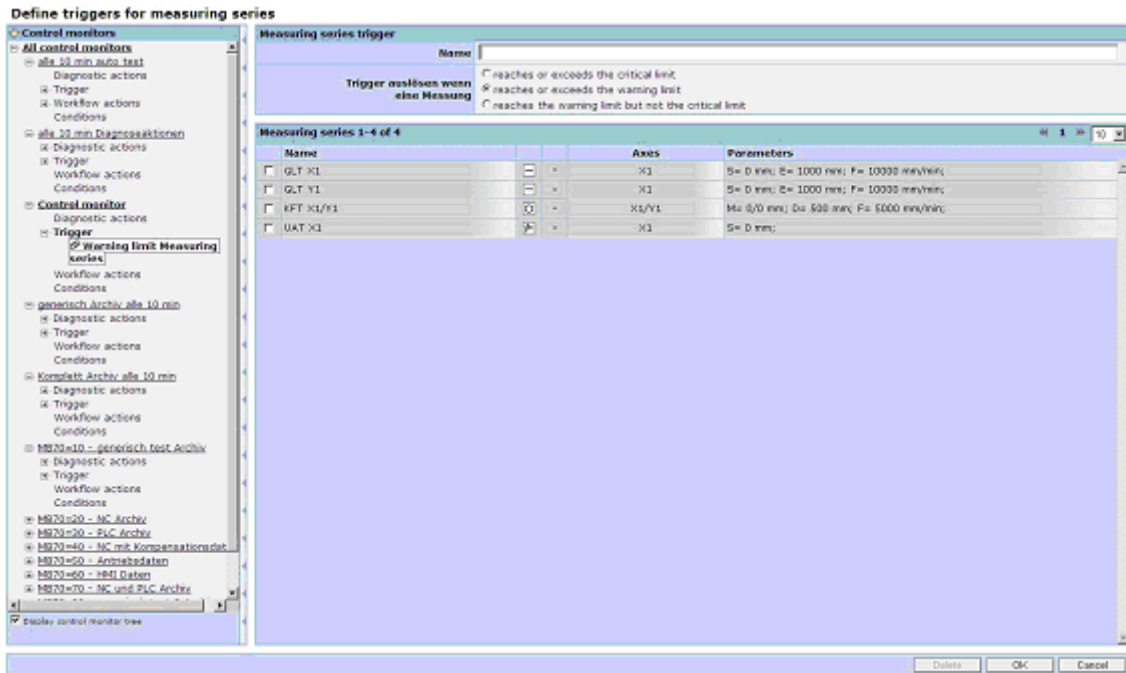


Fig. 3-40: Trigger on measurement series reaches limit value

Function	Description	Type
Name	Name for the trigger; can be entered by the user. If the box remains empty, or if the name is deleted, SINUMERIK Integrate generates a name from the selected measurement ranges. A consecutive number (n) can be added to this name.	DISPLAY INPUT (max. 40 characters, all characters are permissible)

Function	Description	Type
Initiate trigger if a measurement	Select type of limit value <ul style="list-style-type: none"> • "Reaches or exceeds the critical limit": If at least one critical limit was reached or exceeded. • "Reaches or exceeds the warning limit or critical limit" If at least one warning limit was reached or exceeded (exceeding the critical limit is also possible in this case). • "Reaches the warning limit, but not the critical limit": If only the warning limit was reached or exceeded, and the critical limit was not reached. 	SELECTION 1 of 3
Measurement series 1-n of n	Display and selection of the existing measurement series for the trigger	DISPLAY SELECTION

3.4.15 Server trigger on "Trigger on due maintenance tickets"

Function description

In order to monitor the execution of maintenance procedures by acknowledging maintenance jobs, this trigger can be used to respond on a specific basis to one or several jobs with time delays that can be configured differently. A notification is available as a response.

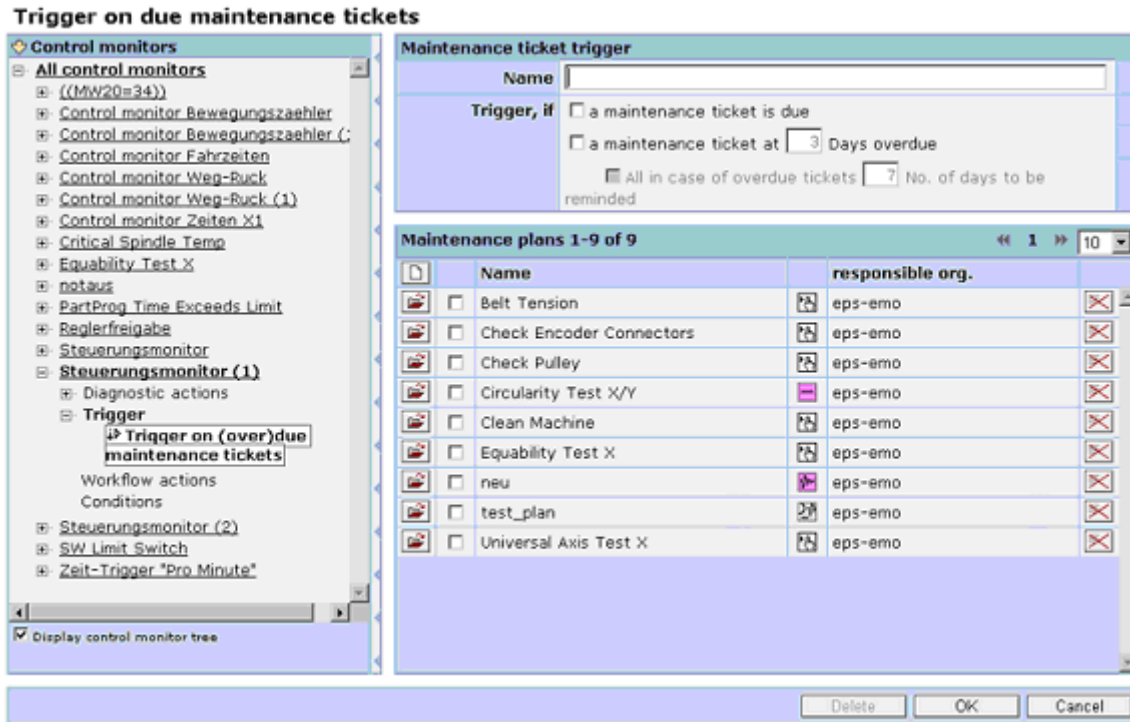


Fig. 3-41: Server trigger on "maintenance job due"

Function	Description	Type
Name	Name of the trigger: If this is not entered, the maintenance job (overdue) trigger is assigned: Name of the maintenance schedule.... is named. If the automatic name has already been assigned, it does not change, even if a different maintenance job is being monitored. The automatic name of the maintenance schedule is updated if a name is entered and then deleted manually.	DISPLAY INPUT (max. 100 characters, all characters are permissible)
Initiate trigger when - A maintenance job is due	If maintenance jobs are due, an individual notification for a freely configurable group of maintenance procedures can be sent. This does not necessarily have to be identical to the notification in the control monitor that triggers maintenance.	DISPLAY SELECTION (Toggle)

Function	Description	Type
	For maintenance procedures that are directly controlled by the maintenance schedule, this is the only option for sending a notification indicating when maintenance procedures are due.	
- A maintenance job is overdue by x days	With a delay of 0 to 999 days, this trigger can be used to send notifications that are initiated when at least one of the selected jobs is overdue.	DISPLAY SELECTION (Toggle) INPUT (Digits from 0 to 999)
- For an existing job is overdue remind every x days	To serve as a reminder, notifications will repeatedly indicate if a job is overdue. The intervals between repeat notifications can be specified in days (between 0 and 999).	DISPLAY SELECTION (Toggle) INPUT (Digits from 0 to 999)
Maintenance schedules	The list of maintenance schedules can be used to select maintenance jobs to be triggered when they are due. The trigger will respond when at least one job on the list is due.	DISPLAY SELECTION (Toggle)

3.4.16 Server trigger on "Variable monitor reaches limit value"

Function description

Any reaching or exceeding of the limit values defined in the variable monitor can be configured here as a trigger in the control monitor.

In contrast to the interval-based evaluations, do not use an endless counter here. If you do, a trigger can only be initiated once during the entire life cycle of the related monitor. In this case, it is advisable to use the normal PLC variable, which can fluctuate around a limit value so that this monitor can become active each time a limit value is violated.

Since the variable monitor cannot generate an entry in the event history, this is done via the control monitor to ensure that any limit value violations can be documented.

The further functions of the control monitor, with workflow actions and diagnostics actions, are fully available, in order to be able to interactively initiate actions in response of limit value violations. Since the processed data is not updated cyclically, the evaluation is done by reaching or exceeding the limit. In order not to trigger an action at every triggering, edge evaluation can be selected. An event will be generated only at the first trigger after the limit value violation.

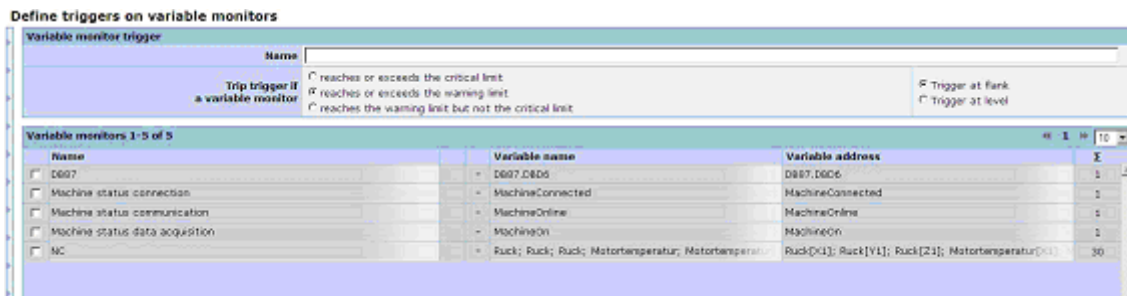


Fig. 3-42: Trigger on limit value for variable monitor

Function	Description	Type
Name	Name of the trigger	DISPLAY INPUT (max. 100 characters, all characters are permissible)

Function	Description	Type
Tripp trigger if it a variable monitor	<ul style="list-style-type: none"> Reaches or exceeds the critical limit Reaches or exceeds the warning limit or the critical limit Reaches the warning limit, but not the critical limit <p>Any number of variables can be integrated into the trigger.</p>	SELECTION
Trigger on flank Trigger on level	<p>Evaluate trigger:</p> <p>If "flank" is selected, the trigger will only be initiated during the transition between the previous and current instance of variable acquisition, while simultaneously detecting the trigger initiation function. If "level" is selected, the trigger will be initiated each time the variable content is captured when the initiating function is detected.</p> <p>The initiating function is the limit value function that has been selected.</p>	SELECTION

The limit values are permanently configured in the variable monitor. Triggering for several limit values of a variable is only possible via several variable monitors; this is also true for each limit violation.

Notice

If several limit values are monitored in one monitor, triggering is not possible for each individual limit violation. In this case, only the first limit violation results in a trigger.

3.4.17 Server trigger on "Cyclic trigger on variable monitors"

Function description

These server triggers are initiated when limits or intervals are reached/exceeded. These limits/intervals can be configured for variables if these are read cyclically from the control and were defined as counters. (Endless counters in SINUMERIK Integrate can not be reset, even when the variable is reset.)

Cyclic trigger on variables

A cyclic trigger on a variable requires a variable defined as counter. These are processed as "endless counters" (without zero crossing) so that the intervals are always consistent. When a configured interval value is reached or exceeded, the trigger is initiated.

Notice

Cyclic triggers for NC variable data can only be created as a template if an axis configuration is available.

Since the endless counter function of the NC cannot be guaranteed when components are exchanged, when a smaller new value is read, SINUMERIK Integrate adds a read small new value as an offset to the old value.

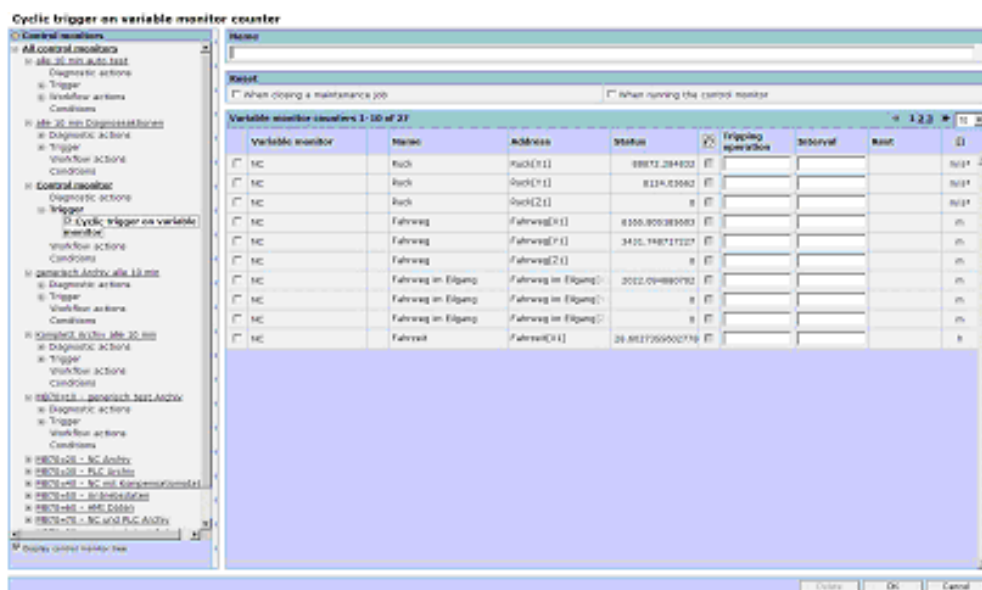


Fig. 3-43: Selection: NC variable counter

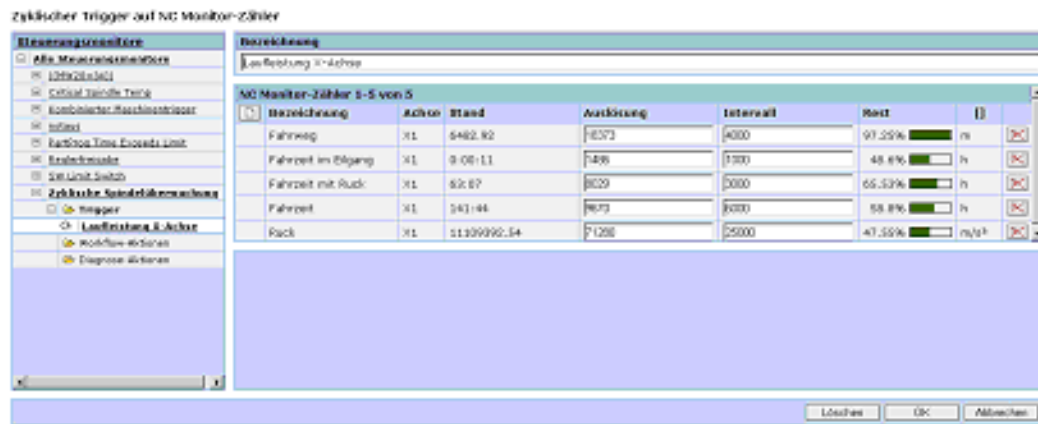


Fig. 3-44: Example - cyclic trigger on variable monitor

An interval value can be specified for each variable provided. As soon as the variable value has exceeded the initiating value, the trigger is initiated and a new count interval begins. The trigger value is incremented by the configured interval value. If several counters are combined in one trigger, the first counter to exceed the interval limit triggers the trigger. A new count interval then starts for all counters that are combined in the trigger.

Function	Description	Type
View		
Name	Name of the variable.	DISPLAY INPUT (max. 100 characters; all characters are permissible, exception <)
Axis	Axis identifier: NC axis name.	DISPLAY
Status	Counter status, corrected by SINUMERIK Integrate, for current absolute variable content.	DISPLAY
Trigger	Counter status for the next initiation, either specified by an entry or automatically calculated and entered by SINUMERIK Integrate upon interval change.	DISPLAY INPUT (With SINUMERIK Integrate update)
Interval	Interval value	DISPLAY INPUT (Up to a max. of 9 digits)
Remainder	Numerical and graphic display of the remaining count units until next initiation	DISPLAY

Function	Description	Type
[]	Unit of the counter.	DISPLAY
Delete	Clears the counter from the server trigger.	ACTION
Add	Adds another NC variable counter to the server trigger.	ACTION
Dependent on start date	This label specifies the dependency of the start date for maintenance.	DISPLAY SELECTION (Toggle)

Each trigger can be assigned a label, which determines its behavior at the central start date for maintenance.

See also Section: Editing the master data of a machine and the general description of the trigger in Section: Setting up functions.

Options:

- If a label has been set and a start date, which has not yet been reached, has been configured in the master data, the trigger will not be initiated.
- If the date has been reached or is in the past, the trigger will be initiated according to the conditions set for it.
- If a start date has not been configured, or the label has not been set, the trigger will be initiated according to the conditions set for it.

Cyclic trigger on variable monitor

SINUMERIK Integrate restricts the use of variables for this cyclic server trigger to "endless counters" that were defined in SINUMERIK Integrate.

The values read in a different control monitor action (execute variable monitor) can be prompted in such a way that the trigger is initiated when a configured interval value is reached or exceeded. The interval is then automatically projected onto the interval grid for the next prompt.

Notice

PLC counters can not be used as SINUMERIK Integrate counters! It is not possible to correct this configuration (counters). This configuration must be completely deleted and re-entered.

Since it is not possible to use the endless counter function of the PLC when a smaller new value is read, SINUMERIK Integrate adds it as an offset to the old value.

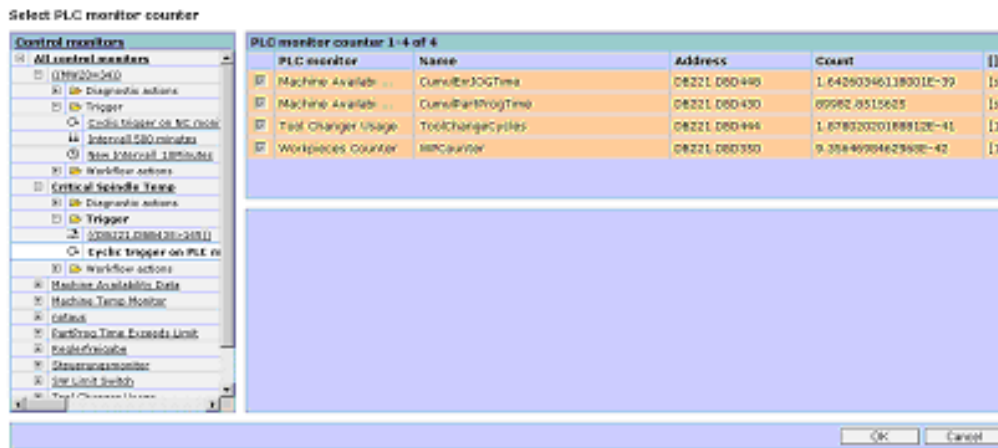


Fig. 3-45: Example, PLC variable - selection: Variable monitor counter

Function	Description	Type
Name	Name of the new trigger.	DISPLAY INPUT (max. 40 characters; all characters are permissible, exception <)
PLC monitor	Display all possible PLC monitors for which a trigger can be initiated.	ACTION
Selection	The variable can be marked for use once per trigger. Any number of variables can be selected.	SELECTION

Each trigger can be assigned a label, which determines its behavior at the central start date for maintenance.

See also Section Editing the master data of a machine and the general description of the trigger in Section: Setting up functions.

Options:

- If a label has been set and a start date, which has not yet been reached, has been configured in the master data, the trigger will not be initiated.
- If the date has been reached or is in the past, the trigger will be initiated according to the conditions set for it.
- If a start date has not been configured, or the label has not been set, the trigger will be initiated according to the conditions set for it.

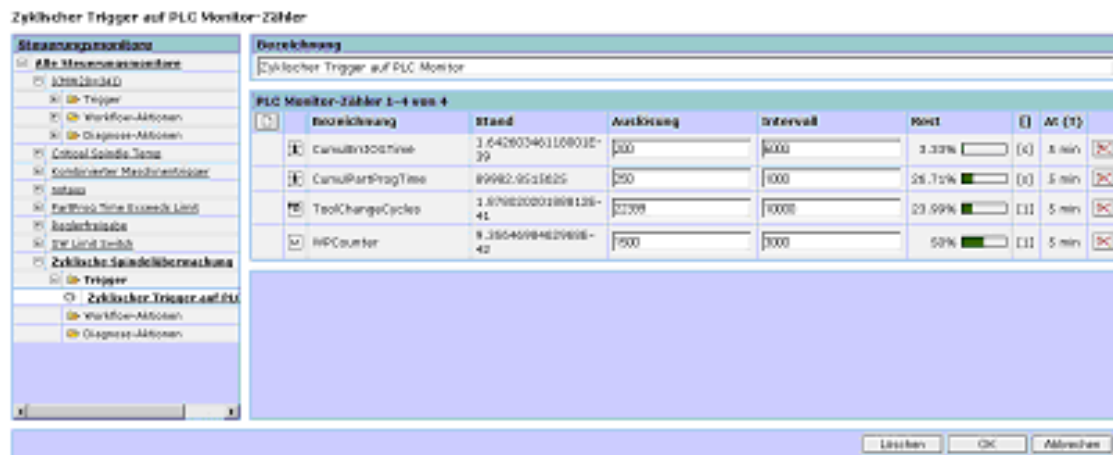


Fig. 3-46: Example, PLC variable - cyclic trigger

Function	Description	Type
View		
Name	Name of the variable.	DISPLAY INPUT (max. 100 characters; all characters are permissible, exception <)
Status	Counter status, corrected by SINUMERIK Integrate, for current absolute variable content.	DISPLAY
Trigger	Counter status for the next initiation, either specified by an entry or automatically calculated and entered by SINUMERIK Integrate upon interval change.	DISPLAY INPUT (With SINUMERIK Integrate update)
Interval	Interval value	DISPLAY INPUT (Up to a max. of 9 digits)
Remainder	Numeric and graphic display of the remaining count units (as a percentage) until the next initiation.	DISPLAY
[]	Unit of the counter.	DISPLAY
Delete	Removes the counter from the server trigger.	ACTION
Add	Adds another NC variable counter to the server trigger.	ACTION
Dependent on start date	This label specifies the dependency of the start date for maintenance.	DISPLAY SELECTION (Toggle)

3.4.18 Fault message on PC

Function description

The user records a fault message at the PC, and saves the control monitor.

Add server trigger

- ☐ Measurement of a measuring series reaches limit value.
- ☐ Trigger on (over)due maintenance tickets
- ☐ Variable monitor reaches limit value
- ☐ Cyclic trigger on variable monitor
- ☐ Fault message on the PC
- ☐ Time trigger

Fig. 3-47: Fault message on PC

The fault is reported at "Report fault".

Report fault

Details of fault

Error report:

Requester:

Phone:

Fig. 3-48: Report fault

Function	Description	Type
Error report	Describes the type of the fault	INPUT
Requester	Name of the machine operator	INPUT
Phone	Telephone number	INPUT

The fault is reported at the PC after the fault message has been saved. The message is displayed in the control monitor / event list.

Events 1-1 of 1

☐ Date

Control monitor/event

fault message on pc : Fault in PC reported

fault message on pc : Fault in PC reported

Event details

Control monitor/event: fault message on pc : Fault in PC reported




Trigger/details: Error report: this is a error report

Conditions: -

Data: -

Fig. 3-49: Report fault

Function	Description	Type
	Opens the reported fault.	DISPLAY
Date	The fault message automatically creates the date. Date display: DD.MM.YYYY and time hours, minutes, seconds.	DISPLAY
	Indicates the status of the job. The display is automatically selected by the system, depending on the acknowledgment made by the user. Only one state can apply at any one time.	DISPLAY
	The job is open.	
	The job is closed and OK.	
	The job is closed and not OK.	
	The job is open and has not yet been started. This is only possible with the interval counter and with time-controlled jobs.	
	A white icon indicates a job that is not yet due.	

Function	Description	Type
	A yellow icon indicates the advance notice of a due date.	
	A red icon shows that the end date is exceeded that was set by the user for completing the job.	
Control monitor / event	Shows the control monitor concerned, and the type of event.	DISPLAY
Priority	Shows the user-assigned priority (0 ... 5) for the control monitor.	DISPLAY
	Deletes the fault message from the list.	ACTION

3.4.19 Server trigger on "Time trigger"

Function description

The time trigger permits trigger cycles in intervals of seconds up to 99 999 days. Various calendar functions are available for defining the trigger time.

To allow time triggers to be more easily coordinated in different intervals, it is no longer necessary to manually calculate each individual start date and time for the first trigger. Instead a uniform start date and time can be specified from which the trigger is activated if the interval is reached. The trigger time calculated from the start time and interval is immediately displayed for control.

Notice

Time data refers only to the local time set at the machine's PC regardless of whether the clock is correct or not.

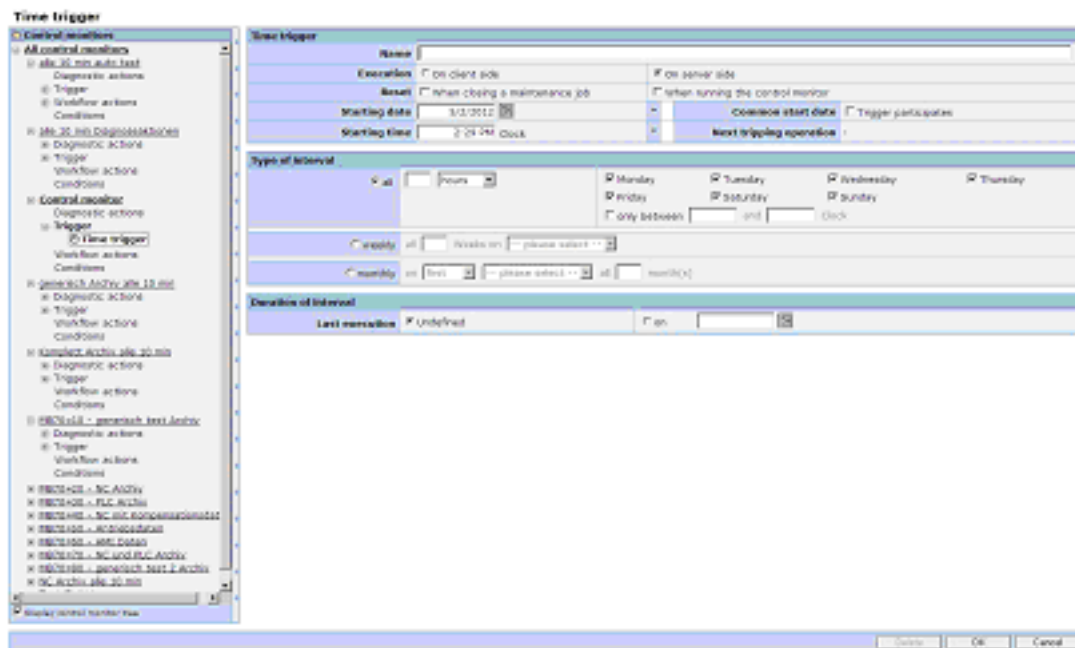



Fig. 3-50: Time trigger

Function	Description	Type
Name	Name of the trigger; can be entered by the user. If the field remains empty or is deleted, the system generates the "Time trigger" name. If the name already exists, a consecutive number is automatically added in parentheses. If the name is too long, the number added can only be seen in a tooltip.	DISPLAY INPUT (max. 100 characters, all characters are permissible)
Execution - On the client side - On the server side	With the client-side execution, it is defined that when the time of the trigger on the PC at the machine expires, then this signals the server in order to execute the programmed actions in the control monitor. All actions can be selected. Triggering on the server side runs independently of the machine. The machine can even be switched-off. Only those actions can be selected, which do not require any online data from the machine.	SELECTION DISPLAY
Reset - When closing a maintenance job - When running the control monitor	Without a specifically selected reset function, the next maintenance job is always created again in the programmed time grid - independent of closing the maintenance job. The restart of the trigger time can be set so that this only starts again after the maintenance job has been closed. The next maintenance job is determined by the time interval set from the time of closing. This means that it does not make any difference if a maintenance measure was performed too early or too late. A maintenance job can be initiated by the time trigger described here - and also by other ORed event triggers. The restart of the trigger time is realized by each trigger of the control monitor used which then generates the maintenance job.	SELECTION DISPLAY
Start date	A date can be entered individually to start the intervals. Once the interval has expired, the trigger is initiated. The date is limited to 24 months in the future and 24 months in the past.	DISPLAY INPUT (Date format with leading zeros)

Function	Description	Type
	<p>If there are no entries and no common start date is found, then a message is output to enter a date.</p> <p>If participation in common start date is selected, you cannot make any entries here.</p>	
	<p>When you select the calendar field, the calendar opens to display the current month.</p> <p>You can navigate through the months in the calendar via the arrows. Select a number to use the date as the start date.</p> <p>The date is limited to 24 months in the future and 24 months in the past.</p> <p>If participation in common start date is selected, you cannot make any entries here.</p>	SELECTION
Start time	<p>The starting time for the trigger can be specified in hours and minutes.</p> <p>If no entry is made, the actual clock time that is already pre-assigned is applied.</p>	DISPLAY INPUT (Time format with leading zeros)
Common start date Trigger participates	<p>If participation in common start date is selected, the time is automatically set.</p> <p>Even if the common start date is subsequently changed, it is automatically corrected.</p> <p>The start date can only be selected if trigger participates in common start date is deselected.</p>	DISPLAY SELECTION (Toggle)
Next tripping operation	To check the trigger time, the moment of the next initiation is shown with date and time.	DISPLAY
Type of the interval		
- All - Weekly - Monthly	The type of interval must be clearly selected. You can only select one of the three options.	DISPLAY SELECTION (Toggle)
All	<p>Enter a cycle 'n' in the selected time unit</p> <ul style="list-style-type: none"> - Seconds (at least 5) - Minutes - Hours - Days <p>The intervals that can be selected are restricted to one or more days of the week, Monday to Friday and a time window for the selected days of the week.</p> <p>The interval runs regardless of the deselect restriction.</p> <p>At the end of the interval, the trigger will be activated in the selected time window of the day and time.</p>	DISPLAY INPUT SELECTION (1 to 99 999 minutes or hours)

Function	Description	Type
	The next interval only starts once the trigger has been successfully triggered.	
Weekly	Enter a cycle 'n' in - Weeks, by selecting a day of the week from Monday to Sunday	DISPLAY INPUT SELECTION (1 to 99 999 minutes or hours)
Monthly	Enter a cycle 'n' in - Months. Either by selecting the - first - second - third - fourth day of the week from Monday to Sunday in the month - OR - one day from 1 to 31 in the month (then, without a weekday).	DISPLAY INPUT SELECTION (1 to 99 999 minutes or hours)
Duration of the interval		
Last execution	There is no restriction pre-selected regarding a last initiation.	DISPLAY SELECTION
Undetermined	If you deselect undefined, you need to select a date for the last execution.	(Toggle)
On the	You can only make an entry if undefined is deselected for the last execution. The can only specify a date for the last execution via the calendar selection function. See above: Calendar field	DISPLAY SELECTION

Each trigger can be assigned a label, which determines its behavior at the central start date for maintenance.

See also Section: Editing the master data of a machine and the general description of the trigger in Section: Setting up functions.

Options:

- If a label has been set and a start date, which has not yet been reached, has been configured in the overview of the control monitors, the trigger will not be initiated.
- If the date has been reached or is in the past, the interval starts and a trigger is initiated at the end of the interval.
- If a start date has not been configured, or if the label has not been set, the trigger will be initiated at the end of the interval in accordance with its condition.

Notice

The starting time and start date are not the time of the first trigger, but the start of the interval at the end of which the trigger takes place.

3.4.20 Workflow actions

Overview

The following workflow actions are available:

Please select the type of workflow action required

Add a workflow action	
▶	Notifying persons via e-mail or SMS
▶	Creating a maintenance job

Function description for "Notifying persons via e-mail or SMS"

You can use the workflow action "Notifying persons via e-mail or SMS", to notify persons of an event via SMS and/or e-mail. The receiver addresses must be stored in the address book.









See also Section: Addresses



Fig. 3-54: Recipients - List view



Fig. 3-55: Recipients - Detailed view

Function	Description	Type
	Insertion of a new recipient into the recipient list of the control monitor	ACTION
	Editing the notification type of the selected recipient (SMS/e-mail) or replacement of the selected recipient by another one	ACTION
	Deletion of a recipient from the recipient list of the control monitor.	ACTION
	Note: This does not change or delete the address in the address book of the organization.	
	Identifies a recipient: Forward the data acquired with the control monitor in file format.	SELECTION
Surname, first name	Selection of a recipient from the address book of the organization	SELECTION
 	Processing the notification type of a recipient (SMS/e-mail)	SELECTION
 Edit selected address	It is possible to switch directly to the address book for the purpose of correcting or editing a selected address. Notice: Changes to address data (name; telephone number; e-mail address) affect not only the data for the currently edited control monitor, but also all control monitors in which the address is programmed.	SELECTION
 Create address	If a required addressee in the selection is missing, the information can be added directly to the address book from here.	SELECTION

Function description for "Creating a maintenance job"

The workflow action is used to create maintenance jobs on the basis of the control monitor trigger event. To create an order, a maintenance schedule is used as a template.

See also Section: Maintenance

Note

If a maintenance job is created by a control monitor, it is always assigned the due date "immediately/today".

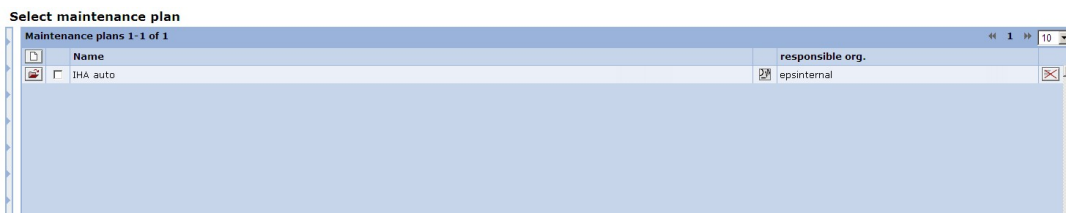



Fig. 3-56: Selecting a maintenance schedule for control monitor

Function	Description	Type
	From here, it is possible to switch directly to the creation of a new maintenance schedule.	ACTION
	Open and edit an existing maintenance schedule Note: Changes to the maintenance schedule only affect new jobs. Jobs that are already open and are, therefore, already being carried out, as well as jobs that are closed, remain documented in their original state. Notice: Renaming a maintenance schedule results in automatic reprogramming of all control monitors in the background where the schedule is configured. Consequently, it is not possible to create all of the required control monitors successively on the basis of a single plan.	ACTION
	Use the maintenance schedule displayed in this line as a job, if the control monitor has been triggered. Any of the maintenance schedules can be selected. Those that have been selected are shown in yellow.	ACTION

Function	Description	Type
	<p>Deletes a maintenance schedule</p> <p>Note: Deletion is only possible if the schedule that is to be deleted is not used in any other control monitors, or controlled independently. However, if a maintenance schedule that creates a job in a control monitor is missing, this is documented and displayed in an entry in the event history. If the schedule becomes available again (i.e. a new version is created), it will also be created in the right format to act as a job.</p>	ACTION

Notice

If diagnostic actions are also carried out in the control monitor that contains a workflow action, it is essential for the entry in the machine event history to be selected for the control monitor.

3.4.21 Diagnostic actions

Overview

The following actions are available:

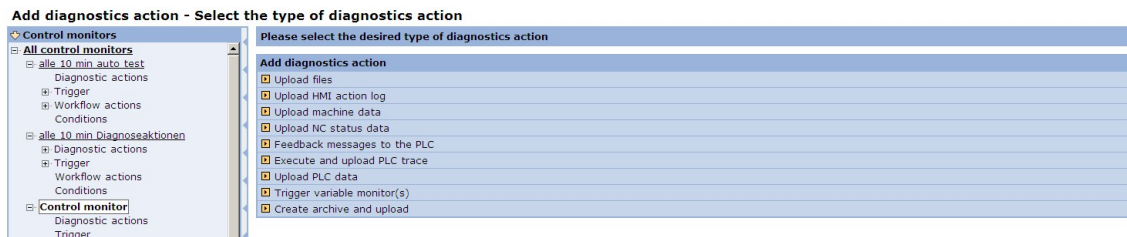


Fig. 3-57: Selecting diagnostic actions

Description of the "Upload files" function

The diagnostic action "Upload files" can be used to upload files from the file system of SINUMERIK and NC in the server upon a trigger event.

In the column with the paper clip, the collection of uploaded files can be marked for sending as an attachment for a notification of the workflow for this control monitor.

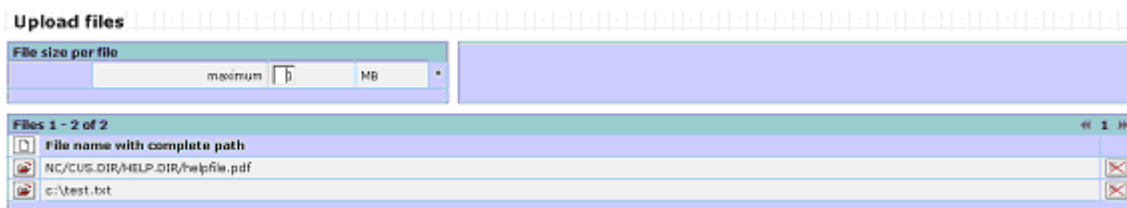



Fig. 3-58: Upload files

Function	Description	Type
File size per file		
Maximum	Determines the maximum size for each file to be uploaded.	DISPLAY INPUT (Digits from 1 to 10)
MB	The file size must be specified between 1 MB and 10 MB. A file that exceeds this maximum value will not be loaded onto the server.	
Files (x)		
File type	A Windows file specification and ac NC file be selected for the file type.	SELECTION
Path	Shows the files entered with path details for uploading purposes Option: The list of specified files can be sorted in ascending or descending order (triangle).	DISPLAY INPUT
	Deletes a file for uploading from the list.	ACTION

Description of "Upload HMI action log" function"

The current HMI action log file can specifically be uploaded to the server with the trigger event.

This action type has no configurable parameters.

In the column with the paper clip, the HMI action log file can be marked for sending as an attachment for a notification of the workflow for this control monitor.

Description of the "Upload machine data" function

The diagnostic action "Upload machine data" permits the machine data to be uploaded to the server upon an event.

This action type has no configurable parameters.

In the column with the paper clip, the machine data can be marked for sending as an attachment for a notification of the workflow for this control monitor.

Note

The uploaded machine data do not contain any drive machine data.

Description of the "Feedback messages to the PLC" function

The function that provides feedback related to any given trigger event to the PLC writes individual pieces of information back to the PLC.

For this purpose, four bytes (DBB118, DBB119, DBB120, and DBB121) are available in DB10 at the interface of the SINUMERIK PLC.

In the SIMATIC PLC, up to 8 bytes are available for this purpose in a freely configurable DB at any block address. The address range must be prepared such that it is contiguous and has before and after the user area 4 additional bytes in which a label is to be stored. The label before the user addresses is 'ePS[', and the label after is 'JePS', each in ASCII format (corresponding to a hex format of 65, 50, 53, 5B and 5D, 65, 50, 53).

If you also want to use the freely configurable data area in a SINUMERIK, the same conditions apply as for the SIMATIC. You can select the distribution and formatting per data byte, word, or double word.

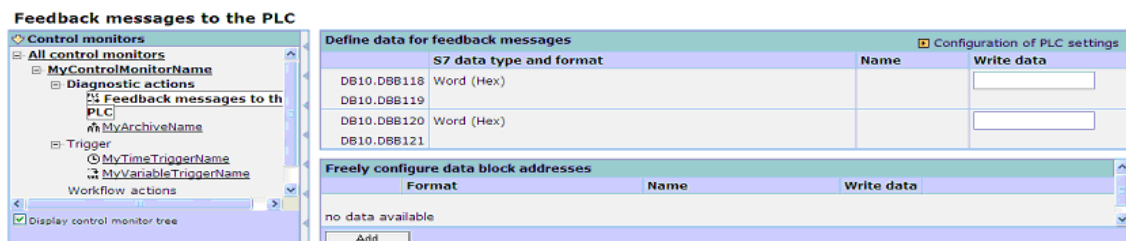


Fig. 3-59: Individual feedback messages to the PLC

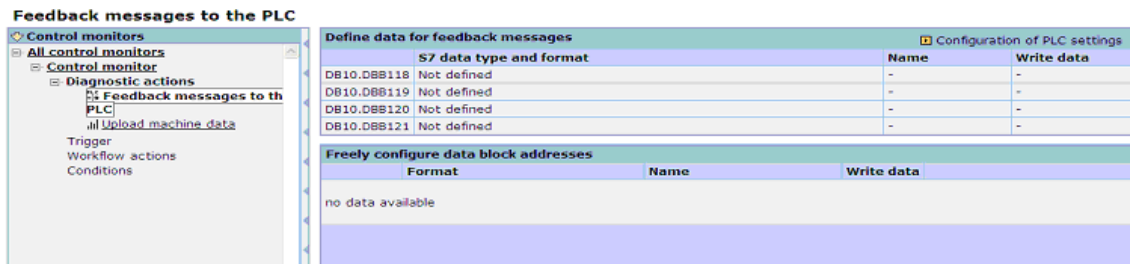



Fig. 3-60: Feedback messages to the PLC in SINUMERIK standard DB10

Function	Description	Type
 Configuration of the PLC settings	The PLC settings can be configured with the selection field. Switch to the menu for the configuration of the feedback signals. The following columns are displayed: <ul style="list-style-type: none"> • DB • S7 data type and format • Name • Write data 	SELECTION Menu change
Configure data block addresses as required		
Write data	Specify data for feedback. The following formats are available: SINUMERIK, DB10, 4 bytes (118-121) OR In freely selectable DB, 8 bytes. Note: Observe the identifier before and after the feedback bytes.	DISPLAY INPUT
Delete (all)	Delete all freely configured variables from the list. A prompt to confirm the deletion is displayed. Acknowledge with "OK". The complete list is deleted. - OR - Acknowledge with "Cancel". Without deleting, the list of feedback messages is opened again.	ACTION
OK	The entries are accepted and the window is closed.	ACTION
Cancel	The entries are accepted and the window is closed.	ACTION

The feedback messages to the PLC can be described once for each control monitor. It displays the variables in the way they are configured and named for the return messages. SINUMERIK Integrate permits describing the variables in the configured format only.

It is possible to switch directly to the settings menu from here in order to adjust and configure the variable format.

Note

Variable format settings can only be changed if none of the control monitors are writing to the variable in the set format. Any feedback messages being written must be removed before the format can be changed.

The contents of the absolute variable addresses are completely overwritten with the information specified here. Individual bits are written selectively. Individual bits can only be written as bytes. For this purpose it is possible to determine whether a bit is to be set to 1 or 0, or is to remain without an entry as it currently appears in the PLC.

SINUMERIK Integrate ensures that a variable that is configured as an absolute address is always written as a complete entity (not byte-by-byte or bit-by-bit).

Description of the "Upload NC status data" function

Use the diagnostic action "Upload NC status data" to upload the NC status data to the server upon an event.

This action type has no configurable parameters.

In the column with the paper clip, the NC status data can be marked for sending as an attachment for a notification of the workflow for this control monitor.

Description of the "Execute and upload PLC trace" function

This action can be used to record the PLC variables status on a cycle-specific basis, and display them synchronously via the server for comparison. Recording is started with the trigger event of the control monitor. Recording is completed following the number of PLC cycles to be configured. A special feature is the option of specifying the number of recording cycles from the time before the trigger event that shall be included in the recording.

Note

Since status recording can be initiated by any control monitor trigger, it is possible that this trigger is initiated repeatedly within the programmed recording time.

SINUMERIK Integrate ensures that the recorded data is captured from the first trigger until the end of recording and, provided that it is not overwritten in the DB interfaces of the PLC, until SINUMERIK Integrate has fetched the data and stored it on the server.

If a trigger subsequently occurs within the recording time for the pre-trigger, recording is still carried out, but the pre-trigger status number is accordingly lower.

Fig. 3-61: PLC trace: Adding variables

Note

By default, PLC addresses are restricted to the address range of the smallest PLC.

To remove this restriction if you are using a more powerful PLC and want to use the addresses in SINUMERIK Integrate, increase the related values in the trigger DB (DB239 in SINUMERIK Integrate Standard) in DW8 for inputs, DW10 for outputs, DW12 for flags, DW14 for timers, and DW16 for counters, to the available address ranges. Restarting the PC that holds the client is necessary.

Warning

Using the trigger DB with an increased address range can cause the PLC to stop when you use the higher addresses in SINUMERIK Integrate configurations, and this address range is not really available in the connected PLC.

Function	Description	Type
Name	Name of the PLC trace: Can be entered by the user. If the field remains empty or is cleared, SINUMERIK Integrate enters the name: Execute and upload PLC trace.	DISPLAY INPUT (max. 100 characters, all characters are permissible)
Remaining memory for the PLC trace configuration	Displays the remaining memory in the DB for addressing variables in the PLC.	DISPLAY
Remaining memory for the PLC trace data	Shows the remaining memory in the DB of the PLC for recording the variables status. The memory requirement is directly related to the number of cycles to be recorded.	DISPLAY

Function	Description	Type
	Note: If the remaining memory is insufficient for the current definition of a trace, you can save the control monitor inactively in the system. To make it possible to activate it, you must free up memory by deactivating one or more of the control monitors.	
Remaining performance	Shows how much performance is left in the PLC cycle time for PLC triggers and PLC conditions. See also Section: Fault services	DISPLAY
Configure PLC settings	Since data blocks must be used in the PLC for the configuration of PLC traces, these must be specified in the PLC settings for SINUMERIK Integrate. If this has not been done in the PLC settings or needs to be checked again, it is possible to branch directly from here for this purpose.	ACTION
"Icons" tab		
PLC area Absolute address	Shows the PLC variables with absolute addresses (not symbolic addresses), which are to be recorded in the trace, or for which additional programming can be carried out. The following selection can be made: All: All PLC variables E: Only PLC input variables A: Only PLC output variables M: Only flags Z: Only counters T: Only timers DBs: Only data blocks Note: The PLC variables to be recorded are selected in the same way as PLC triggers/conditions. See also Section: Machine trigger on "PLC variable"	TAB DISPLAY INPUT S7 syntax S7 formats (max. 40 characters for naming, all characters are permissible)
Absolute address	Display of the absolute address.	DISPLAY
Comment	Displays a comment for the absolute address.	DISPLAY
Data type	Displays the data type.	DISPLAY
Add icon		
Absolute address	Entry of the address of a PLC variable via STEP 7 syntax.	INPUT DISPLAY

Function	Description	Type
Data type	All simple file types are supported. Note: The addresses can be entered in German and English notation. For example: E1.1 or I1.1	INPUT DISPLAY
Comment	Enters a comment for the absolute address.	INPUT
Add	Add additional PLC variable.	ACTION

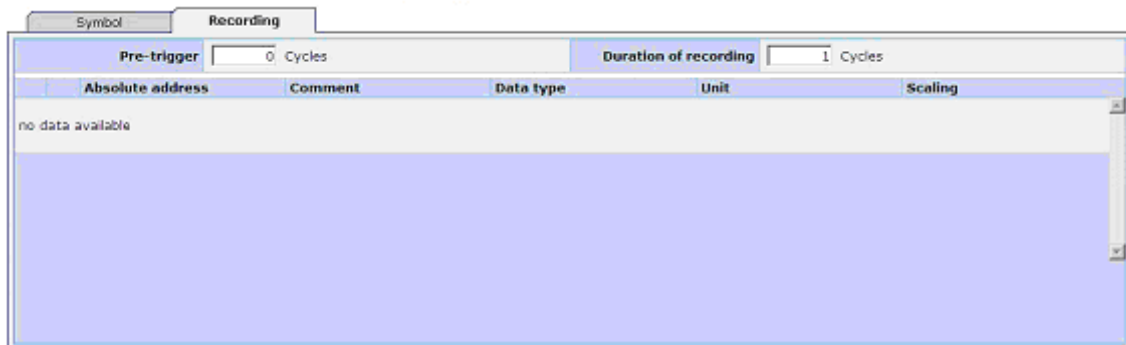


Fig. 3-62: PLC trace: Defining recording parameters

Function	Description	Type
"Recording" tab		
Pretrigger	Entry for the number of cycles for the pre-trigger, used to determine the number of cycles before the trigger event to be recorded.	TAB DISPLAY INPUT (Digits from 0 to 9999)
Recording time	Configured recording time, with the specified number of PLC cycles for the entire recording and the specified number of cycles from the time prior to the trigger event that are to remain recorded.	TAB DISPLAY INPUT (Digits from 1 to 9999 for the total number of cycles, 0 also permissible for pre-trigger)
Absolute address	Shows the PLC variables with absolute addresses (not symbolic addresses), which are to be recorded in the trace, or for which additional programming can be carried out. Note: The PLC variables to be recorded are selected in the same way as PLC triggers/conditions. See also Section: Machine trigger on "PLC variable"	TAB DISPLAY INPUT S7 syntax S7 formats (max. 40 characters for naming, all characters are permissible)
Comment	Enters a comment for the absolute address.	INPUT

Function	Description	Type
Data type	All simple file types are supported. Note: The addresses can be entered in German and English notation. For example: E1.1 or I1.1	INPUT DISPLAY
Unit	Unit of the variables to be recorded.	DISPLAY

Notice

Any trigger configuration can be configured for a PLC trace. With the trigger for a PLC trace, please note that the triggering sequence of the trigger must always be slower than the full recording duration of a trace including the pre-cycles.

This means that entire cycles * cycle time is the minimum duration until the same PLC trace can be triggered again.

Depending on the length of the trace, the PLC requires additional cycles for the data for the recorded trace to be retrieved.

If the next trigger is triggered for a trace before the data of the current trace has been fully saved, the data cannot be recorded. Recording in parallel is not possible. Should this occur, the history records that the data is missing for the event.

If the next trigger is activated after the data for the last trace has been saved but before all data items could be captured for the pretrigger, the oldest data are missing in the pretrigger recording. All data items are always available from the trigger time onwards, at the latest.

Description of the "Upload PLC data" function

Using a control monitor, the diagnostic action "Upload PLC data" permits some or all PLC data blocks to be uploaded onto the server upon a trigger event.

Notice

The PLC data blocks are available on the server without a specific format.

Precisely one contiguous range of the same data block can be selected for uploading for each control monitor.

To display the DB content, the data from the "Machine events" menu must be exported and saved. A hexadecimal editor or byte-by-byte conversion in Excel is recommended for visualization purposes.

With data block contents that change dynamically between the trigger event and the completion of the transfer to the server, the limited bandwidth of the communication channel to the PLC does not allow to guarantee that the states are from a single cycle.

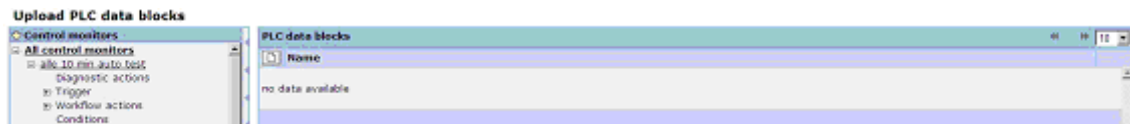


Fig. 3-63: Adding PLC data blocks



Fig. 3-64: PLC data block (details)

Function	Description	Type
	Switch to the menu for configuring the data to be uploaded.	ACTION
	If an existing configuration is changed, the configured entries are displayed. If added, the entry fields will not contain any specifications.	
	Deletes a PLC data block to be uploaded from the list.	ACTION

Function	Description	Type
Data block No.	Number of the data block that is loaded onto the server.	DISPLAY INPUT (Digits from 0 to 9999)
Start byte	Start byte as of which the data of the data block will be loaded (inclusive).	DISPLAY INPUT (Digits from 0 to 999,999)
Number of bytes	Number of bytes loaded from the start address.	DISPLAY INPUT (Digits from 0 to 999,999)

Function description "Trigger variable monitor(s)"

Using the "Trigger variable monitor(s)" action, the variables configured in the selected variable monitors are read from the control and uploaded. In order to execute variable monitors as an action in a control monitor, they must have been configured beforehand. All configured variable monitors are offered for selection here.

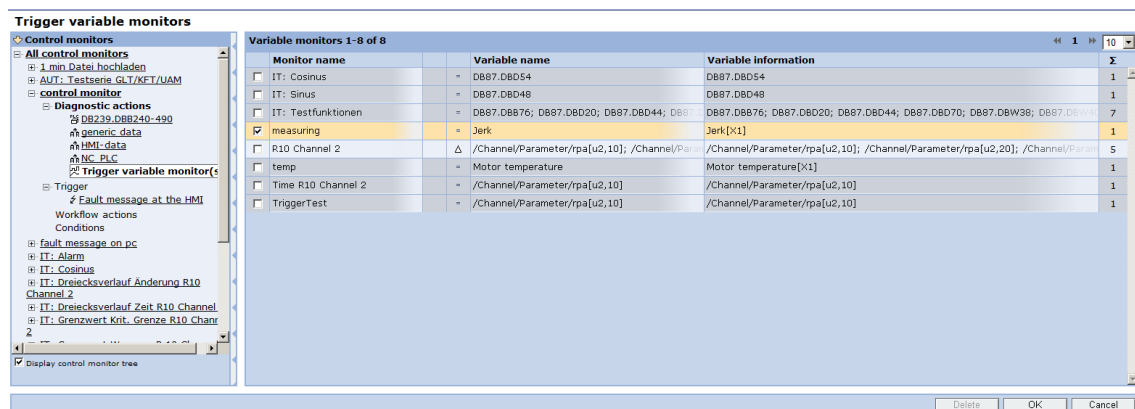


Fig. 3-65: Variable monitors - list view

Function	Description	Type
Trigger variable monitor	At the trigger event, the variable monitor acquires the variables that are configured in the variable monitor. In addition to a label indicating that they have been selected, the background of each variable monitor is highlighted in yellow. Labels show detailed information for each variable monitor that is described in the configuration of the variable monitors.	SELECTION

The configuration of variable monitors is described in the Section: Configuring variable monitors.

The triggers described previously for values that have been recorded using variable monitors are based on the action of initiating variable monitors.

The variable monitors are programmed separately from the control monitor, as individual modular configurations. For the control monitor actions, all available variable monitors are provided for the purpose of initiation via individual triggers. Any trigger that can be selected individually can be used for this purpose.

Note

There is the option of using a direct link between the variable monitor and this control monitor configuration in order to enable rational configuration.

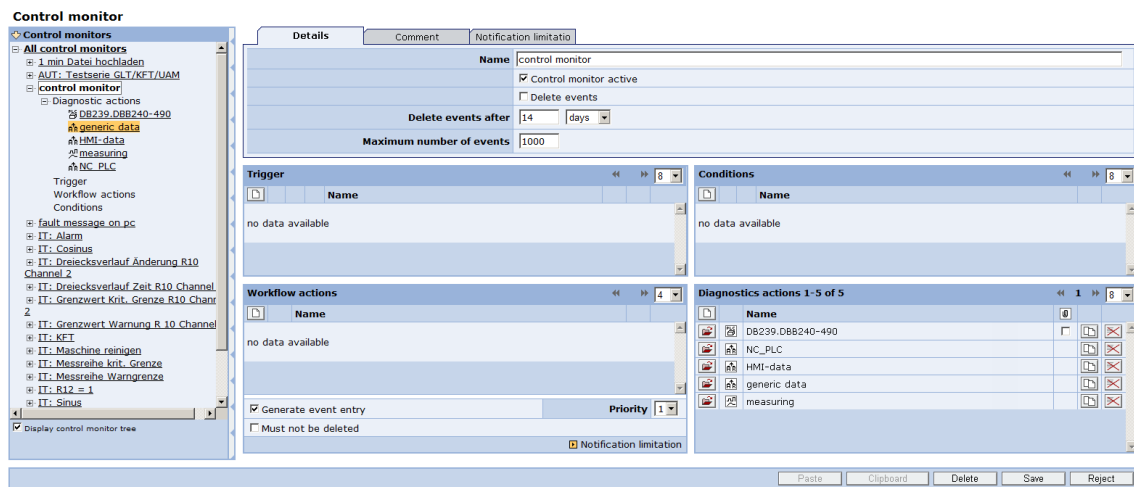


Fig. 3-66: Control monitor with variable monitor

Availability and privileges

Variable monitors can only be configured at the PC. The authorization required for configuring variable monitors is described in detail in the Appendix.

3.4.22 Creating and uploading archives

Constraint

This diagnostic function is only available for controls with the SINUMERIK Operate operating software.

ADDM can still be used for controls without SINUMERIK Operate.

References

Further information can be found in the Commissioning Manual "SINUMERIK 840D sl Basic Software and Operating Software, SINUMERIK Operate"

Function description

The configuration for data backups is possible without any restrictions.

The diagnostics action to upload archives permits a data backup from a machine to be created, and stored in the server. The backups can be used for restoring the data of a machine.

All functions of a control monitor are available for the backup function.

In addition to the standard archives in the operating software, entire paths of the file system can be backed up.

Fig. 3-67: Create and upload archive

Function	Description	Type
Name	Individual input of a name for the archive. The archive is identified in the archive list, the machine events and for the restoration of the data by this name. The operating software supports a name length of 49 characters for series start-up archives. 16 Characters (date and time) are added by the system.	DISPLAY INPUT (max. 49 alphanumeric characters)

Function	Description	Type
Comment	Individual input of a comment to describe the archive.	DISPLAY INPUT (max. 200 alphanumeric characters)
Archive type	Two different archive types can be generated. A series start-up archive that corresponds exactly to the operating software and contains NC, PLC, HMI and drive data. A generic archive that contains arbitrary individual files or paths of the control's file system.	SELECTION DISPLAY




Fig. 3-68: Series start-up archive

The archive components can be created and uploaded either individually or together. If several archives are selected, they are saved as one archive.

Function	Description	Type
Archive type: Series start-up		
• NC data - With compensation data	The archive of the NC data contains all the NC programs and data, optionally with compensation data.	SELECTION
• PLC data	The archive of the PLC data contains the complete STEP 7 logic of the PLC.	SELECTION
• Drive data	The archive of the drive data contains the machine and drive data.	SELECTION
• HMI data	The archive of the HMI data contains the operating software and screens of a PCU or TCU.	SELECTION

Fig. 3-69: Generic archive

Function	Description	Type
Archive type: Generic		
Path	Paths of the file system can be saved with the generic archive. The path must be entered manually because the configuration can be performed irrespective of the final control. A specific file can also be specified. Placeholders in the specifications are not possible.	DISPLAY INPUT Hierarchies of any depths
	Deletes the specified path.	ACTION
Add	Inserts a new line for the path specification.	ACTION
OK	Accepts the entries and returns to the previous window.	ACTION
Cancel	Returns to the previous window without accepting the entries.	ACTION

3.5 Global settings

3.5.1 Setting the notification limit

Function description

The notification limit function permits a repetition delay to be set for a selectable time, during which no notifications are sent after the initial one. This prevents, for example, a glut of alarms being output in the event of a faulty configuration or trigger signal.

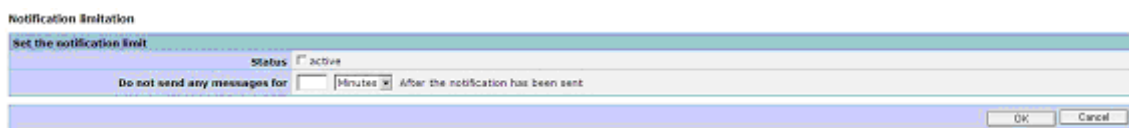


Fig. 3-70: Setting the notification limit

Function	Description	Type
Status Active	Switches the notification limit for the machine on/off. Note: This setting is activated immediately after storage of a change.	SELECTION
Do not send any messages for	Time for the notification limit. The configuration of the notification limit can be transferred to other control monitors. See Section: Control monitor - Detailed view	INPUT SELECTION INPUT 1 to 1440 minutes 1 to 24 hours

Note

When the notification limit is active, all events are recorded in the event history. However, the first notification is sent within the set time window in order to prevent, if necessary, an overflow in the mailbox.

3.5.2 PLC and NC settings

Function description

To be able to use PLC triggers, PLC conditions, and PLC traces on a machine, the data blocks for the machine used in the control must be disclosed and the performance for the SINUMERIK Integrate functions must be released.

Feedback messages must be configured (data format) so that they can be sent to the PLC via DB10 DBB118 to DBB121 in a SINUMERIK, and a freely configurable data block area in a SIMATIC system.

An AC marker must be configured in order to perform axis tests.

Fig. 3-71: Basic settings for the feedback messages to the PLC

Function	Description	Type
PLC data blocks for data storage		
PLC trigger configurations	Number of the data block for PLC trigger configurations (number only; without DB)	DISPLAY INPUT Digits from 0 to 9999
PLC trace configurations	Number of the data block for PLC trace configurations (number only; without DB).	DISPLAY INPUT Digits from 0 to 9999
PLC trace data	Number of the data block for PLC trace data (number only; without DB) <ul style="list-style-type: none"> • Digits from 0 to 9999 • PLC performance index • Display and input • Digits from 1 to 100 	DISPLAY INPUT

Function	Description	Type
PLC performance index	<p>The PLC performance index can be used to limit the number of PLC functions that are executed by SINUMERIK Integrate, so that SINUMERIK Integrate does not put an unnecessary high load on the control.</p> <p>The part of the cycle time for SINUMERIK Integrate functions depends directly on the number of executed SINUMERIK Integrate functions.</p> <p>Since there are different PLCs with different command execution times, a sensible quantity must be determined for this index.</p>	
AC marker	<p>An AC marker that is not being used by applications elsewhere must be enabled for the purpose of performing axis tests.</p> <p>Digits from 0 to 19999</p>	DISPLAY INPUT
Feedback messages to PLC		
Define memory area		
Data block	<p>Specification of the data block number for feedback messages.</p> <ul style="list-style-type: none"> S7 permissible data block numbers 	DISPLAY INPUT
Start address (DBB)	<p>Start of the user data area with the specification of the first byte number.</p> <ul style="list-style-type: none"> S7 permissible and existing DB <p>In addition, the start label must be pre-assigned with 4 bytes before the specified byte.</p> <p>Hex: 65; 50; 53; 5B</p>	DISPLAY INPUT
End address (DBB)	<p>End of the user data area with the specification of the last byte number.</p> <p>A maximum of 8 bytes can be specified.</p> <ul style="list-style-type: none"> S7 permissible and existing DB <p>In addition, the start label must be pre-assigned with 4 bytes before the specified byte.</p> <p>Hex: 5D; 65; 50; 53</p>	DISPLAY INPUT
	Select / deselect Use default storage address.	SELECTION DISPLAY
Accept	The memory addresses for address formatting are displayed when the data block interface entry is applied.	ACTION
Storage addresses 1 - 4 of 8		
Number of lines	The number in the display indicates the number of lines per window that can be shown in this menu. You can select from 4 to 8 lines. A scroll bar will then be displayed in the window.	DISPLAY SELECTION

Note

Use the PLC performance index to define the performance that may be used for the SINUMERIK Integrate PLC triggers. Each PLC trigger uses a certain number of performance points.

This enables you to control the extent to which the PLC may be used by the PLC triggers. The PLC performance index must be defined individually by the machine manufacturer based on the performance capability of the PLC.

Feedback messages to the PLC

Fig. 3-72: Feedback messages to the PLC

Function	Description
DB10.DBB118 or indiv. data element	Determine the S7 data type and S7 format for the data type, with a label for the content of these variables.
DB10.DBB119 or indiv. data element	Determine the S7 data type and S7 format for the data type, with a label for the content of these variables.
DB10.DBB120 or indiv. data element	Determine the S7 data type and S7 format for the data type, with a label for the content of these variables.
DB10.DBB121 or indiv. data element	Determine the S7 data type and S7 format for the data type, with a label for the content of these variables.

The S7 data types and formats can be found in the manual "Programming with STEP 7 V5.4 (in the Appendix "Data and Parameter Types")".
SINUMERIK Integrate does not support any times and floating point numbers.

The S7 data type is also determined by means of the data width. If a word is defined, the following byte is, therefore, included automatically and blocked for a separate format. If a double word is specified, all 4 bytes are assigned as double word. SINUMERIK Integrate checks the plausibility of the possible formats. It allows only permissible configurations (the data word 121, for example, is illegal).

The checkback signals in an individual DB behave according. However, 8 bytes are available. In addition, you must assign identifiers to 4 bytes before and after the 8 bytes. These identifiers are evaluated for write privileges.

3.6 Copy

3.6.1 Copy function settings

Function description

This copy function fetches from a so-called source machine the configurations that the user has created previously and copies them to the current machine, the target machine.

Single or several user functions can be copied concurrently or successively. Any source machine for which the user has access can be selected for copying.

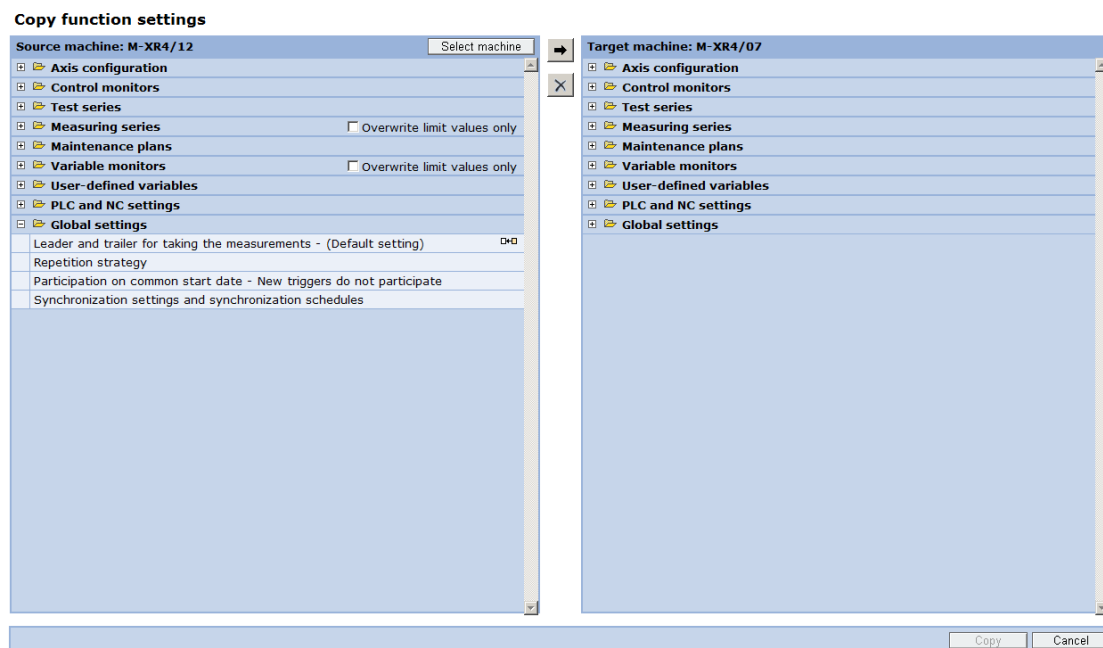


Fig. 3-73: Copy functions

Operating concept

The +/- fields can be used to list or hide individual user configurations that belong to the configuration group.

Copy function settings

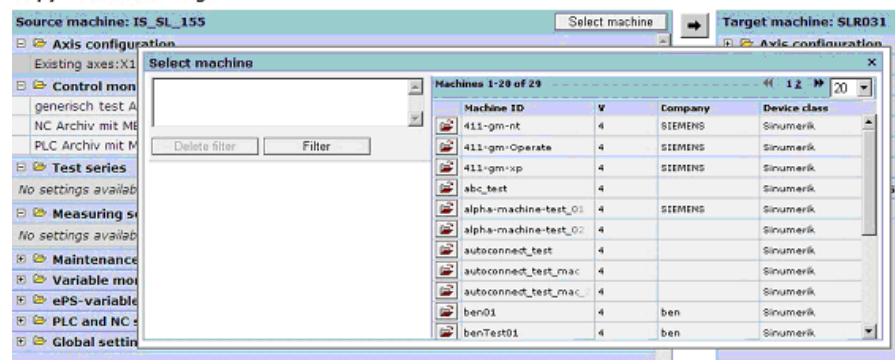


Fig. 3-74: Selecting a source machine

The machine selection functions correspond to those from the general description.

Color concept

The +/- fields can be used to list or hide individual user configurations that belong to the configuration group.

Color	Meaning
Light blue	Marked user configurations can be selected and so can be copied.
Gray	Marked rows cannot be selected and cannot, therefore, be copied.
Yellow	Marked user configurations are preselected for copying.
Light yellow	Marked rows are automatically also selected for copying as result of their dependency to a selected user configuration.
Dark blue	Marked rows are group headings with which the preselection of all user configurations of this group can be made.

The selection of the user configurations to be copied is made for the source machine. The selected user configuration is shown yellow.

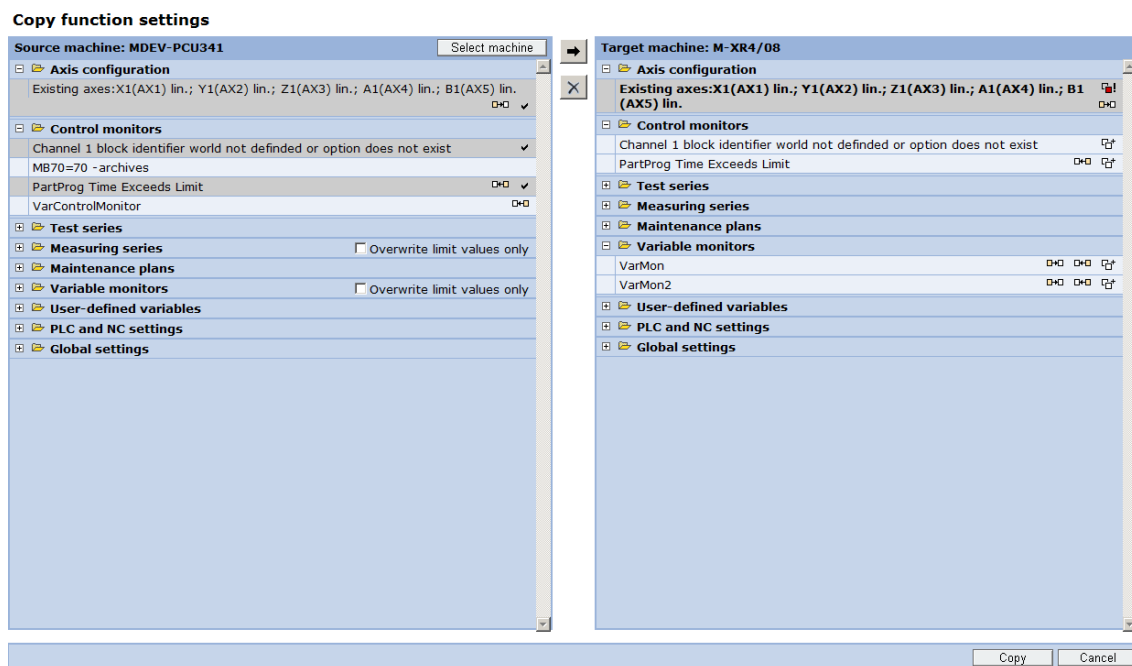


Fig. 3-75: Selecting functions on the source machine

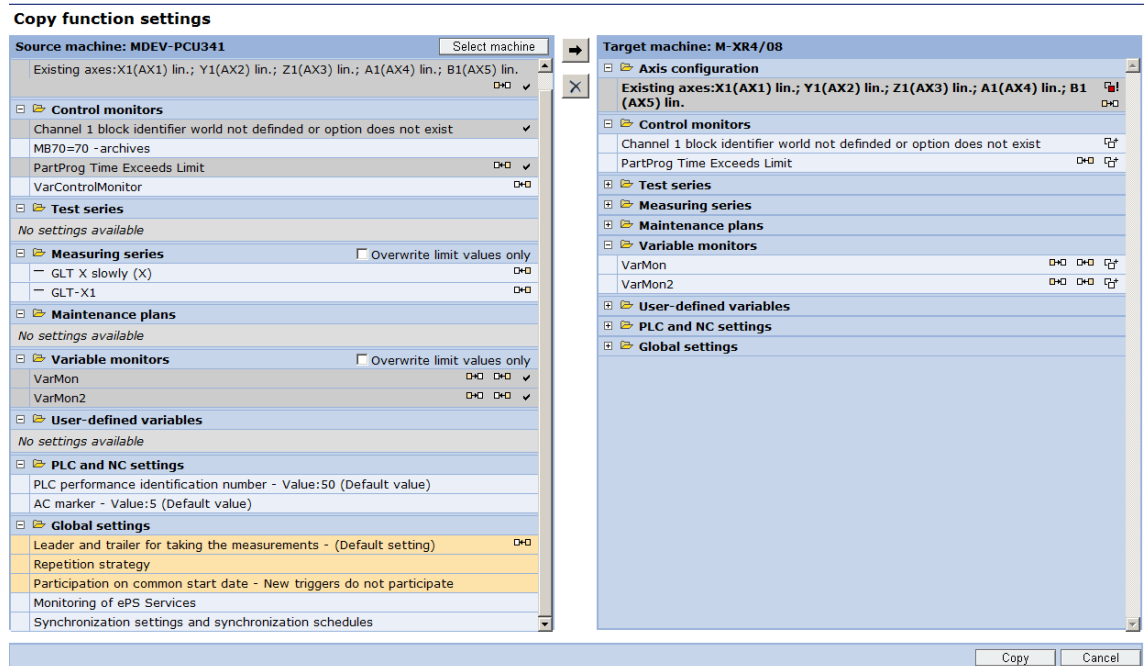








Fig. 3-76: Selection on the target machine



Fig. 3-77: Copying limit values

Copying from the source machine to the target machine:

Function	Description
	The preselected user configurations are displayed on the target machine.
	The preselection to copy to the target machine is canceled for the user configurations selected in the target machine.
	Copying to the target machine is displayed.
	Overwriting the user configuration in the target machine is shown.
	Shows the copy direction of the preselected user configuration: From the source machine to the target machine, or vice versa.
Copy	Copying is in progress.

Function	Description
Back	The process is aborted without copying.
	<p>Selection, if only the limit values for the time series are to be copied. The configurations remain unchanged, all limit values of the configurations selected for copying are copied.</p> <p>Copying limit values can also be used for 1:n copying.</p>


Result

The copying process is complete when the copy log is displayed.

Copy log

5 Function settings have been copied		4/3/2013
Source machine	MDEV-PCU341	Overwritten 1
Target machine	M-XR4/08	Not overwritten 0
Users	dev, eloper	Added 4
Notes	<ul style="list-style-type: none"> All control monitors on the target machine have been globally deactivated for safety reasons. 	Error 0
Details of the copying process		
Name	Type of copy	Status
Axis configuration		
Existing axes:X1(AX1) lin.; Y1(AX2) lin.; Z1(AX3) lin.; A1(AX4) lin.; B1(AX5) lin.	Overwritten	OK
Control monitors		
PartProg Time Exceeds Limit	Added	OK
Channel 1 block identifier world not defined or option does not exist	Added	OK
Test series		
Measuring series		
Maintenance plans		
Variable monitors		
VarMon	Added	OK
VarMon2	Added	OK
User-defined variables		
PLC and NC settings		
Global settings		
Addresses added to organization		

Fig. 3-78: Copy log

Function	Description	Type
	<p>The log can be printed for documenting the copying process.</p> <p>An Image Writer can also be used as printer. This allows the archiving of the log as file.</p> <p>Print settings can only be made by means of the settings for the selected printer.</p>	SELECT ICON

Note

Copying user configurations in SINUMERIK Integrate is only possible when the device classes (SINUMERIK, S7, IPC) for source and target machine are identical.

Copying user configurations with an axis reference is only possible in SINUMERIK Integrate if the axis indices, axis names and measuring system evaluation (translational or rotational) for source and target machine are identical.

In the case of cross-organizational copying, addresses are extended in the target machine if this is required by the copied user configurations. This is shown in the log.

Notice

User configurations that are present on the target machine are overwritten by copying a configuration with the same name onto it.

User configurations can call other user configurations as configuration. SINUMERIK Integrate automatically selects these configurations for copying since the copied user configuration is not functional without these (unless this user configuration is already available on the target machine).

Example: The "OILING" control monitor maintenance job has the action to output the "OILING" maintenance schedule. If the "OILING" maintenance schedule is not present on the target machine, it must be copied onto it so that the control monitor is able to function correctly. If the "OILING" maintenance schedule exists in the target machine, it can be copied such that it overwrites the schedule. However, this is not necessary if you want to use the existing one with the "OILING" maintenance job control monitor.

3.6.2 Copying function settings to several machines

Function description

This function copies any selection of configurations that the user has created previously from a so-called source machine to a freely definable group of machines on a 1:1 basis.

Single or several user functions can be copied concurrently or successively. Any source machine and any target machines to which the user has access can be selected for copying.

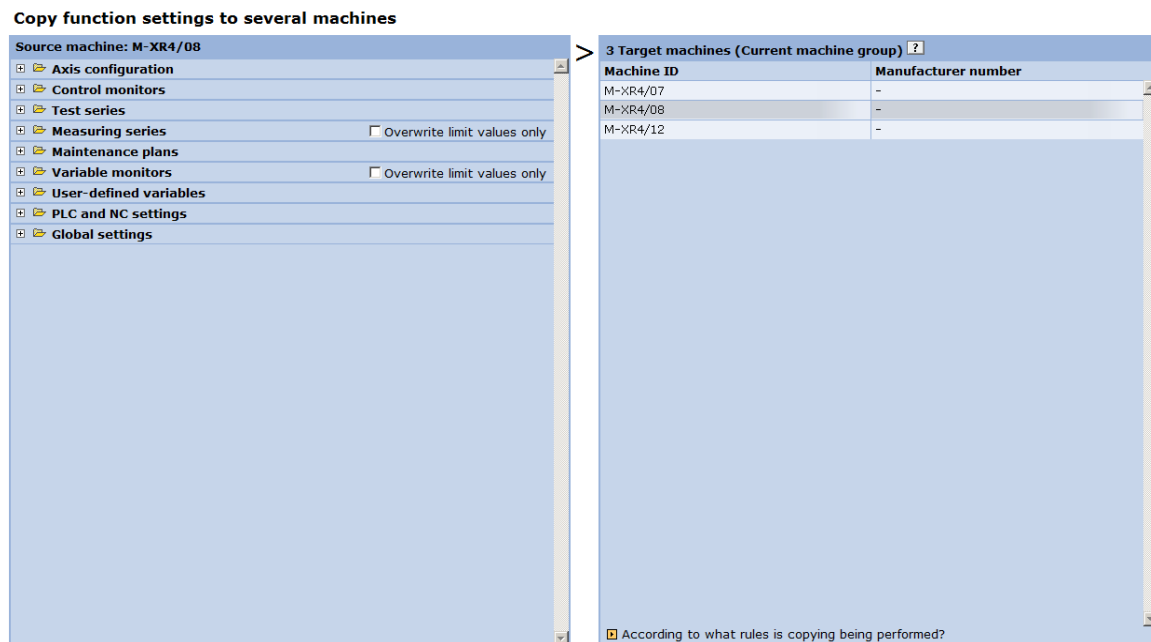


Fig. 3-79: Copying to several machines

Function	Description	Type
Source machine	All configurations are listed in groups. Selecting a group displays all configurations contained within the group and preselects them for copying. This preselection can be switched on and off by selecting the group.	DISPLAY SELECTION
+/-	Selecting +/- displays the configurations in a group or hides the display. The preselection for copying is made by selecting an individual configuration. The preselection can be switched on and off by selecting an individual configuration.	DISPLAY SELECTION
Target machines	All selected target machines are listed. The target machines are selected in the 'Select machine' menu. In this menu, the group of target machines is defined by selecting one or more machines,	DISPLAY

Function	Description	Type
	see also: Selecting a machine.	
▣ Rules for copying	This informational menu indicates the rules used for copying and presents important information for cases in which copying is not possible.	DISPLAY
Cancel	Returns to the previous menu from which the copy function was accessed. The copy function is not carried out.	ACTION
Copy	The copying process is started. The menu changes to a status display for the current copy process.	ACTION DISPLAY

Copy log - Copy function settings to several machines

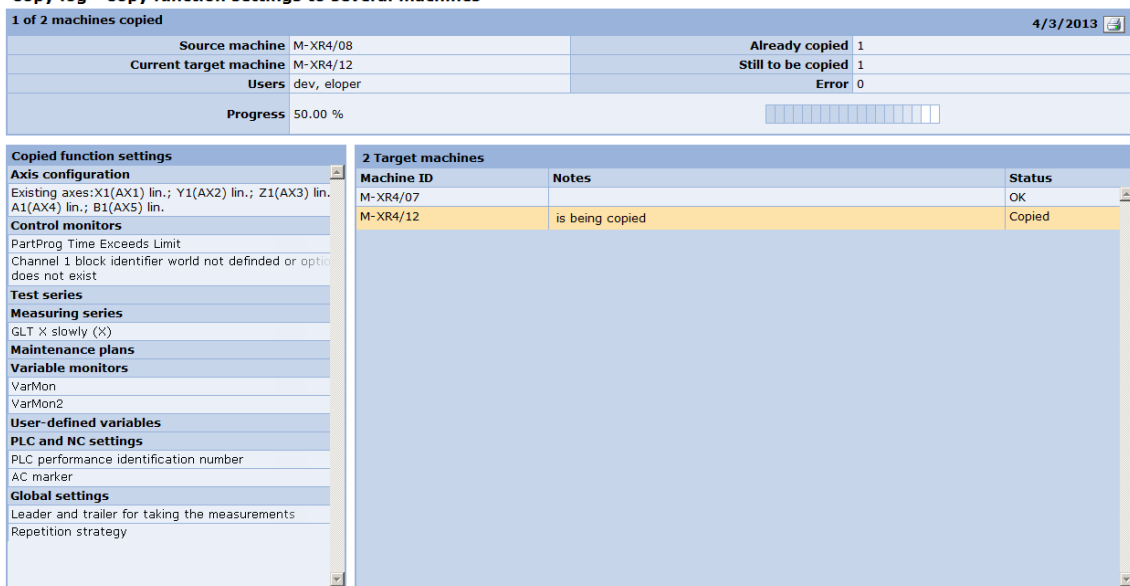


Fig. 3-80: Copying to several machines

Function	Description	Type
Source machine	The source machine for the copying process is indicated during the entire operation.	DISPLAY
Current target machine	If only one target machine is selected, it is displayed here corresponding to the target machine. If multiple target machines are selected, they are displayed as a list in a separate field.	DISPLAY
User	The user who was logged on to SINUMERIK Integrate at the time the copying process was started is displayed here.	DISPLAY

Function	Description	Type
Progress	The copying process can take several hours to complete if a large number of machines has been selected as the target. The progress bar shows an estimation of the completed copying process as a percentage value.	DISPLAY
Already copied	Data is copied to the machines in sequential order. All configurations included in the selection are always copied in their entirety one after the other to each machine. This makes it possible to indicate how many machines already have all complete copies.	DISPLAY
Still to be copied	The number of copies remaining is displayed as the difference to the 'already copied' machines.	DISPLAY
Error	If one or more errors occur during copying, the error display is incremented by one for each machine. Information about the errors is displayed separately. Errors are usually caused by an unsuitable selection of the source and target machines (number of axes, SIMATIC/SINUMERIK, etc.). Irrespective of any errors that occur, everything that is technically and logically appropriate and correct is copied correctly.	DISPLAY
Copied function settings	All configurations selected for copying are listed, just as in the selection, in a window with a scroll bar.	DISPLAY
Target machines		
Machine ID	All selected target machines are listed.	DISPLAY
Notes	Specific information about the copying process is displayed to provide instructions for manual editing of the copied configurations or repetition with other settings.	DISPLAY
Status	The current status of the copying process is "OK" after complete, correct execution. If an error occurred, this remains indicated in the status. A copying process in progress and a copying process that has not yet performed are marked accordingly in the status.	DISPLAY
Ready	When the copying process has taken place, the copy log is complete and can be acknowledged with "Done". To protect against unintentional acknowledgment, an additional prompt must be confirmed. The information in the copy log is no longer available after this acknowledgment.	ACTION

3.7 Client-server communication

3.7.1 Synchronization times

Function description

During synchronization, the specified configurations (e.g. for control monitors) are transferred from the server to the control, and become effective. You can configure an instant or interval when the machine will perform synchronization. You can also define the synchronization mode and time zone, in which the machine is located.

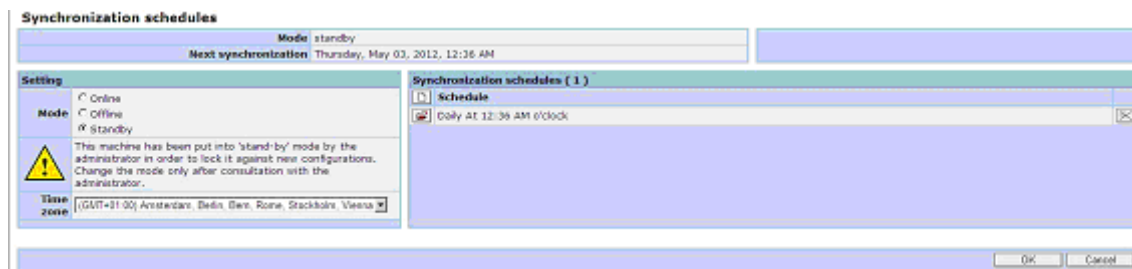


Fig. 3-81: Synchronization times - List view

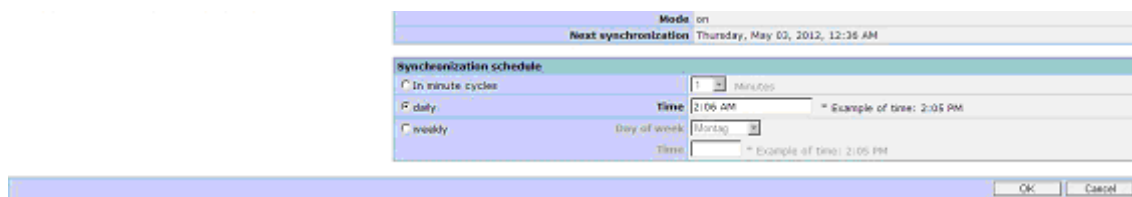




Fig. 3-82: Add synchronization (detail)

Function	Description	Type
Next synchronization	Date of the next scheduled synchronization of the machine with the current configuration on the server.	DISPLAY
Mode	Online: All data is updated. Offline: The machine is not automatically synchronized with the server settings. standby: Only the synchronization data is updated.	SELECTION
Synchronization schedules	Several synchronization times can be configured at the same time.	
	Creates a data record with new synchronization settings.	ACTION
	Edit a previously defined synchronization data record.	ACTION

3.7.2 Offline synchronization

Function description

The "Offline synchronization" function can be used to provide connected and active machines with new or changed configurations, when it is temporarily impossible to access the machine via the Internet. The user must transfer the configuration to the machine concerned. This is not done by the SINUMERIK Integrate system. This can be done with USB flash drive, CD, or e-mail, for example.

The user can thus copy a configuration on his/her PC to a local storage medium, and import this configuration to the machine concerned.

Configuration (PC)

Configuration is done in the same way as for an "online" machine. See description in the Section: Setting up functions.

Note

The user does not obtain any support regarding the issue of whether or not the selected configuration is expedient for a machine that does not send any data to the server via the internet.

Exporting the configuration (PC)

The user can export a configuration on the PC. He/she must select the "Offline synchronization" function for this purpose.

The system synchronizes and creates the configuration file on the server. A progress display will appear during this. Once the configuration file has been created on the server without any errors, a "Save as" dialog box will appear, and the file can be created on a local data carrier.

Note

The system informs the user if the current client version in the server does not satisfy the necessary requirements. The system suggests the user the configuration for the enabled client version.

Offline-Synchronisation
Offline-Synchronisationseinstellungen

Letzte Synchronisation	13.11.2012 14:04	Achtung: Bitte wählen Sie links eine Version, die die Offline-Synchronisation unterstützt. Diese Client-Version muss auf der Steuerung installiert werden, bevor die Synchronisationsdatei(en) importiert werden
Aktuelle Version Manufacturing-IT Client	PowerLine Client ohne Unterstützung der Offline-Synchronisation	
Offline-Synchronisation für Client-Version	-- bitte Version wählen --	
Dateiname	<input type="text" value=".eps"/>	

Datei erstellen

Fig. 3-83: Performing offline synchronization

Function	Description
Last synchronization	Display of date/time of the most recent synchronization with the machine. Note: Synchronization can take place either online or offline. Therefore, it is not guaranteed that the configuration will already be on the machine.
Current version manufacturing-IT client	Display of the client version transferred during the most recent online communication with the machine. If the client version does not support offline synchronization, the following message appears: "PowerLine client without offline synchronization support".
Offline synchronization for client version	Selection of the required client version Please refer to the note.
File name	Entry/selection of the file name under which the configuration is stored on the data carrier.
Creating a new file	Creates a configuration file on the server and provides a possibility of saving locally.

Example of creating a configuration

Offline-Synchronisation

Offline-Synchronisationseinstellungen

Letzte Synchronisation	13.11.2012 14:04	! Achtung: Bitte wählen Sie links eine Version, die die Offline-Synchronisation unterstützt. Diese Client-Version muss auf der Steuerung installiert werden, bevor die Synchronisationsdatei(en) importiert werden
Aktuelle Version Manufacturing-IT Client	PowerLine Client ohne Unterstützung der Offline-Synchronisation	
Offline-Synchronisation für Client-Version	4.7.0 (PowerLine)	
Dateiname	Machine_test-2013-01-31-02-47	.eps

Datei erstellen

Fig. 3-84: Selecting a client version; file name suggested by the system

Offline-Synchronisation

Offline-Synchronisationseinstellungen

Letzte Synchronisation	13.11.2012 14:04	! Achtung: Bitte wählen Sie links eine Version, die die Offline-Synchronisation unterstützt. Diese Client-Version muss auf der Steuerung installiert werden, bevor die Synchronisationsdatei(en) importiert werden
Aktuelle Version Manufacturing-IT Client	PowerLine Client ohne Unterstützung der Offline-Synchronisation	
Offline-Synchronisation für Client-Version	4.7.0 (PowerLine)	
Dateiname	Machine_test-2013-01-31-02-47	.eps

Datei erstellen

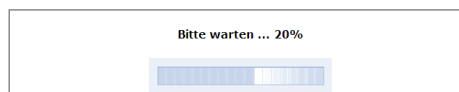


Fig. 3-85: Progress display when creating the configuration file

Offline-Synchronisation

Offline-Synchronisationseinstellungen


Letzte Synchronisation	31.01.2013 14:51	! Achtung: Bitte wählen Sie links eine Version, die die Offline-Synchronisation unterstützt. Diese Client-Version muss auf der Steuerung installiert werden, bevor die Synchronisationsdatei(en) importiert werden
Aktuelle Version Manufacturing-IT Client	PowerLine Client ohne Unterstützung der Offline-Synchronisation	
Offline-Synchronisation für Client-Version	4.7.0 (PowerLine)	
Dateiname	Machine_test-2013-01-31-02-51	.eps

Datei erstellen

Dateien 1-1 von 1

Dateiname	Dateigröße
Machine_test-2013-01-31-02-47.eps	190 KB

Fig. 3-86: Configuration file created

Function	Description
	Opens the "Save as" box of the Internet Explorer.
Back	Ends offline synchronization and returns to "Set up functions".

3.7.3 Monitoring of ePS services

Function description

With the monitoring function of the ePS services, you can configure the status monitoring of the ePS services on machines of your own organization.

You can activate or deactivate the status monitoring for a selected machine. The time interval for sign-of-life monitoring can be defined in the range 5 minutes to up to 24 hours.

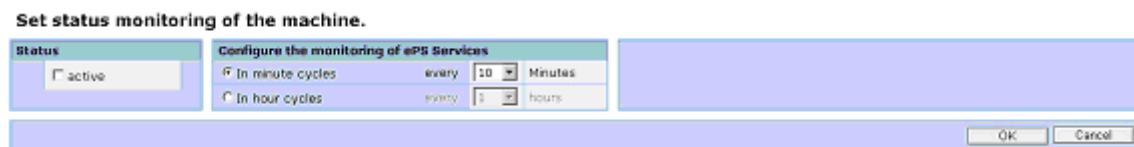


Fig. 3-87: Setting monitoring

Function	Description	Type
Status	Activation or deactivation of monitoring of ePS services	SELECTION
Configure the monitoring of ePS services	Definition of the interval using predefined list values. <ul style="list-style-type: none"> In minute cycles: 5,10,15,20,30 In hour cycles: 1,2,3,4,6,8,12,24 	SELECTION

3.7.4 Making files available for download to the machine

Function description

A download can be realized by preparing files to be downloaded to the machine.

Files in the user file system can be selected and uploaded to the server.

Depending on the configuration setting, the user at the machine must confirm whether he wishes to have the files loaded to the machine - or not. When confirmed, then the files are loaded to the machine. If no confirmation is necessary, the files are downloaded at the next synchronization.

Note

The configuration settings apply to all organizations on the server and can only be made individually for an eP satellite.

The files are subject to a virus check when uploading to the server and before downloading to the machine. Files where a virus has been identified are not transferred, and an additional message is entered into the logbook.

The files are deleted on the server once transfer has been completed.

The files loaded onto the machine are located on the level of the "Temp" directory of the control defined in SINUMERIK Integrate (for example: F:\privatesyncdata). This cannot be set individually.

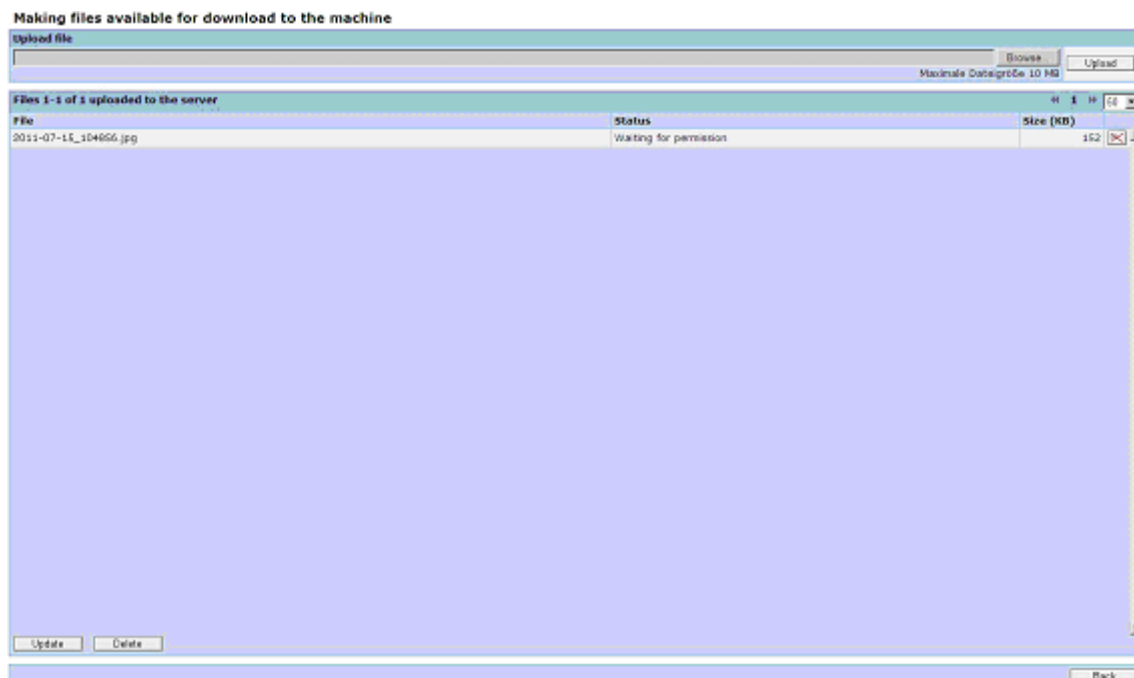



Fig. 3-88: Preparing download files

Function	Description	Type
Browse	Open the window in Windows to navigate in the file system and to select a file	ACTION
Upload	Starts uploading from your own file system onto the server. The file size is limited to 8 MB.	ACTION
Display / Status window / Size	Displays the uploaded files and specifies the size that has not yet been loaded into the machine (actual status).	DISPLAY
	Files that were not be transferred to the machine, can be deleted from the server.	ACTION
Update	The file display window is updated. This is required in order to also update the currently running transfer operations in the display.	ACTION
Delete	Delete files to download to the server	ACTION
Number of lines	The value shown here specifies the lines per window that shall be represented in this menu. You can select up to 200 lines. A scroll bar will then be displayed in the window.	DISPLAY SELECTION
Upload file	Input window for the complete path and file input.	INPUT

Notice

You can find configuration settings to download files under the "Administration" tab under "Organization data".

4

4 Organizational tasks

4.1 Maintenance

Overview

The functions SINUMERIK Integrate provides for maintenance purposes are subdivided into different sections:

- Maintenance jobs that are already in place and relate to an entire organization of the user that has logged on are available in the organizational tasks.
- It is possible to use the machine views in order to select individual maintenance jobs on a machine-specific basis (maintenance jobs of the selected machine).
- Specifying maintenance procedures is explained in the form of maintenance schedules for Set-up functions.
- A central scheduling function for maintenance procedures is located in management under machines for the master data for the machine in the function settings.

Organizational tasks

Organizational tasks	
▶	Maintenance jobs
▶	Service cases

Other options for linking maintenance procedures with control monitors and axis tests are described in the relevant sections.

Function description

The maintenance jobs describe the maintenance and servicing tasks to be performed on the machine. Maintenance jobs are always found in a maintenance schedule stored in the system.

The maintenance schedule contains the work instructions required for the procedures, in the form of text that has been entered directly, an attached file, or a reference to the maintenance manual and, if necessary, with functions that can be executed directly via the system (such as axis tests).

The maintenance job is created via a control monitor through which the maintenance job is initiated.

See also Section: Setting up functions

Maintenance jobs can involve either activities (such as performing axis tests with the system) or standard service and maintenance procedures on machines.

- The user can view maintenance jobs via the control on the machine and can also acknowledge them here ("Machine operator at machine" application case), i.e. mark a job as "done" by means of "OK" or "Not OK", and has the option of adding a comment.
- The user can view maintenance jobs on the internet PC, and can edit them individually. For instance, the work instruction or the date can be edited individually for each job.

A change to the maintenance job itself does not change the underlying maintenance schedule!

This option is not available on the control operator panel.

Note

A user logged onto the machine at SINUMERIK Integrate can acknowledge the jobs that are pending there (changing status and comment).

Jobs contain the target organization: This specifies which organization is responsible for processing the job. Jobs for a machine can be viewed, changed and deleted by any organization that has access to this machine.

The contents of maintenance jobs that have already been opened can no longer be changed. Only the comment associated with the maintenance procedure can be edited.

Maintenance jobs that have been closed can only be viewed. They cannot be changed.

Overview according to organization

Calling via "Organization tasks → Maintenance jobs" provides an overview of the jobs for all machines known in the organization. To enable quick location of work that is still pending, jobs with the status "pending" and "overdue" are highlighted in the list view.

A preview of pending jobs is also displayed via a dedicated status (yellow). In addition, the preview can be set to an individual time period in the future for all new and open maintenance jobs.

The user can use the overview of the maintenance jobs on the internet PC for the following purposes:

- Creating an overview of the jobs that are pending, that are pending in the near future and have been acknowledged, progress monitoring; service call planning.
- Editing jobs in order to individually adapt automatically generated jobs (as long as they have not yet been opened or acknowledged).
- Changing a work instruction if other tasks to be completed have to be added that were still not known at the time that a task from the maintenance schedule was planned (as long as they have not yet been opened or acknowledged).
- Changing the execution time, for example, rescheduling tasks that can or should be completed together on the same day.
- Editing comments, adding comments for tasks already performed, attaching detailed service reports as file to a job (as long as the maintenance jobs still have the NEW status, have not yet been opened and have still not been acknowledged).
- Acknowledging jobs, tasks that have already been performed can be conveniently entered, for example, entering the same tasks on several machines (as long as they have not yet been acknowledged). Not only one keyboard is always available at machines. Inputs at machines must be performed at the machine involved. At the internet PC, input from a work station is possible when the machine concerned is selected.
- Deleting jobs (as long as they have not yet been opened or acknowledged)

In addition to the option of filtering at individual machines or machine groups, the status of maintenance jobs and the responsible organization for the maintenance procedures can also be included in the filter to display the maintenance jobs.

Note

In all views of the tree structure, the respective names from the machine master data (as specified in the user organization) are used.

Each organization can change machine master data individually to suit its own purposes. In this case, other organizations for which the same machine is released cannot see these changes. Even the organization that releases the machine cannot automatically see the modified machine master data of organizations for which the machine is released.

Thus, a service organization that only has machines released to it cannot be appointed to maintain the machine master data.

Overview according to individual machine

Calling via "Machine information → Maintenance jobs" provides an overview of the jobs for the currently selected single machine, without requiring an extra filter for this machine.

This is also the information that the user sees on the control operator panel (Maintenance services → Maintenance jobs).

4.1.1 Selecting a maintenance job on a machine

Function description

Filter options are available for simple and fast searching to rationally process maintenance jobs. Filters can be set to all of the information relevant to a maintenance job.

The filter result corresponds to the selectable criteria in so much that for each criteria group, all maintenance jobs appear in the result if a criterion is fulfilled (OR logic operation).

The criteria groups are logically combined with one another so that the filter result must correspond to each selected and active group (AND logic operation).

It can happen with an unfortunate selection that no maintenance job appears in the filter result; e.g. display all new maintenance jobs, that are processed.

Cross-machine overview of the maintenance jobs

The screenshot shows the Siemens maintenance management software interface. The top navigation bar includes tabs for 'Machine information', 'Configure functions', 'Organization tasks' (selected), 'Statistics/Export', and 'Administration'. Below the navigation bar, there's a 'Select machine' dropdown showing 'SLR001c_V411PL; TZ; Remingen' and a status message 'No synchronization, machine not connected'. The main area is titled 'Maintenance jobs' and displays a table of jobs. On the left, there's a 'Search' panel with various filter options like 'Job status' (New, Open, Closed, OK, Closed, error), 'Due date status' (Not announced, announced, Due, Edited), 'Due date scheduled for open jobs' (days), 'Closed in the period' (of to), and 'Responsible organization' (epinbema). The table shows columns for Machine ID, Job no., Name, Status, Schedule, and Responsible org. The table lists 10 jobs, with the first 10 of 967 jobs displayed. The jobs are filtered by status 'New' and 'Open'.

Machine ID	Job no.	Name	Status	Schedule	Responsible org.
411-gm-nt	M-13-2728	Täglich alle	-27 d	Mon, 2/24/2012 2:42 PM	epinbema
411-gm-nt	M-13-2727	Täglich alle	0 d	Mon, 2/24/2012 2:13 PM	epinbema
411-gm-nt	M-13-2735	Täglich alle	0 d	Mon, 2/24/2012 9:13 AM	epinbema
SLR031	M-1-2562	3HA auto	-82 d	Thu, 2/8/2012 11:05 AM	epinbema
SLR031	M-1-063	3HA auto	0 d	Wed, 12/26/2011 2:25 PM	epinbema
SLR031	M-1-062	3HA auto	0 d	Wed, 12/28/2011 2:15 PM	epinbema
SLR031	M-1-061	3HA auto	0 d	Wed, 12/28/2011 2:05 PM	epinbema
SLR031	M-1-060	3HA auto	0 d	Wed, 12/28/2011 2:55 PM	epinbema
SLR031	M-1-059	3HA auto	0 d	Wed, 12/28/2011 2:45 PM	epinbema
SLR031	M-1-058	3HA auto	0 d	Wed, 12/28/2011 2:35 PM	epinbema

Fig. 4-1: Maintenance jobs








Search – Filter









Function	Special function	Description	Type
Search Freetext filter		Only those maintenance jobs are included in the selection result which have the specified partial text in their name.	DISPLAY INPUT
Job status New	Jobs that will soon become due in ... days	Maintenance jobs which have the new status, appear in the selection result of the group for the job status. If a time period is entered for soon, then the new jobs are displayed restricted to those that will be due in the specified time period.	SELECTION INPUT DISPLAY
Open		Maintenance jobs which have the open status, appear in the selection result of the group for the job status. If a time period is entered for soon, then the open jobs are displayed restricted to those that will be due in the specified time period.	SELECTION INPUT DISPLAY
Closed, OK	Only closed in the time period from ... → to....	Maintenance jobs which have the closed OK status, appear in the selection result of the group for the job status. If a time period is entered for from - to, then the closed jobs are displayed, restricted to those that have been closed in the specified time period.	SELECTION INPUT DISPLAY
Closed, Error		All maintenance jobs which have the closed with fault status, appear in the selection result of the group for the job status. If a time period is entered for from - to, then the closed jobs are displayed, restricted to those that have been closed in the specified time period.	SELECTION INPUT DISPLAY
Due status Not announced		If a maintenance job is initiated by a time trigger in the server rather than by a current status event of the machine, the next maintenance job can already be viewed after the current one has been closed. In order that jobs that have not been announced do not appear in the selection list, the due status filter can be activated and preselected with all other statuses, except those for the "still not announced" maintenance jobs. The due status can specifically be used	SELECTION DISPLAY

Function	Special function	Description	Type
		to select the maintenance jobs that shall be contained in the selection result. If the due status is set as filter, but no status is selected, then the result list will be empty.	
Announced		If a maintenance job is initiated by a time trigger in the server rather than by a current status event of the machine, you can check whether the next maintenance job has already reached the preview time after the current one has been closed. The filter can also be used to select the other statuses and precisely not this "announced" one, in order that these jobs do not appear in the selection list. The due status can specifically be used to select the maintenance jobs that shall be contained in the selection result. If the due status is set as filter, but no status is selected, then the result list will be empty.	SELECTION DISPLAY
Due		Irrespective of the activation - event-controlled or time-controlled - of a maintenance job, setting the filter to "due" permits the jobs to be selected that should now be done. The filter can also be used to select the other statuses and precisely not this "due" one, in order that these jobs do not appear in the selection list. The due status can specifically be used to select the maintenance jobs that shall be contained in the selection result. If the due status is set as filter, but no status is selected, then the result list will be empty.	SELECTION DISPLAY
edited		No matter how the maintenance jobs were once initiated, only the completed jobs can be selected. The filter can also be used to select the other statuses and precisely not this one, in order that these jobs do not appear in the selection list. The due status can specifically be used to select the maintenance jobs that shall be contained in the selection result. If the due status is set as filter, but no status is selected, then the result list will	SELECTION DISPLAY

Function	Special function	Description	Type
		be empty.	
Due date open jobs		Starting at the specified time, only the open maintenance jobs are included in the selection result. Note: This filter only has an effect on new and open maintenance jobs.	INPUT 1-99 Hour, Days, Week, Months
Closed in time period		The selection result only contains the closed maintenance jobs after the entered date.	INPUT DD.MM.YYY Y
Responsible organization		In order that specific plans can be made, the selection list can be generated specifically for a certain organization.	SELECTION DISPLAY

Maintenance jobs

Function	Description	Type
Filter symbol ... Machines (999)	The header shows whether a filter is enabled for the maintenance jobs shown in the list, along with the filter conditions and the number of filtered maintenance jobs.	DISPLAY
Number of lines	The number in the display indicates the number of lines per screen that can be shown in this menu. 1 to 200 maintenance jobs can be selected. A scroll bar appears on the screen.	DISPLAY SELECTION
	The maintenance job can be opened. The system changes to the maintenance job screen.	ACTION
Machine ID	Display of the machine ID from the machine master data which differs for the same job depending on whether the maintenance job list is viewed from the point of view of any given partner, or from your point of view Notice: The machine ID is not unique, it can be different for the same machine depending on the particular organization.	DISPLAY
Job number	Unique, consecutive numbers for maintenance jobs which are automatically generated by the system in order to avoid misunderstandings in communication	DISPLAY
	Icon generated automatically by the system for the purpose of classifying the maintenance job. The icons are assigned as follows:	DISPLAY
    	All jobs without axis tests (manual) Circularity test with maintenance job Universal axis test Equability test Test series	
Name	Name of the maintenance schedule which the user has specified during configuration	DISPLAY

Function	Description	Type
Status	Indicates the status of the job. The display is automatically selected by the system, depending on the acknowledgment made by the user. Only one state can apply at any one time.	DISPLAY
	The job is open.	
	The job is closed and OK.	
	The job is closed and not OK.	
	The job is open and has not yet been started. This is only possible with the interval counter and with time-controlled jobs.	
	A white icon indicates a job that is not yet due.	
	A yellow icon indicates the advance notice of a due date.	
	A red icon shows that the end date is exceeded that was set by the user for completing the job.	DISPLAY
Status [number d]	Shows the number of days until the execution time in the "Date" column.	
Schedule	Time of execution of the maintenance job that is calculated by the system on the basis of the user-configured specifications. As an option, this column can be sorted according to time, in ascending or descending order.	DISPLAY
Responsible organization	Indicates the organization configured in the maintenance schedule as taking responsibility	DISPLAY
	Jobs can be deleted, as long as they have not yet been opened or acknowledged.	ACTION
Back	Switch to the original menu	ACTION

4.1.2 Opening a maintenance job (PC)

Function description

The screenshot displays the 'Maintenance job' interface. At the top, 'Ticket details' include Job no. M-13-3735, Schedule 3/28/2012, Time 9:13 AM, and Status checked (closed, OK on Mon, 3/28/2012). To the right, machine information shows Machine ID 411-gm-nt, Name Taglich alle, Service engineer M. G, and responsible org. epaintemal. Below this, a 'Test series Testserie 1' section shows 'Measurements' with 2 of 2 measurements OK, Date 3/28/2012, Channel 2, Number 2, and Measuring series 0. The bottom section, 'Work instruction', contains a 'Files' list with 'File' and 'no data found', and a 'Comment' field. A 'Back' button is at the bottom right.

Fig. 4-2: Viewing a maintenance job (edit with restrictions (detailed view))

Function	Description	Type
Job number	Unique, consecutive numbers for maintenance jobs which are automatically generated by the system in order to avoid misunderstandings in communication	DISPLAY
Schedule	Time of execution of the maintenance job that is calculated by the system on the basis of the user-configured specifications. You have the option of changing the date for this job once. A calendar selection function is available for this purpose.	INPUT SELECTION DISPLAY (in date format with leading zeros)
Time	Time at which the maintenance job is due on the date configured.	INPUT (in time format with leading zeros)

Function	Description	Type
Status	<p>Indicates the status of the job. The status can be changed by the user at this point.</p> <p>Opening the job should indicate that the maintenance procedures required in the job are in progress.</p> <p>Closing the maintenance job corresponds to acknowledging it. It can be determined here whether or not the maintenance procedures were performed successfully.</p>	SELECTION
	<p>The status of a maintenance job is "new" when it is has not yet begun or when it is due.</p> <p>The job can be opened to perform the maintenance job.</p> <p>The job can also be closed right away as OK or not OK.</p> <p>The status of a closed job can no longer be changed.</p> <p>A job that has been opened can only be closed.</p>	
Machine ID	Display of the machine ID from the machine master data. The displayed value depends on whether the maintenance job list is visualized from the point of view of any given partner, or from the local point of view.	DISPLAY
Name	Name of the maintenance schedule which the user has specified during configuration	DISPLAY
Service engineer	The system automatically enters the user who is logged on to SINUMERIK Integrate, and has most recently opened the maintenance job on the machine operator panel.	DISPLAY
Responsible organization	<p>Indicates the organization configured in the maintenance schedule as taking responsibility</p> <p>The user can select a different organization to be responsible for this particular maintenance job, from a drop down list box.</p> <p>See also Section: Editing the master data of a machine</p>	DISPLAY SELECTION INPUT

Function	Description	Type
Work instruction	Description of the maintenance procedures to be performed. This field displays the work instructions for the maintenance personnel.	DISPLAY INPUT (Max. 2000 characters; including blanks)
Files	In order to provide a more detailed description of the job, additional documents can be attached in PDF format by means of "Add file", or can be attached for this job on an individual basis. It is also possible to directly view files that have already been attached.	DISPLAY SELECTION
Number of lines	The number in the display indicates the number of lines per screen that are shown in this menu. You can select from 4 to 20 lines. A scroll bar will then be displayed on the screen.	DISPLAY SELECTION
Comment	Description of the maintenance procedures to be performed. This box shows the maintenance report of the maintenance engineer.	DISPLAY INPUT (Max. 1000 characters; including blanks)

Restriction:

For reasons of data protection, the option of editing maintenance jobs described above is only available for maintenance jobs that have not yet been opened or acknowledged. Open maintenance jobs are protected against changes being made to their contents during the maintenance process. Acknowledged maintenance jobs are, therefore, saved in document format, containing the maintenance procedures carried out.

Options

Submenus are available as an option if axis tests are connected to the maintenance job.

The axis tests (axis test type and name) which have been connected to the maintenance job while the maintenance schedule was being created are displayed.

The details indicate:

- That an axis test has been performed, as well as whether this was successfully completed and interpretable results produced
- The date on which the axis test was performed. A date is not entered if the maintenance job has been acknowledged without an axis test having been performed.
- The (consecutive) number of each axis test counted (axis test type and name) A date is not entered if the maintenance job has been acknowledged without an axis test having been performed.
- The axis, along with its name (neither axis index nor channel axis index), and the parameters of the axis test in NC syntax format.

Another optional view is available for combinations of axis tests (several axis tests compiled in a test procedure - test series):

- Here, the number of axis tests is displayed, as well as whether the axis tests yielded interpretable results.
- The date on which the axis tests were performed. If the maintenance job has been acknowledged without the axis tests being performed, a date is not entered.
- The NC channel in which the axes are configured for the axis test
- The number of axis tests configured in this combination The types of axis test configured, as well as how many are included in this combined axis test

Once axis tests have been performed, their results can be viewed from this point in a submenu.

Function	Description	Type
Open (axis test)	Axis test data recorded for a maintenance job is displayed along with its test parameters, and can be viewed in the associated data series.	DISPLAY

Notice

In the case of maintenance procedures that include axis tests, it is highly recommended that the status of the maintenance job be set to "open" while the axis test is being performed. Otherwise, this may result in faulty axis tests if a third party accesses the configurations.

4.1.3 Executing/closing a maintenance job (control)

Function description

Maintenance personnel can view and open jobs in the SINUMERIK Integrate menu (maintenance services → maintenance jobs) on the control.

To limit the length of execution for maintenance procedures, there is the option of protecting the maintenance job from entries and changes when it is opened. Third parties will see that the maintenance procedure is already taking place and will be acknowledged with the appropriate status. See also Section: Test series on the machine

Function	Description
Execute maintenance job	The maintenance personnel can edit maintenance jobs that are due: <ul style="list-style-type: none"> • Open (block for third-party access) • Add and change comments • Acknowledge as correctly executed • Acknowledge as incorrectly executed, if this is not possible. It may be advisable to add a comment in such cases.
Condition monitor: Perform axis test of maintenance job	The maintenance personnel can perform the axis tests that are linked to the maintenance job via the maintenance schedule.
View maintenance job	The maintenance personnel can display the information stored in the maintenance schedule (from which the maintenance job was generated), such as work instructions and attached files (drawings, extracts from the machine documentation, etc.). These documents must have been stored as PDF documents during the planning in the maintenance schedule or in the job.

The same maintenance job information is shown on both the user interface of the control and the PC.

However, to facilitate handling, only the maintenance jobs of a machine are displayed that are soon due, are due and open.

To this effect, menu operation is limited: The jobs cannot be edited; but only opened and acknowledged, and comments can be added.

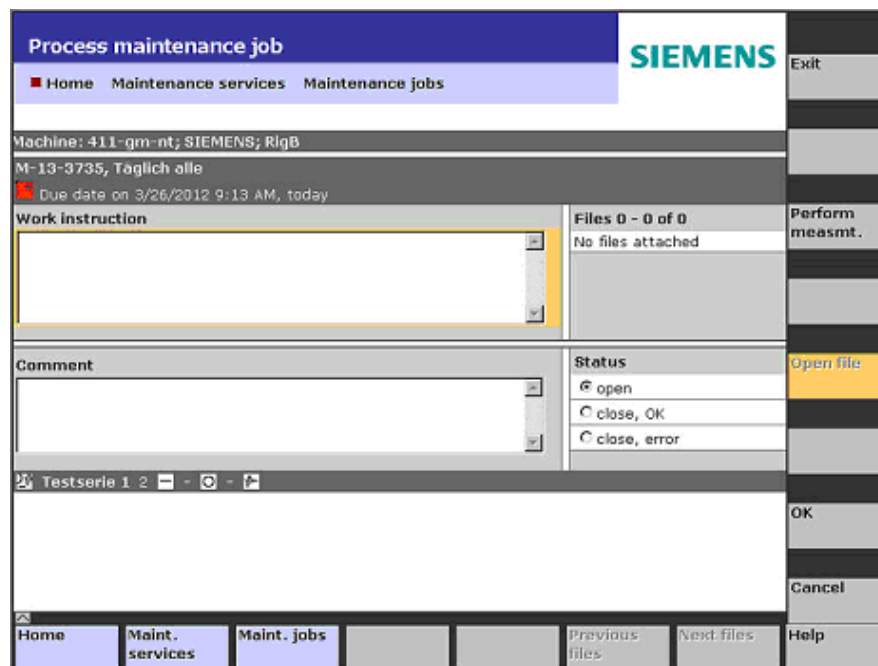


Fig. 4-3: Executing a maintenance job on the control

Function	Description	Type
Master data	Display your own data from the machine master data. Where a job is concerned, this may vary depending on the view used for visualization: i.e. whether it is viewed from the perspective of any given partner, or, in the case of the maintenance job list, your own point of view.	DISPLAY
Job no., job name, date (due)	Unique, consecutive numbers for maintenance jobs which are automatically generated by the system in order to avoid misunderstandings in communication Name of the maintenance schedule which the user has allocated during configuration Execution time for the maintenance job, calculated by the system according to the basic settings configured by the user	DISPLAY
Status	Indicates the status of the job. The status can be changed by the user at this point. Opening the job should indicate that the maintenance procedures required in the job have already been carried out. Closing the maintenance job corresponds to acknowledging it; here it can be determined whether the maintenance procedures were performed successfully. Important: Even when the display has a particular status, it is not actually set to this. In each case, the status	SELECTION

Function	Description	Type
	must be confirmed with "OK" in order for it to take effect and for the display to be set to this. This can be monitored by calling the maintenance job again.	
Service engineer	The system automatically enters the user who is logged on to SINUMERIK Integrate, and has most recently opened the maintenance job on the machine operator panel.	<i>No display</i>
Responsible org.	Not displayed, since the responsible organization would never inadvertently look for the job on the machine	<i>No display</i>
Work instructions	Description of the maintenance procedures to be performed. This field displays the work instructions for the person performing maintenance.	DISPLAY
Files	In order to provide a more detailed description of the job, additional documents can be attached in PDF format by means of "Add file", or can be attached for this job on an individual basis. It is also possible to directly view files that have already been attached. Note: The first document of the list has been preselected and can be directly opened with "View file". Other documents in the list can only be viewed if they have been selected with the cursor beforehand.	DISPLAY SELECTION
Comment	Description of the maintenance procedures to be performed. This box shows the maintenance report of the maintenance engineer.	DISPLAY INPUT (Max. 1000 characters; including blanks)
Axis tests	The axis tests included in the maintenance job can be performed directly from this point. The test results are saved together with the corresponding measurement series. See also Section: Configuring measurements and measurement series	ACTION
Test results	The results of the axis tests can be viewed directly from this point. Note: The result can also originate from previous processing of the job, provided this was not completed with "closed" status.	ACTION

Security note on displaying PDF documents

Notice

PDF documents to be displayed on the control operator panel must not contain any active contents (Java script, e-mail fields, etc.) nor have any HTML Links!

Otherwise you run the risk of navigating from the system to other web sites.

At the operator panel of the control, SINUMERIK Integrate supports only the display of PDF documents that are compatible with Acrobat 1.3 (Reader Version 4.x).

For optimum display, please create your PDF documents with the option "Initial View: Page Only/ Magnification Fit Width".

4.2 Service cases

Function description

Service cases are automatically generated from fault help requests.

If the personnel on the machine or in the production line require support, a help request can be submitted via the control of a machine with SINUMERIK Integrate, or an internet PC.

Where service cases are concerned, all of the fault help requests submitted for an entire organization are displayed.

From an internet PC, you can also submit fault help requests for single machines, with the machine information entered under fault services. It should be noted that fault services for the machine information should not be mistaken for fault services for setting up functions, as the control monitors are located in this menu.

Fault help requests entered can be linked via control monitors. All possible actions for control monitors, such as notifications, uploading data, etc., are available within this context. (Exception: With a fault help request from an internet PC, you can not take any actions that concern the access to current data from the control.)

Fault help requests are only advisable in conjunction with a specific notification, since, although the user seeking help is waiting for a quick response, monitoring personnel are seldom available exclusively for incoming service case notifications.

During servicing, the technician can see the description of the problem entered by the personnel and can document the procedures being carried out by making additional entries throughout the entire process. For support purposes, the service technician can see the fault help request files uploaded with a control monitor from the machine.

Overview of service cases

The overview of service cases is used to obtain a general view of all service cases assigned to an organization. That enables quick access to solutions that have already been worked out and documented for use in new service cases. Service cases can be assigned to people in your own organization by allocating employees. It is not possible to notify a technician automatically, but it is possible to clearly identify them in a separate column of the overview of service case help requests.

During searching and filtering, it should be noted that all non-visible parts of texts, from the entire contents of service cases, are also included in the overview, and thus it may be the case that more than expected is displayed. The current status of the work (processing status) can also be made transparent for all employees for the purpose of planning and progress control.

Notice

Service cases are always related to a machine.

Each user that has access to a machine via an internet PC, can view its service cases. If access granted to an organization is removed, it will no longer be possible to access the service cases.

4.2.1 Service cases - List view

Function description

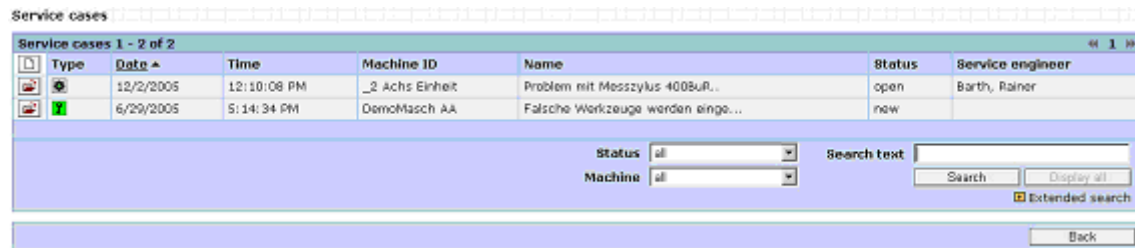


Fig. 4-4: List view of service cases

Function	Description	Type
	Opens an existing service case for processing.	SELECTION
Type		
	Manually created service case. The service case is created for the currently selected machine.	DISPLAY
	Machine released from a foreign organization.	DISPLAY
Date/Time	Displays the date and time when the service case was created.	DISPLAY
Machine ID	Designation of the machine from which the service case originates or for which it was created.	DISPLAY
Name	Name of the service case Note: If the service case was entered at the control or the internet PC with the machine information, the first 40 characters of the fault description input is used as name. When a service case is entered directly into the organizational overview at this point, a specific name can be assigned.	DISPLAY
Status	Displays the processing status of a service case.	DISPLAY
Service engineer	Currently assigned technician for a service case However, is not the creator of the fault help request.	DISPLAY
Status (filter)	Filters all service cases according to status: "Find" button starts the filtering.	SELECTION
Machine (filter)	Filters all service cases according to the machine that is currently selected. "Find" button starts the filtering.	SELECTION
Search text (filter)	Filters all service cases according to a free text. "Find" button starts the filtering. Note: The filter text is applied to the machine ID and the service case name. Technicians cannot be found in this way. The filter is only effective if the limitations are adhered to.	INPUT (Max. 40 characters; no differentiation between upper and lower case; any character permitted)

Function	Description	Type
Extended search	Enhanced search for service cases according to the search term, date, status, and the current technician and initiator of the service case.	ACTION

Extended search

Fig. 4-5: Search criteria for service cases

Function	Description	Type
Search term	Permits filtering of all service cases according to a free text: Filtering is activated by clicking "Search". Note: The filter text is applied to the machine ID and the service case name. Technicians cannot be found in this way. The filter is only effective if the limitations are adhered to.	INPUT (Max. 40 characters; no differentiation between upper and lower case; any character permitted)
Machine	Filtering of all service cases according to the machine that is currently selected: Filtering is performed by clicking "Search".	SELECTION
Date from/to	The service cases to be displayed can be limited to within a freely definable time window. For this purpose, the time frame is limited by entering dates (inclusive) between which service cases should be displayed. In addition, other filters will take effect.	SELECTION (month) INPUT (Day: Between 1 and 31; year: Between 1994 and 20xx)
Status	Filtering of all service cases according to status: Filtering is performed by clicking "Search".	SELECTION
Requested by	Creator of fault help request	SELECTION
Service engineer	Technician currently assigned to a service case (not the creator of the fault help request)	SELECTION

4.2.2 Service cases - Detailed view

Function description

A service case can be accessed by either opening one from the overview list of existing service cases, or creating a new one in the service cases menu in the organizational tasks.

It is not necessary for a machine to be selected for the purpose of opening an existing service case. To create a new service case, SINUMERIK Integrate automatically opens the machine selection list and prompts the user to select a machine.

Fig. 4-6: Creating a new service case (detailed view)

Function	Description	Type
Master data		
Name	Assigning a name for the service case. Note: If the service case was triggered by the event "Error processing requested (control/PC)", the first 40 characters of the error description entered there are used as the name of the service case, since your own name cannot be entered at the machine. If you do not enter a name at the PC, the name is automatically created from the first 40 characters of the error text. Notice: You can rename a service case that has already been created as often as you wish.	DISPLAY ACTION (max. 40 characters; all characters are permissible, exception <)
Machine Date Time	Name of machine and date with time.	
Current control software	The user of this interface has permanent access to the current control software. SINUMERIK Integrate automatically detects the current control software which is directly available.	ACTION

Function	Description	Type
Status of the service case		
Status	<p>A status can be assigned to the service case, so that it can have a varying status which reflects the stage of the process.</p> <p>The status can be changed as many times as is required. The status also has absolutely no effect in respect of changing other fields. Even service cases that have been closed can be changed at a later point.</p> <p>New: Created but not yet processed</p> <p>Assigned: The technician who is to provide fault help has been determined.</p> <p>Open: Additional procedures for fault help cannot be determined.</p> <p>Closed: The fault help is complete (whether in terms of fault elimination or diagnosis) and there is no additional fault help to be carried out.</p>	DISPLAY SELECTION
Service engineer	<p>An engineer can be assigned to the service case, who must be a user from your own organization with SINUMERIK Integrate access privileges.</p> <p>The technician can be changed as many times as is required.</p> <p>Note: Changes to technicians and status are stored jointly with the optional reason for the change in the change history of the service case.</p>	DISPLAY SELECTION
Requestor	Access assignment to the requesting person.	
Telephone number	For questions relating to clarifying the fault, the person who made original the request can leave his/her telephone number.	INPUT / DISPLAY (15 digits)
Reason for modification	Whenever the status is changed, the field indicating the reason for editing is enabled, and the text entered here is stored in the log history with the status change.	DISPLAY INPUT (Max. 2000 characters; any character permissible)
Remote access	<p>A teleservice session can be established here if the person who made the fault help request requires teleservice, and has specified this on the control.</p> <p>Note: The session ID is automatically transferred to the operator panel of the control from which the request for a teleservice session was submitted. Manual entry at the panel is not necessary. If the request form for the teleservice session on</p>	

Function	Description	Type
	the operator panel of the control is no longer open (e.g. canceled by the machine operator), a teleservice session will have to be initiated.	
Error report/ Service report	Option for entering a service report: The existing report can be changed as many times as required by means of editing; this will not be logged.	DISPLAY INPUT (Max. 2000 characters; any character permissible)
Log	Each change to the status and technician is logged here along with a time stamp and the change.	DISPLAY
Files	<p>Display of the files connected with the service case for additional information. Use the browse function to locate and add files. Click the files once to open them in the applications corresponding to the type of file.</p> <p>Note:</p> <p>Additional files from the local file system can be linked to the service case manually using "Add file" and saved on the ePS network server (e.g. repair reports, pictures of the damage). Files can also be added and deleted as required at a later point; this will not be logged.</p>	SELECTION DISPLAY ACTION
Reason for assignment	Whenever the status is changed, the field indicating the reason for editing is enabled, and the text entered here is stored in the log history with the status change.	DISPLAY INPUT (Max. 2000 characters; any character permissible)
Date/ time	When a service case help request is saved for the first time, the date and time are saved automatically and are always displayed with the service case (in a format that cannot be changed).	DISPLAY

4.2.3 Requesting fault processing on the control

Function description

Fig. 4-7: Requesting fault processing on the control

Function	Description	Type
Please write a short fault report		
Report fault Fault report	In the event of a fault, a report can be sent directly to the control via the operating software which immediately leads to a fault on transfer. Since a name was not given to the fault help request here, the first 40 characters are used automatically as the fault name on the internet PC.	DISPLAY INPUT (Max. 2000 characters; any character permissible)
Contact data		
Requested by	Irrespective of the person who is currently logged on with SINUMERIK Integrate, the person who made the request can enter his/her details directly here. These identities can be different.	DISPLAY INPUT
Telephone number	The person who made the request can leave his/her telephone number for any other questions that may arise.	DISPLAY INPUT (max. 15 digits)

Function	Description	Type
Remote access		
Requesting remote access	<p>A request for remote access can be directly linked with a fault help request. Manual entry of the session ID on the control is then not necessary.</p> <p>To permit an automatic transfer of the session ID, and remote access to be started by an employee at an internet PC once he/she has viewed the service case, the request window must remain open until remote access is up and running.</p> <p>If the request window for the remote access has been closed (e.g. canceled), a teleservice session will have to be set up manually.</p> <p>See Operating Manual "Remote Access", Section: Functions of a service session.</p> <p>Note:</p> <p>This function is only available when fault processing is requested on the control.</p>	DISPLAY SELECTION

5

5 Statistics/export

Overview

The statistics and export area provides functions that are used to evaluate the information in the server or to display task-specific summaries (for system administration, for example). As statistics function, multi-machine events can be viewed analogously to the machine events of an individual machine.

Statistics/export

Multi-machine views	
▶	Machine events
▶	Summary of machine events
▶	Measuring series
▶	Variable monitors
▶	Reports
▶	Comparing configurations
Import	
▶	Active import procedures
▶	Importing a file
▶	Import directory (requires ActiveX)
Export	
▶	Export PLC data
Overviews	
▶	Synchronization overview

5.1 Multi-machine views

5.1.1 Multi-machine events

Function description

Event history of several machines in one display:
In the Statistics/Export area under Multi-machine events, any machine can be entered on an individual basis, or machines can be selected as groups. The machine events are to be displayed in the form of a chronological list.

The navigation is performed in the machine tree where machines can specifically be selected, or filters used.

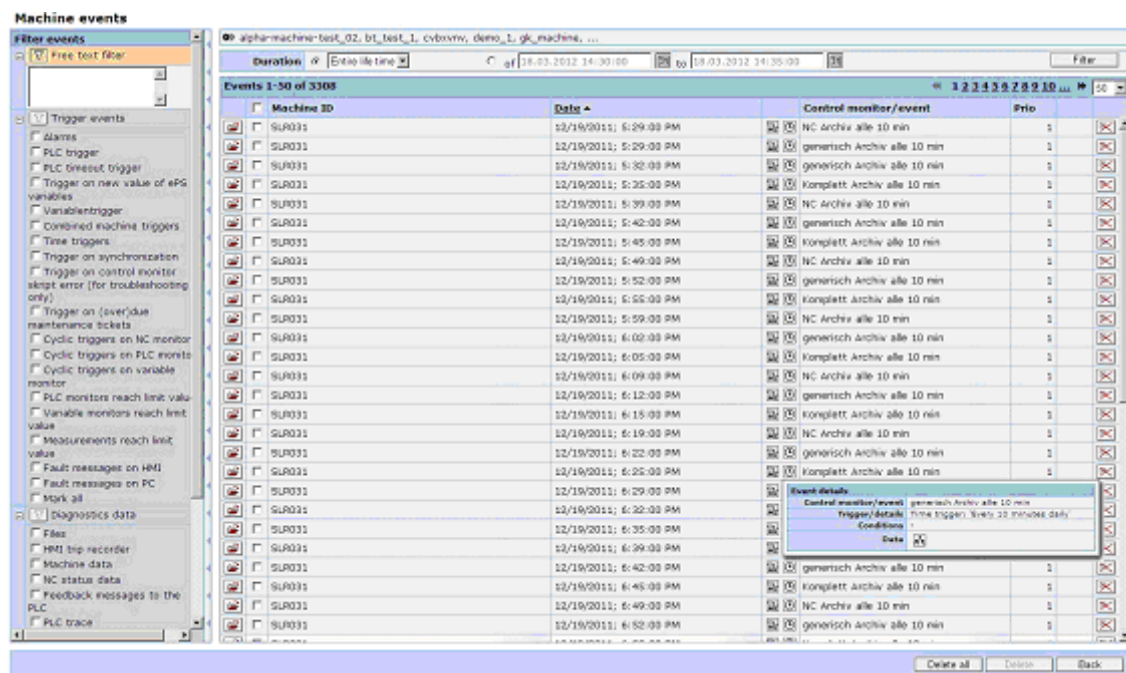



Fig. 5-1: Multi-machine views

Function	Description	Type
	Details of events can be filtered to limit the events displayed. An active filter is highlighted in yellow.	DISPLAY
Free text filter	Definition of partial text over all text columns in the event list. After the filter has been applied, only events containing the partial text are shown.	INPUT DISPLAY
Trigger events	After occurrence, the display of events can be limited with the following triggers: Trigger events:	MULTIPLE SELECTION DISPLAY

Function	Description	Type
	<ul style="list-style-type: none"> • Alarms • PLC triggers • PLC timeout triggers • Triggers on a new value of a user-defined variable • Variabletrigger • Combined machine triggers • Time triggers • Triggers on synchronization • Triggers on control monitor script error (only for troubleshooting) • Triggers on (over) due maintenance trigger • Cyclic triggers on NC monitor • Cyclic triggers on PLC monitor • Cyclic triggers on variable monitor • PLC monitors reach limit value • Variable monitors reach limit value • Measurements reach limit value • Fault messages on the HMI • Fault messages on the PC • Mark all 	
Diagnostics data	<p>The display of events can be limited according to the actions used in the control monitor:</p> <p>Diagnostics data:</p> <ul style="list-style-type: none"> • Files • HMI trip recorder • Machine data • NC status data • Feedback messages to PLC • PLC trace • PLC data • PLC monitors • Variable monitors • Archives • Mark all 	MULTIPLE SELECTION DISPLAY
Notifications	<p>The display of events can be limited according to the actions used in the control monitor:</p> <p>Notifications</p> <ul style="list-style-type: none"> • E-mail or SMS notifications • Maintenance jobs • Mark all 	MULTIPLE SELECTION DISPLAY

Function	Description	Type
Priority	The display of events can be limited according to user-definable priorities for the control monitor: Priority: <ul style="list-style-type: none"> • 0 • 1 • 2 • 3 • 4 • 5 • Mark all 	MULTIPLE SELECTION DISPLAY
Event category	The display of events can be limited to events generated by users with control monitors or events generated automatically by SINUMERIK Integrate. Event category: <ul style="list-style-type: none"> • Control monitor - events • System events • Mark all 	MULTIPLE SELECTION DISPLAY
Filtering	Filtering takes place when multiple filter conditions are selected. After the filters have been applied, only events corresponding to the filters remain in the display.	ACTION

Displaying result of the selection

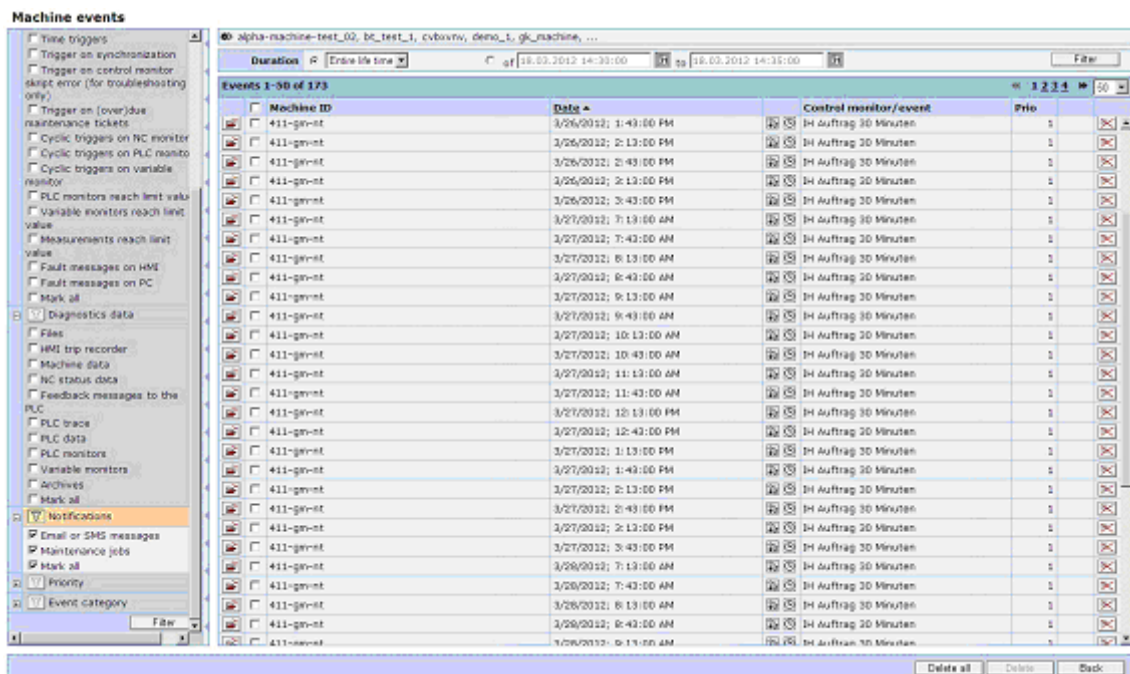



Fig. 5-2: Multi-machine events - machine type filter

Function	Description	Type
Time period	<p>The filter period can be set over the entire time period. Related to the current date, it can also be backdated for the following periods:</p> <ul style="list-style-type: none"> • Last day • Last week • Last month • Last 3 months • Last 6 months • Last year • Total lifetime <p>To search for events after they have occurred, you can restrict the time period for the display of events with a calendar function.</p>	SELECTION DISPLAY
Filtering	Events are displayed according to the selected time frame.	ACTION
Events (window)	Input window for the partial text filter. Instead of a manual entry, the specification can also be copied from an arbitrary file in the window.	
Number of lines	The number in the display indicates the number of lines per screen that can be shown in this menu. You can select up to 200 lines. A scroll bar appears on the screen.	DISPLAY SELECTION
Machine ID	If an appropriate filter is selected, you can select and delete all 200 events simultaneously. You can cancel these marks for individual events before you start deletion.	SELECTION, DISPLAY
Date	Events can be sorted by the date in ascending or descending order.	SELECTION
Icons	Icons specify the origin of the event entry and indicate what type of event caused the entry.	DISPLAY
Control monitor / event	The name of the event from the control monitor is displayed for identification. The free text filter can be used specifically for this purpose.	DISPLAY
Priority	The user-defined priority for the control monitor is displayed here.	DISPLAY
	Individual entries can directly be deleted.	ACTION
Delete all	Press the "Delete all" button to remove a multiple selection of entries.	ACTION
Back	Back to the basic menu "Statistics/Export"	ACTION

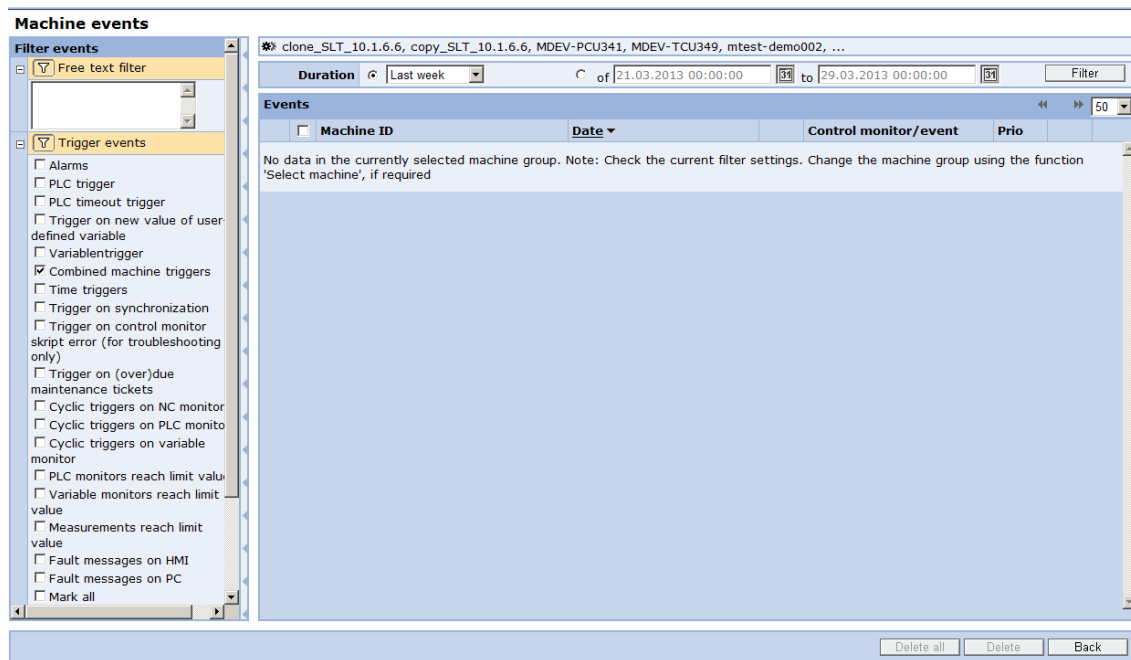


Fig. 5-3: Multi-machine events - event type filter

The display of the machine events is in strict chronological order for all selected machines. Further functionalities in and with the data of the machine events are in the event history of a machine, as described below.

5.1.2 Summary of machine events

Quantitative evaluation of the machine events

Two views are available to provide an overview of the frequency of events. To limit the machines and the viewing period, the same filters are available as for viewing multi-machine events.

One representation is a list of the machines sorted in descending order by the number of events. The second representation is a list of the events (identified by control name) sorted in descending order by their frequency.

Identifying conspicuous machines

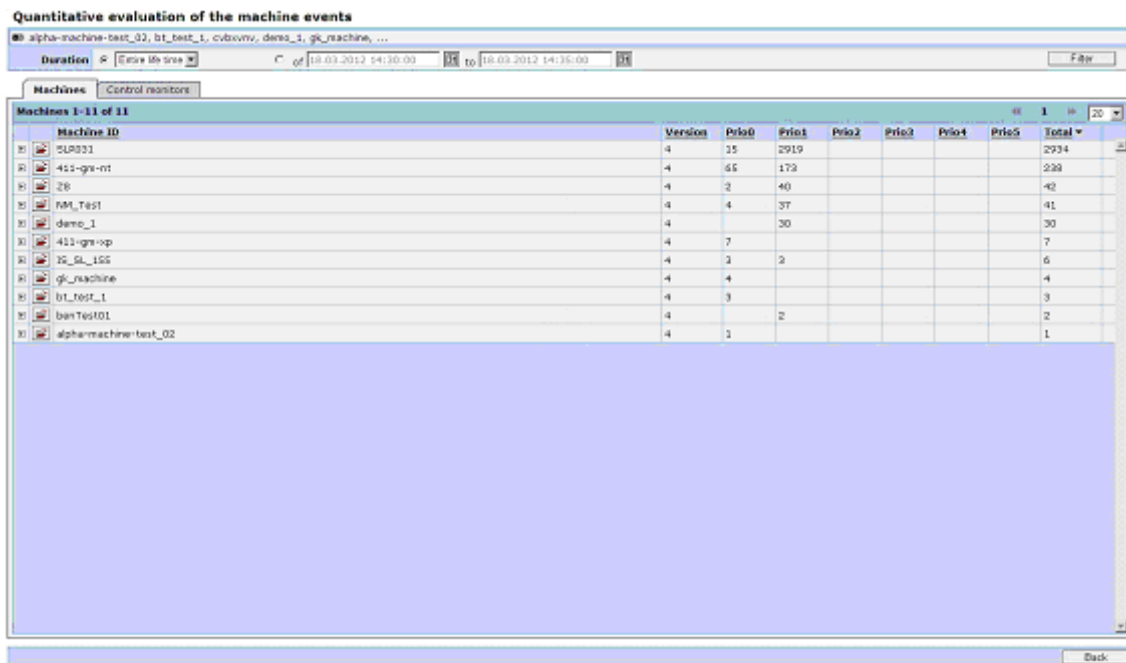


Fig. 5-4: Machine events: Quantitative analysis

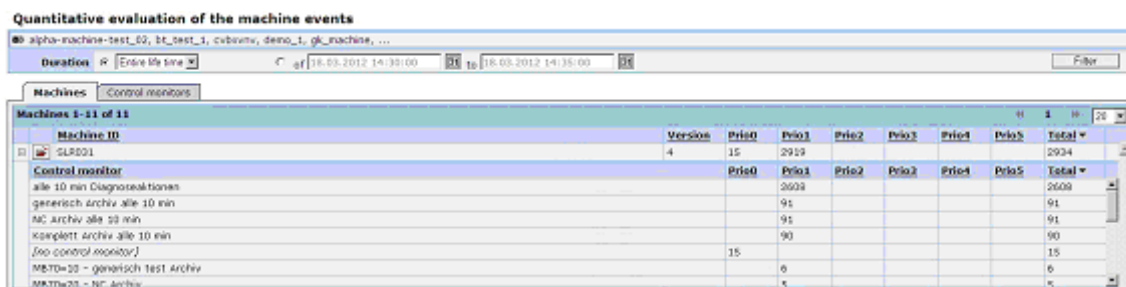



Fig. 5-5: Control monitor (detailed view)

Function	Description	Type
	A yellow icon indicates an active filter. The filter conditions are displayed if they fit in the line.	DISPLAY
Time period	In addition to being set over the entire period, the filter can also be set with retrospective effect from the current date back to the last day, last week, or last months. To search for events after they have occurred, you can restrict the time period for the display of events with a calendar function.	SELECTION DISPLAY SELECTION DISPLAY

Function	Description	Type
Filtering	Events are displayed according to the selected time frame.	ACTION
Number of lines	The number in the display indicates the number of lines per screen that can be shown in this menu. You can select up to 200 lines. A scroll bar appears on the screen.	DISPLAY SELECTION
Machine ID	Displays the name entered under machine ID in the machine master data. The "+" icon permits the control monitors of the individual machines to be displayed below each machine. Clicking on the "Folder" icon branches directly to the machine events for this particular machine without changing filters or filter period.	DISPLAY SELECTION ACTION
Version	Displays the SINUMERIK Integrate version: 3 or 4	DISPLAY
Prio 0 to 5	Total number of events with the specific priority assigned by the user for the control monitor. If the control monitors for the machine was opened with the "+" icon, the number of entries is also displayed for each control monitor.	DISPLAY
Total	Total number of events of all priorities. If the control monitors for the machine were opened with the "+" icon, the number of entries is also displayed for each control monitor.	DISPLAY
Back	Back to the basic menu "Statistics/Export"	ACTION

Identifying suspicious problems

Quantitative evaluation of the machine events

alpha-machine-test_02_bt_test_1_cybrmv_demo_1_gk_machine, ...

Duration: [Enter time] of 10.03.2012 14:30:00 to 10.03.2012 14:35:00 Filter

Machines Control monitors

Control monitors 1-20 of 27

Control monitor	Prio0	Prio1	Prio2	Prio3	Prio4	Prio5	Total
alle 10 min Diagnoseaktionen		2609					2609
34 Auftrag 20 Minuten		172					172
generisch archiv alle 10 min		91					91
NC archiv alle 10 min		91					91
Komplett Archiv alle 10 min		90					90
Archiv		87					87
MACHINEONCTRLMON	37						37
[no control monitor]	36						36
demo_sm_1		30					30
KomplettArchiv		24					24
MACHINEONLINECTRLMON	22						22
GenerischeDatensicherung		16					16
MACHINECONNECTEDCTRLMON	9						9
MBT0+20 - generisch test Archiv		6					6
MBT0+20 - NC Archiv		5					5
MBT0+20 - HMI Daten		5					5
generisch test archiv mit MBT0+10		4					4
MBT0+30 - PLC archiv		4					4
MBT0+40 - NC mit kompensationsdaten		4					4
MBT0+50 - Antriebsdaten		4					4

Fig. 5-6: Evaluation of the control monitors

Control monitor	Prio0	Prio1	Prio2	Prio3	Prio4	Prio5	Total
alle 10 min Diagnoseaktionen		2608					2608
IH Auftrag 30 Minuten		173					173
generisch Archiv alle 10 min		91					91
MC Archiv alle 30 min		91					91
Komplett Archiv alle 10 min		90					90
Archiv		27					27
MACHINECONNECTMON	27						27
[no control monitor]	36						36
demo_en_1		30					30
KomplettArchiv		24					24
MACHINEONLINECTRMON	22						22
GenerischDatensicherung		16					16
MACHINECONNECTCTRMON	9						9

Machine ID	Version	Prio0	Prio1	Prio2	Prio3	Prio4	Prio5	Total
411-gm-nf	4	8						8
411-gm-sp	4	1						1

Fig. 5-7: Machine selection

Function	Description	Type
	A yellow icon indicates an active filter. The filter conditions are displayed provided they fit in the line.	DISPLAY
Time period	In addition to being set over the entire period, the filter can also be set with retrospective effect from the current date back to the last day, last week, or last months.	SELECTION DISPLAY
	To search for events after they have occurred, you can restrict the time period for the display of events with a calendar function.	SELECTION DISPLAY
Filtering	Events are displayed according to the selected time frame.	ACTION
Number of lines	The number in the display indicates the number of lines per screen that can be shown in this menu. You can select up to 200 lines. A scroll bar will then be displayed on the screen.	DISPLAY SELECTION
Control monitor	Events are sorted by the linked control monitors in descending order over all selected machines. Click on the "+" icon to display the machines in which the control monitor is used. This display corresponds to the display described above for machines with events. Within this selection, you can click the "Folder" icon to branch directly to the machine events to see this particular machine without changing filters or filter period.	DISPLAY SELECTION ACTION
Prio 0 to 5	Total number of events with the specific priority assigned by the user for the control monitor.	DISPLAY

Function	Description	Type
Total	Total number of events of all priorities: If the control monitors for the machine were opened with the "+" icon, the number of entries is also displayed for each control monitor.	DISPLAY
Back	Back to the basic menu "Statistics/Export"	ACTION

5.1.3 Measuring series

Function description

On the basis of a measuring series of an examined machine, it is often not possible to decide whether the viewed machine is in a good or a poor condition. This applies in particular when only few measurement data is available for the inspected machine. By comparing the measurement data between machines of the same make, you might be able to assess even with few data records whether a machine is in an acceptable condition.

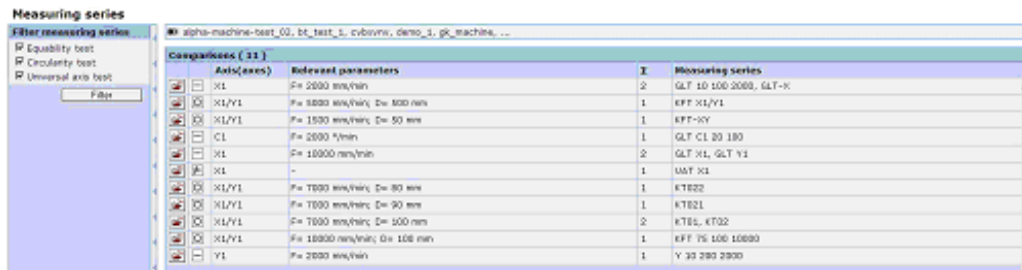


Fig. 5-8: Initial state of the multiple-machine evaluation

Machine selection

The machines that are to be included in the comparative inspection of measurement series are selected via the group at "Select machine".

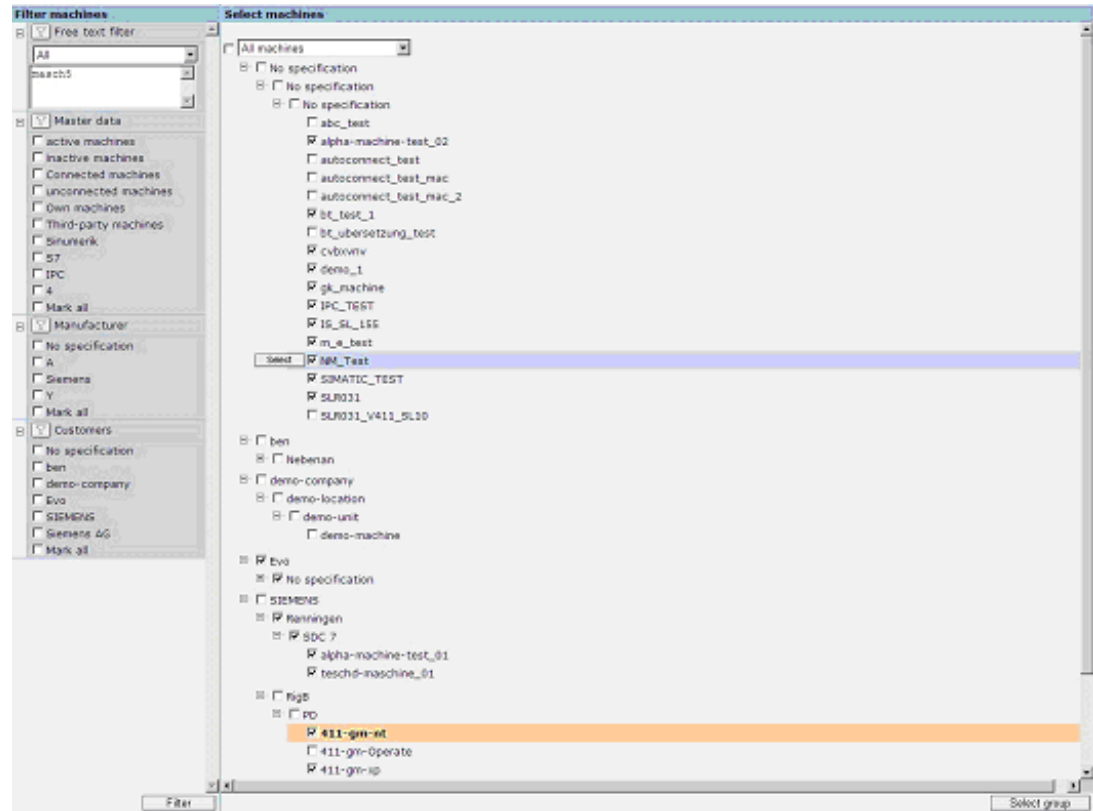


Fig. 5-9: Selecting machines via the machine tree

Selection of measurement series

After the selection of the machines that are to be considered, the system creates an overview of the comparable measurement series. This overview contains the following information:

- Name of the measured axis
- Values of the measurement series parameter relevant for the comparison
- Number of machines that have a comparable measurement series

Comparisons (11)				
	Axis(axis)	Relevant parameters	Σ	Measuring series
	X1	F= 2000 mm/min	2	GLT 10 100 2000, GLT-X
	X1/Y1	F= 5000 mm/min; D= 500 mm	1	KFT X1/Y1
	X1/Y1	F= 1500 mm/min; D= 50 mm	1	KFT-XY
	C1	F= 2000 °/min	1	GLT C1 20 100
	X1	F= 10000 mm/min	2	GLT X1, GLT Y1
	X1	-	1	UAT X1
	X1/Y1	F= 7000 mm/min; D= 80 mm	1	KT022
	X1/Y1	F= 7000 mm/min; D= 90 mm	1	KT021
	X1/Y1	F= 7000 mm/min; D= 100 mm	2	KT01, KT02
	X1/Y1	F= 10000 mm/min; D= 100 mm	1	KFT 75 100 10000
	Y1	F= 2000 mm/min	1	Y 10 200 2000

Fig. 5-10: Overview of the measurement series groups

Click on the "Open" icon in the line concerned to select the measurement series.

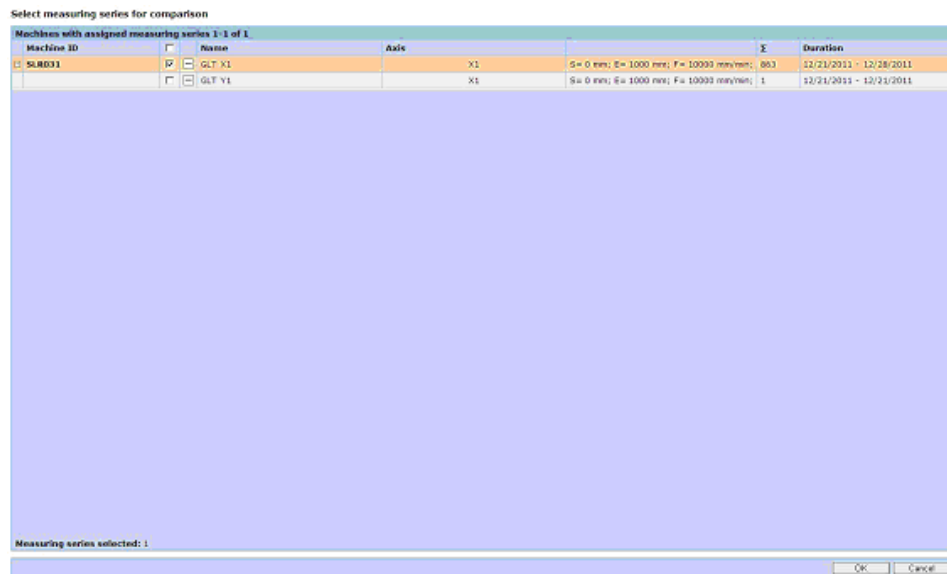


Fig. 5-11: Comparing measurement series of the selected measurement series group

In an overview, the system shows all measurement series examined in one comparison grouped by machines. In this overview, the selection of the measurement series to be examined in the comparison function can be changed. The system makes a preselection, to the effect that from each machine only one measurement series will be considered for displaying. The criteria for this preselection is the number of measurements contained in the measurement series. For each machine, the measurement series with most measurements will be marked as selected. By selecting, this preselection can be overwritten as required.

Displaying measurement series

In order to display measurement series in a diagram, the machine operator must select the required characteristic from the table. The system generates a diagram that shows the progress in time of the selected characteristic for each measurement series considered in the comparative display. There are various functions available for changing the diagram or displaying detailed information.

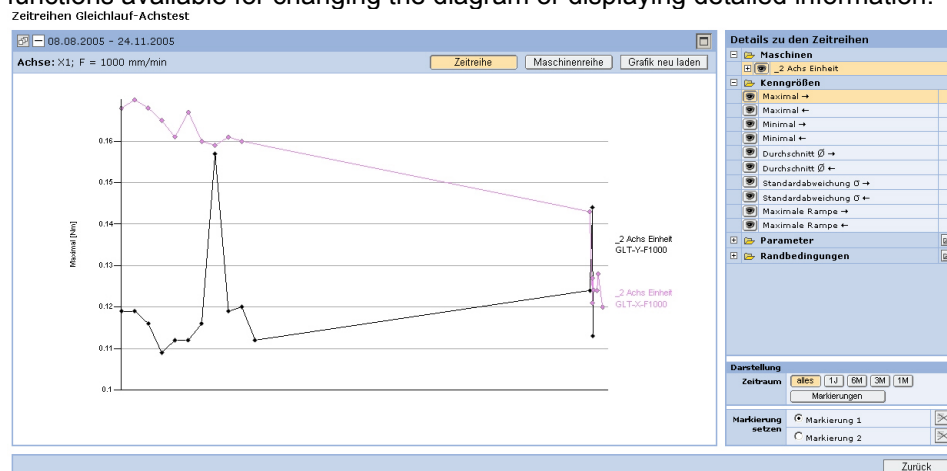


Fig. 5-12: Displaying the measurement series as time series

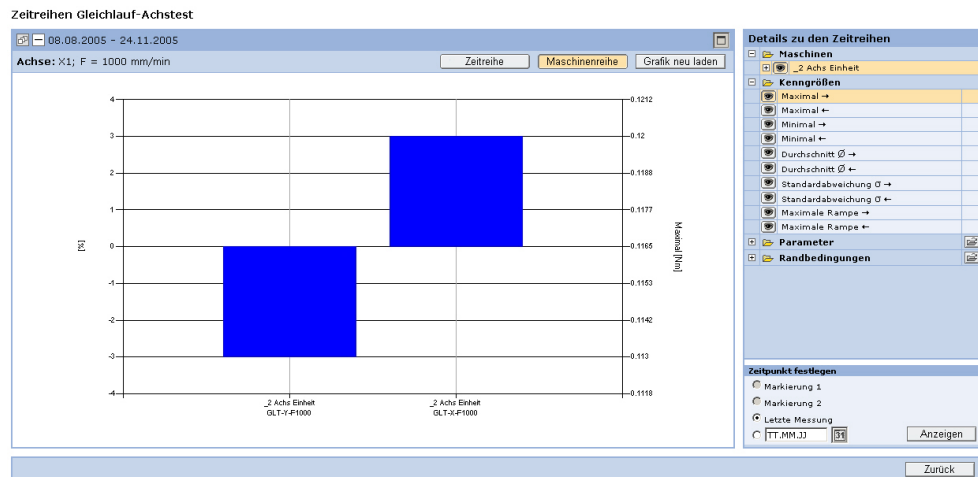

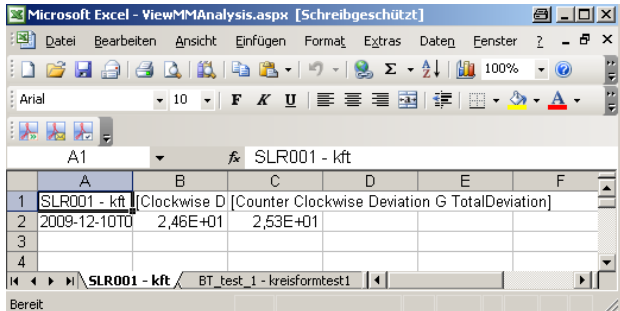


Fig. 5-13: Displaying the measurement series as machine series

Function	Description
Time series	This function displays the progression over time of the selected characteristic within the defined period.
Machine series	This function displays the selected characteristic from the compared measurement series at a defined point in time. It is displayed as a bar chart. The ordinate at the left-hand side indicates the relative deviation from the average value of the examined characteristics values. The right-hand ordinate indicates the absolute value.
Reload the graphics	Changing settings will update and reload the graphics.
Details of the time series	
Machines	In the "Machines" table, all measurement series considered in the comparative function will be listed by machines. Individual measurement series can be excluded from being displayed in the diagram or included again.
Characteristics	The table shows the characteristics that are calculated for the examined type of measurement series. The representation in the diagram requires a characteristic to be selected.
Parameters	The pull-down "Parameters" table shows the parameters of the measurement being performed. Parameters that are not identical in all measurement series are marked. Click on the "Open" icon in the table to display a detailed view of the parameters for each individual measurement series.
Boundary conditions	The pull-down "Boundary conditions" table shows the supplementary conditions of the measurement being performed. Supplementary conditions that are not identical in all measurement series are marked. Click the "Open" icon in the table to display a detailed view of the supplementary conditions for each individual measurement series.

Function	Description
Representation	
Duration	The time frame to be examined as a time series in the display can be adjusted. You can select certain defined periods or a period limited by two marks in the displayed diagram.
Set marker	Double-click to set two marks in the representation as time series. These marks specify the individual characteristic values at this point in time and serve to define a time period or a point in time.
Defining a point in time (with machine series)	
	In the display as machine series, you can define the reference time. You can enter the point in time explicitly or use one of the two marks.
	<p>With this function, all values of the data points are exported to an Excel file.</p> <p>The data points of each data series are stored in separate tables.</p> 

5.1.4 Variable monitors

The data recorded via variable monitors can be displayed for all machines. To do this, select a group of machines via the "Select machine" menu. Only data series of the same name can be compared.

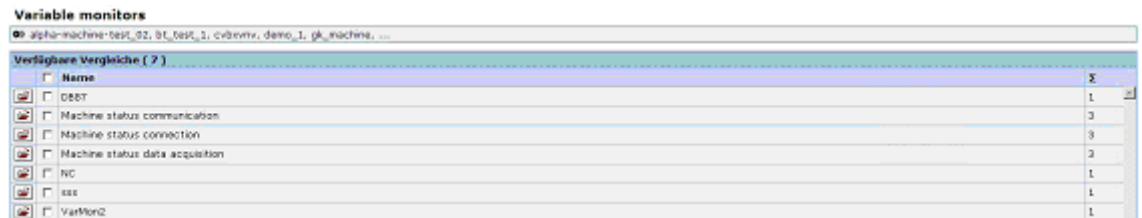


Fig. 5-14: Display of all comparable data series of the selected machine group

Function	Description	Type
All machines	Display of the number of machines that are selected as a group.	DISPLAY
Available comparisons ()	Displays the number of comparisons between the variable monitors of the machines in the group that are possible. The decisive factor is the same name.	DISPLAY
Name	List of all variable monitors of the machines in the selected group. Simultaneous selection and deselection of all variable monitors via a checkbox.	DISPLAY SELECTION (Toggle)
	Direct change to the display of the variables of the data series.	DISPLAY
	The variable monitors to be compared are selected by activating the checkboxes.	DISPLAY SELECTION
Σ	The number of machines with variable monitors of the same name in the selected group is displayed below the sum sign.	DISPLAY
Cancel	Return to the previous menu without executing the action.	ACTION
OK	A changeover is made to the variable monitor selection.	ACTION

5.1 Multi-machine views

Variable monitors		
M-XR4/07, M-XR4/08, M-XR4/12, MDEV-PCU341		
Verfügbare Vergleiche (6)		
<input type="checkbox"/> Name		Σ
<input type="checkbox"/> machine status communication		4
<input type="checkbox"/> machine status connection		4
<input type="checkbox"/> machine status data acquisition		4
<input type="checkbox"/> test		1
<input type="checkbox"/> VarMon		4
<input type="checkbox"/> VarMon2		4

Fig. 5-15: Display of the variables that are available for comparison

Select variable for comparison				
Machines with assigned variable monitors 1-3 of 3				
Machine ID	Variable monitor	Variable	Σ	Duration
411-gm-at	<input checked="" type="checkbox"/> Machine status connection	Machine connected	0	2/26/2012 6:40:58 AM - 4/25/2012 7:34:25 AM
411-gm-xp	<input checked="" type="checkbox"/> Machine status connection	Machine connected	1	3/20/2012 2:01:22 PM
SLR031	<input checked="" type="checkbox"/> Machine status connection	Machine connected	0	-

Fig. 5-16: Selection of variables

Function	Description	Type
Machines with assigned variables monitors	Display of the number of machines that are selected as a group.	DISPLAY
Machine ID	Display of the machine name in order to specifically select the variable to be compared.	DISPLAY
Variable monitor	List of the variable monitors for each machine. The variable monitors for the comparison are selected and deselected via the checkboxes.	DISPLAY SELECTION (Toggle)
Variable	Display of all variables within a variable monitor that are to be configured.	DISPLAY
Σ	The number of machines with variable monitors of the same name in the selected group is displayed below the sum sign.	DISPLAY
Duration	Display of the time period during which the variable monitor is configured.	
Cancel	Return to the previous menu without executing the action.	ACTION
OK	Pressing the button transitions to the variable selection of the selected monitors.	ACTION

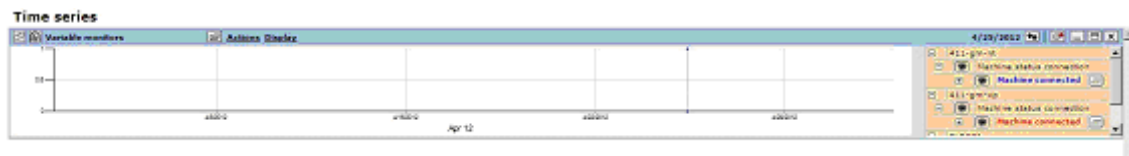


Fig. 5-17: Display of the data points of each selected variable

For information on the operation of the graphic display, see Section: Variable monitors – time series – measurements and measurement series.

5.1.5 Reports

Function description

Reports are available as an option in SINUMERIK Integrate. These reports provide an overview of all events on the machines of an organization, within a fixed time frame of one week. Within an organization, it is possible to group machine master data by "Manufacturer" or "Location".

A report shows all events compiled by the machines over the course of a week in a summary report.

Other reports show totaled and extreme values for each machine and event type, and also use color coding.

Data report (cross-machine summary report)

This report contains individual information for all characteristics that are subject to limit values, with evaluations grouped and a total displayed with color coding.

- Axis test, 3 times, per axis test type (yellow / red; number of limit value violations)
- PLC variable evaluations (yellow / red; number of limit violations)
- NC variable evaluations n (yellow / red; number of limit violations)
- Machine events (number only)
- Notifications (number only)

A machine is shown on each line of the selection. You can branch to the corresponding individual machine report via a link. The individual machine report can also be selected directly via the menu.

Individual machine reports

Kostenstelle

Bericht anzeigen

1 von 1 100% Suchen | Weiter

Monitoring Übersicht nach Kostenstelle

Analyze MyCondition Reporting

Hersteller	Beschreibung	Kostenstelle	Prod. Einheit
Report von: 01.01.2000 01:00 bis: 01.01.3000 01:00		Bearbeiter: gk Datum: 18.02.2013 10:16	

Maschinen ID	Prod.-Einheit	GLAT	Achstests	KFT	UAT	Variablenmonitore	Ereignisse	E-Mail/SMS
		22 / 27	3 / 10	3 / 10	10 / 13	56	0	
m	Prod.-Einheit	17 / 17			0 / 2	56	0	
maschine	Prod.-Einheit	5 / 10	3 / 10	3 / 10	10 / 11	0	0	

(.01.01.2000 bis 01.01.3000)

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Fig. 5-18: Example of individual machine report

Individual machine reports contain detailed depictions of each axis test and monitor type. In addition, all monitors configured for a machine are displayed individually in alphabetical order.

The display also shows a neutral representation, which indicates that the monitor did not detect or evaluate any data during the report interval.

The evaluated data is shown with color coding that reflect the associated limit values. Evaluations are performed on specific days for all events of the individual monitor. The highest priority is given to the worst result.

Monitor Grenzwertanalyse				Analyze MyCondition Reporting			
	Hersteller Herstellername	Beschreibung Kommentar	Kostenstelle Standort	Prod. Einheit Prod.-Einheit			
maschine <i>Name intern</i>		Report von: 01.01.2000 01:00 bis: 01.01.3000 01:00		Bearbeiter: gk Datum: 12.02.2013 08:57			
zurück							
Name des Monitors	01.01.2000	02.01.2000	03.01.2000	04.01.2000	05.01.2000	06.01.2000	07.01.2000
MACHINEISONVARMONITOR							
maschine_var_1							
maschine_var_10							
maschine_var_2							
maschine_var_3							
maschine_var_4							
maschine_var_5							
maschine_var_6							
maschine_var_7							
maschine_var_8							
maschine_var_9							
(maschine.01.01.2000 bis 01.01.3000)							
Seite 1 / 1				Copyright Siemens AG 2013. All rights reserved. zurück			

Fig. 5-19: Example of a continuous test

Monitor Grenzwertanalyse				Analyze MyCondition Reporting			
	Hersteller Herstellername	Beschreibung Kommentar	Kostenstelle Standort	Prod. Einheit Prod.-Einheit			
maschine Name intern		Report von: 01.01.2000 01:00 bis: 01.01.3000 01:00		Bearbeiter: gk Datum: 12.02.2013 08:59			
zurück							
Name des Monitors	01.01.2000	02.01.2000	03.01.2000	04.01.2000	05.01.2000	06.01.2000	07.01.2000
MACHINEISONVARMONITOR							
maschine_var_1							
maschine_var_10							
maschine_var_2							
maschine_var_3							
maschine_var_4							
maschine_var_5							
maschine_var_6							
maschine_var_7							
maschine_var_8							
maschine_var_9							
(maschine.01.01.2000 bis 01.01.3000)							
Seite 1 / 1				Copyright Siemens AG 2013. All rights reserved. zurück			

Fig. 5-20: Example of monitors

Management report

To ensure consistent documentation and change management, SINUMERIK Integrate provides a report detailing all changes made to configurations of a machine, along with the date and time, the currently logged on engineer, and the name of the configuration that was created or changed.

In this case, the following restrictions apply:

- It is not possible to log the deletion of a configuration or the name of a configuration that has been renamed.
- Once a report has been selected, all reports available for the organization are offered. The reports below relate to logging changes made to configurations.
- The total number of changes shows not only how many changes were made, but also whether changes were made and when, as well as when the most recent change was made (adjustment for updates).
- The individual machine log assumes that a machine for logging all changes was selected, and that it logged which user made the change, which configuration was changed, and when the change took place.

Management report for machine groups

Config Test Org1				Author:	rkp1	
				Date:	10.08.2007 06:24:13	
Machine ID	Internal name	Location	Production unit	Responsible organization	Last change	Number of changes
101	endcustomer's name for 101	Location 1	production unit for 101	Config Test Org1	10.08.2007 06:24:13	<u>0</u>
102	endcustomer's name for 102	Location 1	production unit for 102	Config Test Org1	10.08.2007 06:24:14	<u>39</u>
103	endcustomer's name for 103	Location 1	production unit for 103	Config Test Org1	10.08.2007 06:24:14	<u>39</u>
104	endcustomer's name for 104	Location 2	production unit for 104	Config Test Org1	10.08.2007 06:24:14	<u>52</u>
105	endcustomer's name for 105	Location 1	production unit for 105	Config Test Org1	10.08.2007 06:24:14	<u>26</u>
106	endcustomer's name for 106	Location 3	production unit for 106	Config Test Org1	10.08.2007 06:24:14	<u>91</u>
107	endcustomer's name for 107	Location 2	production unit for 107	Config Test Org1	10.08.2007 06:24:14	<u>26</u>
108	endcustomer's name for 108	Location 3	production unit for 108	Config Test Org1	10.08.2007 06:24:14	<u>91</u>
109	endcustomer's name for 109	Location 2	production unit for 109	Config Test Org1	10.08.2007 06:24:14	<u>78</u>
1010	endcustomer's name for 1010	Location 3	production unit for 1010	Config Test Org1	10.08.2007 06:24:15	<u>117</u>
1011	endcustomer's name for 1011	Location 2	production unit for 1011	Config Test Org1	10.08.2007 06:48:36	<u>0</u>
1012	endcustomer's name for 1012	Location 2	production unit for 1012	Config Test Org1	10.08.2007 06:48:36	<u>78</u>
1013	endcustomer's name for 1013	Location 2	production unit for 1013	Config Test Org1	10.08.2007 06:48:37	<u>65</u>
1014	endcustomer's name for 1014	Location 1	production unit for 1014	Config Test Org1	10.08.2007 06:48:37	<u>91</u>
1015	endcustomer's name for 1015	Location 3	production unit for 1015	Config Test Org1	10.08.2007 06:48:37	<u>104</u>
1016	endcustomer's name for 1016	Location 2	production unit for 1016	Config Test Org1	10.08.2007 06:48:37	<u>78</u>
1017	endcustomer's name for 1017	Location 1	production unit for 1017	Config Test Org1	10.08.2007 06:48:37	<u>39</u>
1018	endcustomer's name for 1018	Location 3	production unit for 1018	Config Test Org1	10.08.2007 06:48:37	<u>104</u>
1019	endcustomer's name for 1019	Location 2	production unit for 1019	Config Test Org1	10.08.2007 06:48:37	<u>78</u>
1020	endcustomer's name for 1020	Location 1	production unit for 1020	Config Test Org1	10.08.2007 06:48:37	<u>39</u>

Management report for individual machines

Config Test Org1	Internal name endcustomer's name for 1015	Description description for 1015	Location Location 3	Production unit production unit for 1015
1015		Author: Date:	rkp1 10.08.2007 06:24:13	
Type of configuration	Name	Time of change	Changed by	
PLC Monitor	PlcMonitor_Name_9	11.08.2007 08:36:11	LastName, FirstName	
NC Monitor	NcMonitor_Name_9	11.08.2007 08:36:11	LastName, FirstName	
CondMonSettings	CondMonSettings_Name_9	11.08.2007 08:36:11	LastName, FirstName	
CondMonitorSeries	CondMonitorSeries_Name_9	11.08.2007 08:36:11	LastName, FirstName	
CondMonitorSuite	CondMonitorSuite_Name_9	11.08.2007 08:36:11	LastName, FirstName	
ControlMonitor	ControlMonitor_Name_9	11.08.2007 08:36:11	LastName, FirstName	
MaintTicketTemplate	MaintTicketTemplate_Name_9	11.08.2007 08:36:11	LastName, FirstName	
NotificationAddress	NotificationAddress_Name_9	11.08.2007 08:36:11	LastName, FirstName	
PlcModule	PlcModule_Name_9	11.08.2007 08:36:11	LastName, FirstName	
PlcInterface	PlcInterface_Name_9	11.08.2007 08:36:11	LastName, FirstName	
ProEpiLog	ProEpiLog_Name_9	11.08.2007 08:36:11	LastName, FirstName	
<unknown Item: "HeartbeatSettings" >	HeartbeatSettings_Name_9	11.08.2007 08:36:11	LastName, FirstName	
Machine master data	Machine_Name_9	11.08.2007 08:36:11	LastName, FirstName	
PlcMonitor	PlcMonitor_Name_9	11.08.2007 08:36:11	LastName, FirstName	
Nc Monitor	NcMonitor_Name_9	11.08.2007 08:36:11	LastName, FirstName	
CondMonSettings	CondMonSettings_Name_9	11.08.2007 08:36:11	LastName, FirstName	
CondMonitorSeries	CondMonitorSeries_Name_9	11.08.2007 08:36:11	LastName, FirstName	
CondMonitorSuite	CondMonitorSuite_Name_9	11.08.2007 08:36:11	LastName, FirstName	
ControlMonitor	ControlMonitor_Name_9	11.08.2007 08:36:11	LastName, FirstName	
NotificationAddress	NotificationAddress_Name_9	11.08.2007 07:55:22	LastName, FirstName	
PlcModule	PlcModule_Name_9	11.08.2007 07:55:22	LastName, FirstName	
PlcInterface	PlcInterface_Name_9	11.08.2007 07:55:22	LastName, FirstName	
ProEpiLog	ProEpiLog_Name_9	11.08.2007 07:55:22	LastName, FirstName	
<unknown Item: "HeartbeatSettings" >	HeartbeatSettings_Name_9	11.08.2007 07:55:22	LastName, FirstName	
Machine master data	Machine_Name_9	11.08.2007 07:55:22	LastName, FirstName	
PlcMonitor	PlcMonitor_Name_9	11.08.2007 07:55:22	LastName, FirstName	
Nc Monitor	NcMonitor_Name_9	11.08.2007 07:55:22	LastName, FirstName	
CondMonSettings	CondMonSettings_Name_9	11.08.2007 07:55:22	LastName, FirstName	
CondMonitorSeries	CondMonitorSeries_Name_9	11.08.2007 07:55:22	LastName, FirstName	
CondMonitorSuite	CondMonitorSuite_Name_9	11.08.2007 07:55:22	LastName, FirstName	
ControlMonitor	ControlMonitor_Name_9	11.08.2007 07:55:22	LastName, FirstName	
MaintTicketTemplate	MaintTicketTemplate_Name_9	11.08.2007 07:55:22	LastName, FirstName	
NotificationAddress	NotificationAddress_Name_9	11.08.2007 07:55:22	LastName, FirstName	
PlcModule	PlcModule_Name_9	11.08.2007 07:55:22	LastName, FirstName	
PlcInterface	PlcInterface_Name_9	11.08.2007 07:55:22	LastName, FirstName	
ProEpiLog	ProEpiLog_Name_9	11.08.2007 07:55:22	LastName, FirstName	
<unknown Item: "HeartbeatSettings" >	HeartbeatSettings_Name_9	11.08.2007 07:55:22	LastName, FirstName	
Machine master data	Machine_Name_9	11.08.2007 07:55:22	LastName, FirstName	
Machine master data	Machine_Name_8	11.08.2007 05:29:10	LastName, FirstName	
PlcMonitor	PlcMonitor_Name_8	11.08.2007 05:29:10	LastName, FirstName	
Nc Monitor	NcMonitor_Name_8	11.08.2007 05:29:10	LastName, FirstName	
CondMonSettings	CondMonSettings_Name_8	11.08.2007 05:29:10	LastName, FirstName	
CondMonitorSeries	CondMonitorSeries_Name_8	11.08.2007 05:29:10	LastName, FirstName	
CondMonitorSuite	CondMonitorSuite_Name_8	11.08.2007 05:29:10	LastName, FirstName	
ControlMonitor	ControlMonitor_Name_8	11.08.2007 05:29:10	LastName, FirstName	
MaintTicketTemplate	MaintTicketTemplate_Name_8	11.08.2007 05:29:10	LastName, FirstName	
NotificationAddress	NotificationAddress_Name_8	11.08.2007 05:29:10	LastName, FirstName	
PlcModule	PlcModule_Name_8	11.08.2007 05:29:10	LastName, FirstName	
PlcInterface	PlcInterface_Name_8	11.08.2007 05:29:10	LastName, FirstName	
ProEpiLog	ProEpiLog_Name_8	11.08.2007 05:29:10	LastName, FirstName	
<unknown Item: "HeartbeatSettings" >	HeartbeatSettings_Name_8	11.08.2007 05:29:10	LastName, FirstName	

Config Test Org1	Internal name endcustomer's name for 1015	Description description for 1015	Location Location 3	Production unit production unit for 1015
1015		Author: Date:	rkp1 10.08.2007 06:24:13	
Type of configuration	Name	Time of change	Changed by	
Machine master data	Machine_Name_8	11.08.2007 05:29:10	LastName, FirstName	
PlcMonitor	PlcMonitor_Name_8	11.08.2007 05:29:10	LastName, FirstName	
Nc Monitor	NcMonitor_Name_8	11.08.2007 05:29:10	LastName, FirstName	
<unknown Item: "HeartbeatSettings" >	HeartbeatSettings_Name_6	10.08.2007 22:30:06	LastName, FirstName	
Machine master data	Machine_Name_6	10.08.2007 22:30:06	LastName, FirstName	
PlcMonitor	PlcMonitor_Name_6	10.08.2007 22:30:06	LastName, FirstName	
Nc Monitor	NcMonitor_Name_6	10.08.2007 22:30:06	LastName, FirstName	
CondMonSettings	CondMonSettings_Name_6	10.08.2007 22:30:06	LastName, FirstName	
CondMonitorSeries	CondMonitorSeries_Name_6	10.08.2007 22:30:06	LastName, FirstName	
CondMonitorSuite	CondMonitorSuite_Name_6	10.08.2007 22:30:06	LastName, FirstName	
ControlMonitor	ControlMonitor_Name_6	10.08.2007 22:30:06	LastName, FirstName	
MaintTicketTemplate	MaintTicketTemplate_Name_6	10.08.2007 22:30:06	LastName, FirstName	
NotificationAddress	NotificationAddress_Name_6	10.08.2007 22:30:06	LastName, FirstName	
PlcModule	PlcModule_Name_6	10.08.2007 22:30:06	LastName, FirstName	
PlcInterface	PlcInterface_Name_6	10.08.2007 22:30:06	LastName, FirstName	
ProEpiLog	ProEpiLog_Name_6	10.08.2007 22:30:06	LastName, FirstName	
<unknown Item: "HeartbeatSettings" >	HeartbeatSettings_Name_6	10.08.2007 22:30:06	LastName, FirstName	
MaintTicketTemplate	MaintTicketTemplate_Name_5	10.08.2007 21:49:17	LastName, FirstName	
NotificationAddress	NotificationAddress_Name_5	10.08.2007 21:49:17	LastName, FirstName	
PlcModule	PlcModule_Name_5	10.08.2007 21:49:17	LastName, FirstName	
PlcInterface	PlcInterface_Name_5	10.08.2007 21:49:17	LastName, FirstName	
ProEpiLog	ProEpiLog_Name_5	10.08.2007 21:49:17	LastName, FirstName	
<unknown Item: "HeartbeatSettings" >	HeartbeatSettings_Name_5	10.08.2007 21:49:17	LastName, FirstName	
Machine master data	Machine_Name_5	10.08.2007 21:49:17	LastName, FirstName	
PlcMonitor	PlcMonitor_Name_5	10.08.2007 21:49:17	LastName, FirstName	
Nc Monitor	NcMonitor_Name_5	10.08.2007 21:49:17	LastName, FirstName	
CondMonSettings	CondMonSettings_Name_5	10.08.2007 21:49:17	LastName, FirstName	
CondMonitorSeries	CondMonitorSeries_Name_5	10.08.2007 21:49:17	LastName, FirstName	
CondMonitorSuite	CondMonitorSuite_Name_5	10.08.2007 21:49:17	LastName, FirstName	
ControlMonitor	ControlMonitor_Name_5	10.08.2007 21:49:17	LastName, FirstName	
MaintTicketTemplate	MaintTicketTemplate_Name_5	10.08.2007 21:49:17	LastName, FirstName	
NotificationAddress	NotificationAddress_Name_5	10.08.2007 21:49:17	LastName, FirstName	
PlcModule	PlcModule_Name_5	10.08.2007 21:49:17	LastName, FirstName	
PlcInterface	PlcInterface_Name_5	10.08.2007 21:49:17	LastName, FirstName	
ProEpiLog	ProEpiLog_Name_5	10.08.2007 21:49:17	LastName, FirstName	

5.1.6 Comparing Configurations

Function description

In order to be able to compare the configurations of several machines, a freely selectable group of machines can be compared with a sample machine.

The result is an overview which shows all the differences between the sample machine and each individual machine of the group.

The following differences are shown:

- Different names of the configurations
- Non-existing configurations
- Too many existing configurations

The result of the comparison can be exported or printed, for post-editing the configurations, for example.

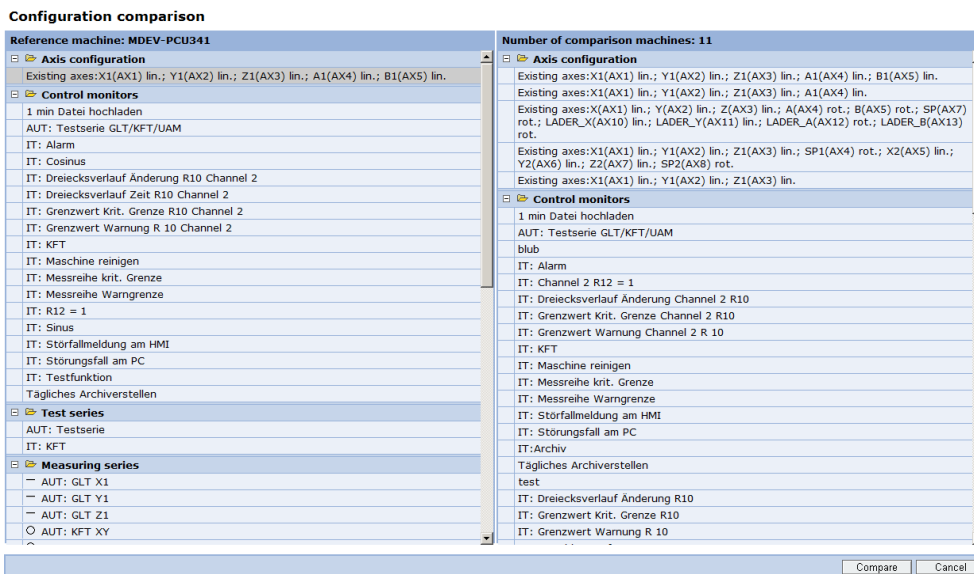


Fig. 5-21: Example of monitors

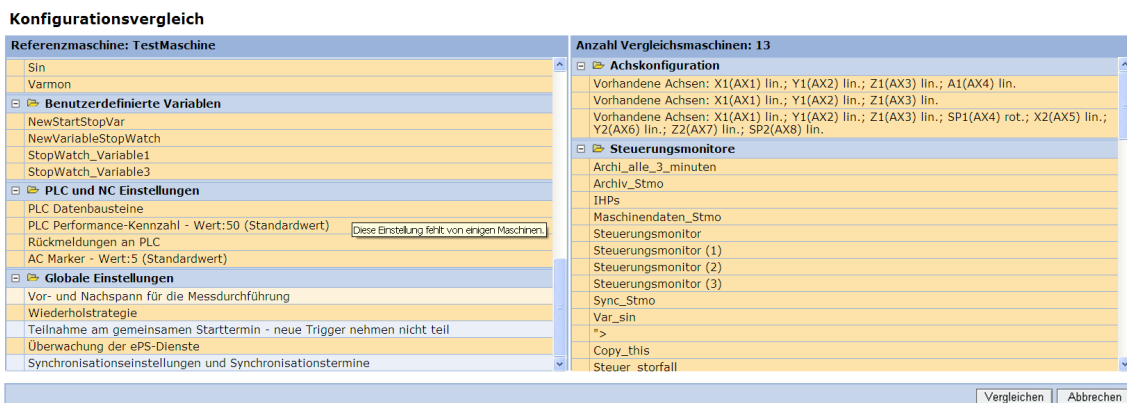


Fig. 5-22: Comparing configurations

Konfigurationsvergleich

Referenzmaschine: Machine_test	Anzahl Vergleichsmaschinen: 2
<ul style="list-style-type: none"> Achskonfiguration <ul style="list-style-type: none"> Vorhandene Achsen: X1(AX1) lin.; Y1(AX2) lin.; Z1(AX3) lin.; A1(AX4) lin. Steuerungsmonitore <ul style="list-style-type: none"> Steuerungsmonitor Testserien Messreihen Instandhaltungspläne Variablenmonitore Benutzerdefinierte Variablen PLC und NC Einstellungen <ul style="list-style-type: none"> PLC Performance-Kennzahl - Wert:50 (Standardwert) AC Marker - Wert:5 (Standardwert) Globale Einstellungen <ul style="list-style-type: none"> Vor- und Nachspann für die Messdurchführung - (Standard-Einstellung) Wiederholstrategie Teilnahme am gemeinsamen Starttermin - neue Trigger nehmen nicht teil Überwachung der ePS-Dienste 	<ul style="list-style-type: none"> <ul style="list-style-type: none"> kft3 uat1 UAT1 (1) UAT2 Instandhaltungspläne Variablenmonitore Benutzerdefinierte Variablen PLC und NC Einstellungen <ul style="list-style-type: none"> PLC Performance-Kennzahl - Wert:50 (Standardwert) Rückmeldungen an PLC AC Marker - Wert:5 (Standardwert) PLC Datenbausteine Globale Einstellungen <ul style="list-style-type: none"> Vor- und Nachspann für die Messdurchführung Wiederholstrategie Teilnahme am gemeinsamen Starttermin - neue Trigger nehmen nicht teil Überwachung der ePS-Dienste Synchronisationseinstellungen und Synchronisationstermine

Vergleichen Abbrechen

Fig. 5-23: Comparing configurations

Konfigurationsvergleich

Referenzmaschine: Machine_test	Anzahl Vergleichsmaschinen: 2
<ul style="list-style-type: none"> Achskonfiguration <ul style="list-style-type: none"> Vorhandene Achsen: X1(AX1) lin.; Y1(AX2) lin.; Z1(AX3) lin.; A1(AX4) lin. Steuerungsmonitore <ul style="list-style-type: none"> Steuerungsmonitor Testserien Messreihen Instandhaltungspläne Variablenmonitore Benutzerdefinierte Variablen PLC und NC Einstellungen <ul style="list-style-type: none"> PLC Performance-Kennzahl - Wert:50 (Standardwert) AC Marker - Wert:5 (Standardwert) Globale Einstellungen <ul style="list-style-type: none"> Vor- und Nachspann für die Messdurchführung - (Standard-Einstellung) Wiederholstrategie Teilnahme am gemeinsamen Starttermin - neue Trigger nehmen nicht teil Überwachung der ePS-Dienste Synchronisationseinstellungen und Synchronisationstermine 	<ul style="list-style-type: none"> Sin Benutzerdefinierte Variablen <ul style="list-style-type: none"> neue variable NewStartStopVar NewVariableStopWatch StopWatch_Variable1 StopWatch_Variable3 PLC und NC Einstellungen <ul style="list-style-type: none"> PLC Performance-Kennzahl - Wert:50 (Standardwert) Rückmeldungen an PLC AC Marker - Wert:5 (Standardwert) <small>-hat passende Einstellungen in Vergleichsmaschine</small> PLC Datenbausteine Globale Einstellungen <ul style="list-style-type: none"> Vor- und Nachspann für die Messdurchführung Wiederholstrategie Teilnahme am gemeinsamen Starttermin - neue Trigger nehmen nicht teil Überwachung der ePS-Dienste Synchronisationseinstellungen und Synchronisationstermine

Vergleichen Abbrechen

Fig. 5-24: Comparing configurations

Function	Description	Type
Reference machine	<p>Display of the reference machine which is the machine selected for comparison.</p> <p>All configurations are represented by type with their names.</p> <p>Configurations are marked in color with the following meaning: Orange: Different configurations Light blue: Identical configurations</p>	DISPLAY
Number of comparison machines: x	<p>Shows the number of machines in the selected group that are compared.</p> <p>All configurations are shown according to type with the individual names of each machine in the group.</p> <p>Configurations are marked in color with the following meaning: Orange: Different configurations Light blue: Identical configurations</p>	DISPLAY

Function	Description	Type
Compare	A list that shows the differences between the individual machines of the group and the comparison machine is created. The list can be printed.	ACTION
Cancel	Return to the previous menu without executing the action.	ACTION

Configuration comparison

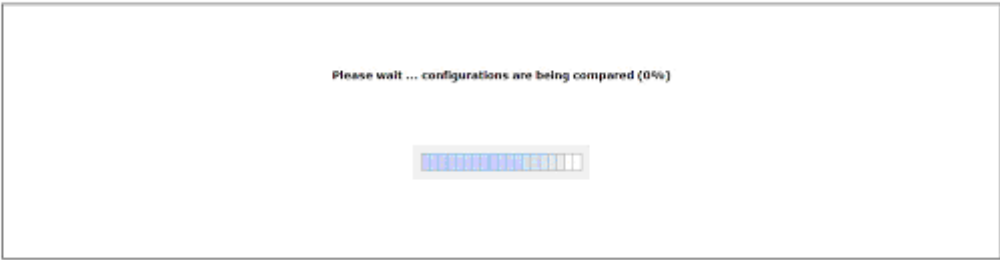



Fig. 5-25: Configuration comparison in progress

Comparison log	
Test series	
Testserie 1	Missing
Testserie 2	Missing
Measuring series	
GLT 10 100 2000	Missing
GLT C1 20 100	Missing
GLT Z1 10 / 1000	Missing
KFT 75 100 10000	Missing
V 50 200 2000	Missing
Maintenance phase	
Täglich alle	Missing
PLC and NC settings	
PLC data blocks	Missing
Global settings	
Leader and trailer for taking the measurements - (Default setting)	Contents not identical.
Differences from machine cxbxvrv	
Name	Status
Axis configuration	
Existing axes: X1(AX1) lin.; Y1(AX2) lin.; Z1(AX3) lin.; C1(AX4) rot.	Missing
Control monitors	
1 Minute Archiv	Missing
DI Auftrag 30 Minuten	Missing
Steuermaschine	Missing
Test series	
Testserie 1	Missing
Testserie 2	Missing
Measuring series	
GLT 10 100 2000	Missing
GLT C1 20 100	Missing
GLT Z1 10 / 1000	Missing
KFT 75 100 10000	Missing
V 50 200 2000	Missing
Maintenance phase	
Täglich alle	Missing
PLC and NC settings	
PLC data blocks	Missing
Global settings	

Fig. 5-26: Comparison log

Abweichungen von Maschine ffjh	
Bezeichnung	Status
Achskonfiguration	
Vorhandene Achsen: X1(AX1) lin.; Y1(AX2) lin.; Z1(AX3) lin.; A2(AX4) lin.; B2(AX5) lin.; C3(AX6) lin.; U3(AX7) lin.; V4(AX8) lin.; W4(AX9) lin.; X5 (AX10) lin.; Y5(AX11) lin.; X6(AX12) lin.; Y6(AX13) lin.	fehlt
Globale Einstellungen	
Überwachung der ePS-Dienste	fehlt

Fig. 5-27: Comparison log block per machine

Function	Description	Type
Reference machine	Name of the comparison machine	DISPLAY
Target machine	List of all machines of the group that were compared with the reference machine.	DISPLAY
User	Logged-on user	DISPLAY
	The printer icon can be used to export the result to a file or a printer.	ACTION
Identical	Number of identical configurations	DISPLAY
Different	Number of different configurations	DISPLAY
Missing	Number of missing configurations	DISPLAY
Axis configuration	Display of all configurations of the reference machine with the status "OK".	DISPLAY
Control monitors	Display of all configurations that differ from the reference machine, each machine in the group.	DISPLAY
Status	The following states are displayed: <ul style="list-style-type: none"> • OK • Contents not identical • Missing • Test serie • Measuring 	DISPLAY
Back	Return to the configuration comparison	ACTION

Print preview A4 Print Exit

Page 1 of 1 Portrait Landscape

Reference machine	411-gm-nt	Identical:	12
Target machines	alpha-machine-test_02; bt_test_1; cvbxvrv; demo_1; gk_machine; IPC_TEST; IS_SL_155; m_e_test; NM_Test; SIMATIC_TEST; SLR031; benTest01; OR_test_machine_1; OR_test_machine_2; alpha-machine-test_01; teschd-machine_01; 411-gm-nt; 411-gm-xp; Z7; Z8	Different:	17
Users	z, w	Missing:	26

Comparison machine 411-gm-nt	
Name	Status
Axis configuration	
Existing axes: X1 (AX1) lin.; Y1 (AX2) lin.; Z1 (AX3) lin.; C1 (AX4) rot.	Does not exist in all machines.
Control monitors	
1 Minute Archiv	Does not exist in all machines.
IH Auftrag 30 Minuten	Does not exist in all machines.
Steuerungsmaschine	Does not exist in all machines.
Test series	
Testserie 1	Does not exist in all machines.
Testserie 2	Does not exist in all machines.
Measuring series	
GLT 10 100 2000	Does not exist in all machines.
GLT C1 20 100	Does not exist in all machines.
GLT Z1 10 / 1000	Does not exist in all machines.
KFT 75 100 10000	Does not exist in all machines.
Y 10 200 2000	Does not exist in all machines.
Maintenance plans	
Taglich alle	Does not exist in all machines.
PLC and NC settings	
PLC data blocks	Does not exist in all machines.
PLC performance identification number - Value: 50 (Default value)	Does not exist in all machines.
AC marker - Value: 5 (Default value)	Does not exist in all machines.
Global settings	
Leader and trailer for taking the measurements	Contents not identical
Repetition strategy	Does not exist in all machines.
Participation on common start date - New triggers do not participate	Contents not identical
Monitoring of EPS Services	Does not exist in all machines.

Fig. 5-28: Print preview of comparison log

Function	Description	Type
<< Page x of x >>	Scrolling in the print preview	FUNCTION
Portrait/ landscape format	Selection of the printing format	DISPLAY SELECTION
Format selection	Selection of the paper format: <ul style="list-style-type: none"> A4 A3 	DISPLAY SELECTION
Print	Calling the print menu of the operator PC. The following print options are available: <ul style="list-style-type: none"> All available print options of the printer As a file 	ACTION

5.1.7 Comparing installed components

To compare installed components, a list of machines and the components installed in them is shown. The components only exist for a machine after the machine has been connected with an NCU.

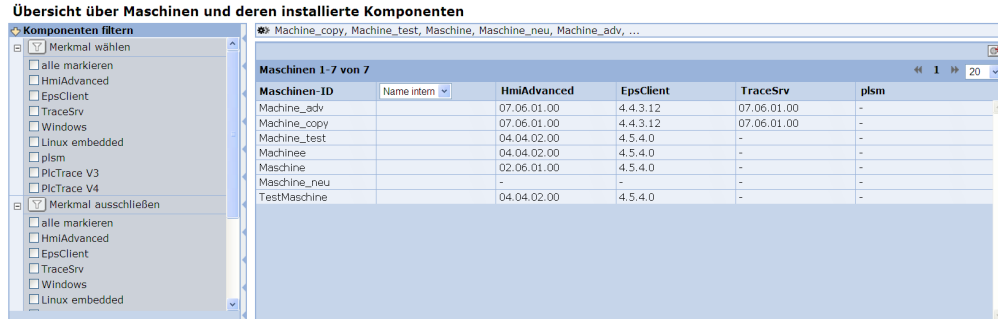


Fig. 5-29: Component overview

Function	Description	Type
Filtering components		
Select property	The number of machines is limited by the selection of the components. After filtering, only machines are displayed that contain at least one of the selected components.	SELECTION
Exclude property	The number of machines is limited by the selection of individual components. After filtering, only machines are displayed that do not contain any of the selected components.	SELECTION
Machines x - y of y		
Machine ID	Shows the currently selected machine group. The list is empty and a corresponding message is issued if a machine group is not selected or if the currently selected group does not contain any machine.	SELECTION

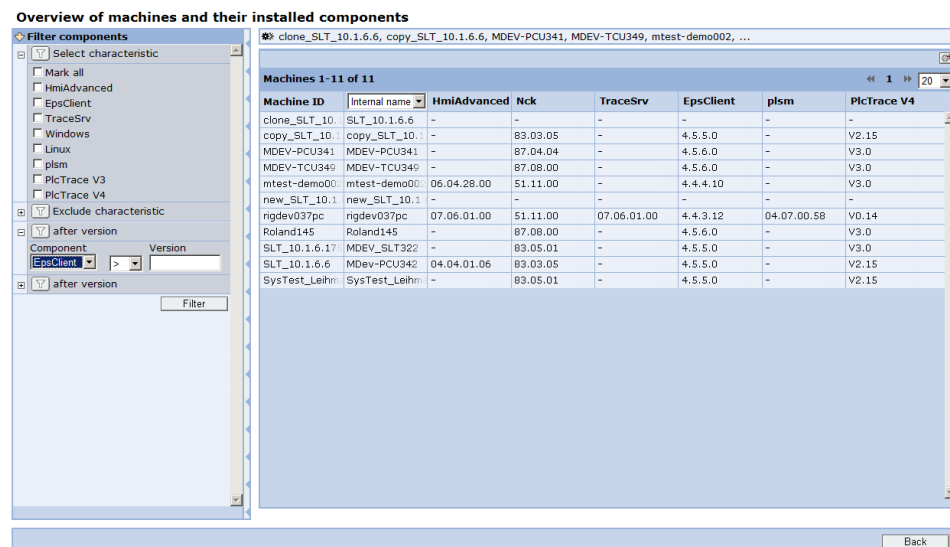


Fig. 5-30: Comparing components

Function	Description	Type
Filtering components		
By version	Up to 5 filters can be created. The filters are ANDed, so that the result list contains only machines that fulfill the conditions of all filters. The list is sorted automatically by the machine IDs.	SELECTION
Component	A selection box permits the filter component to be selected.	SELECTION
	The following relationship characters limit the selection: = equal > greater than < less than <= less than or equal to >= greater than or equal to	SELECTION
Version	Version information	INPUT
Filtering	Press the button to start filtering.	

5.2 Import

Function description

The import area permits data that results from "Robust operation" to be transferred to SINUMERIK Integrate. "Robust operation" allows data that results from a trigger event to be temporarily saved on the local hard disk of the control when the Internet connection is faulty or temporarily unavailable. Data is stored temporarily, for example, when there is no internet connection to the server due to network problems or when the internet connection was deliberately deactivated for a longer time.

There are different ways of transferring local data from the client to the server:

- Once the internet connection has been restored, data is automatically transferred to the server.
- The user can copy the data to a network drive via a local "Backup" function. Pressing the "Backup" softkey activates the backup application.

Backup with HMI Advanced

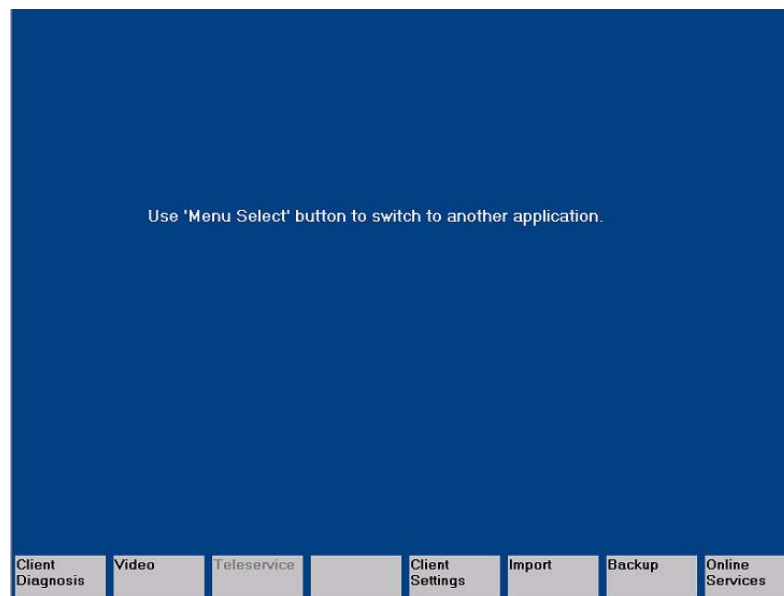


Fig. 5-31: Local selection menu with HMI Advanced

Local backup application

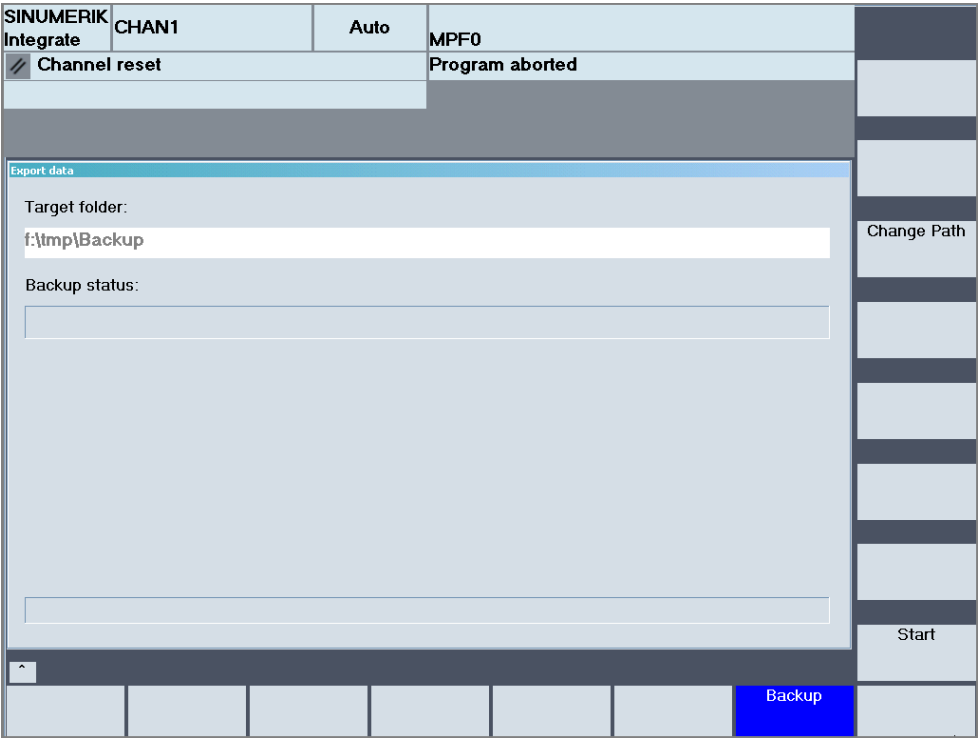


Fig. 5-32: Backup application

Functions

Function	Description
	The user can select the target folder.
	The user can start backup operation.

Backup with SINUMERIK Operate

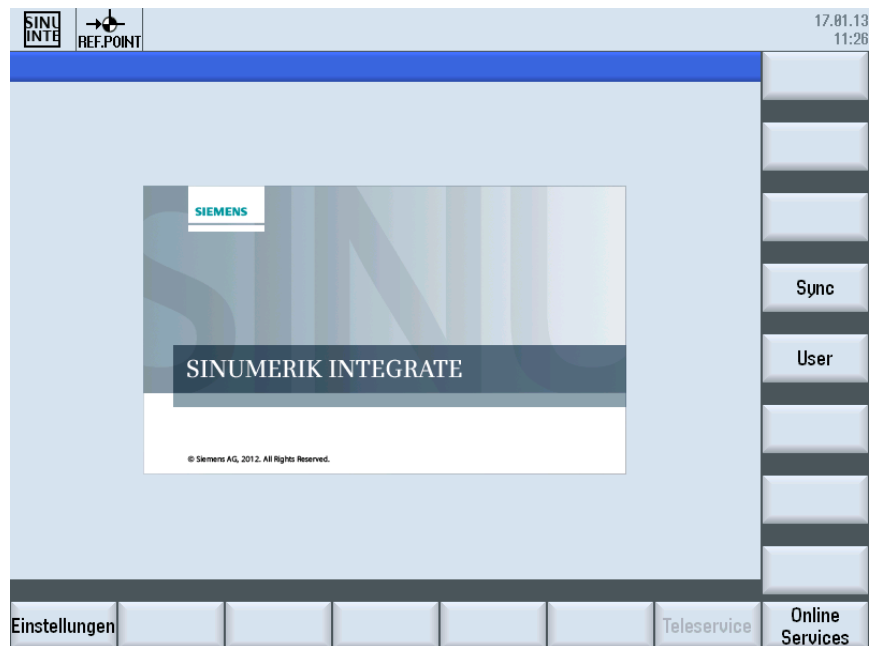


Fig. 5-33: Selection menu with SINUMERIK Operate

Pressing the "Settings" softkey displays another vertical softkey bar. Press the "Backup" softkey to start data backup.

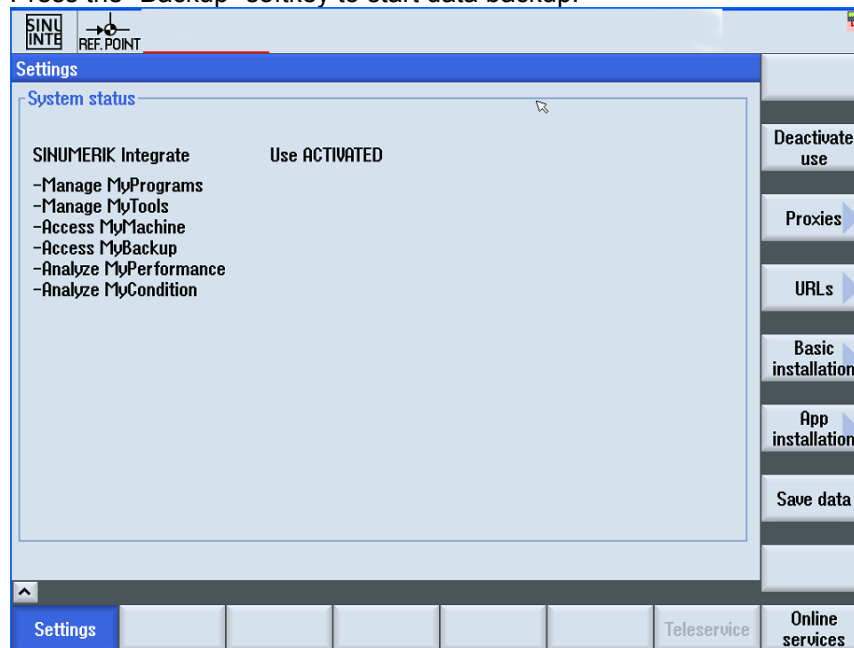


Fig. 5-34: Offline data backup with SINUMERIK Operate

The "Backup" windows opens. Press the "Select path" softkey to select target directory and data.
Press the "Start" softkey to open the directory.

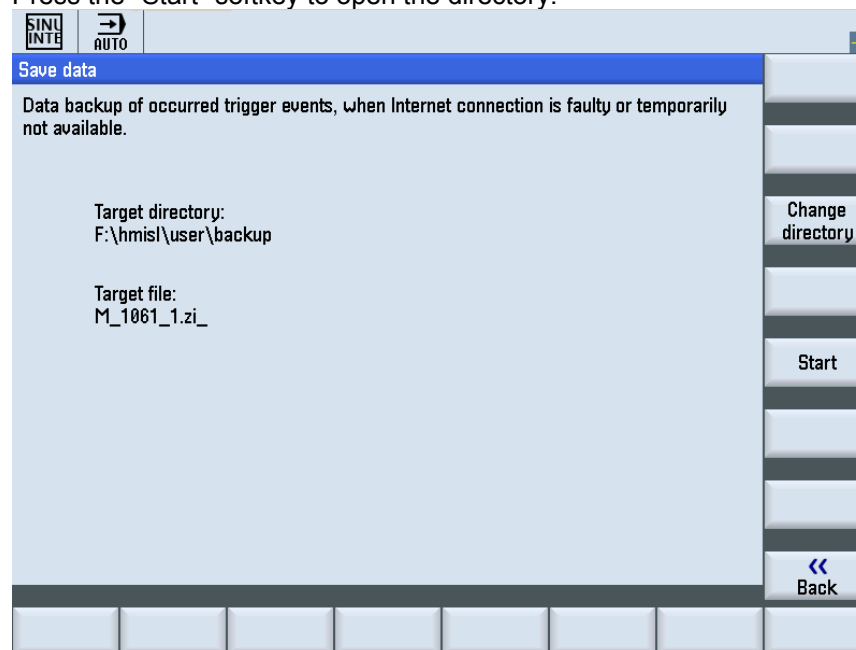


Fig. 5-35: Selecting the path with SINUMERIK Operate

Once you have selected the data, press the "OK" softkey to start the process.

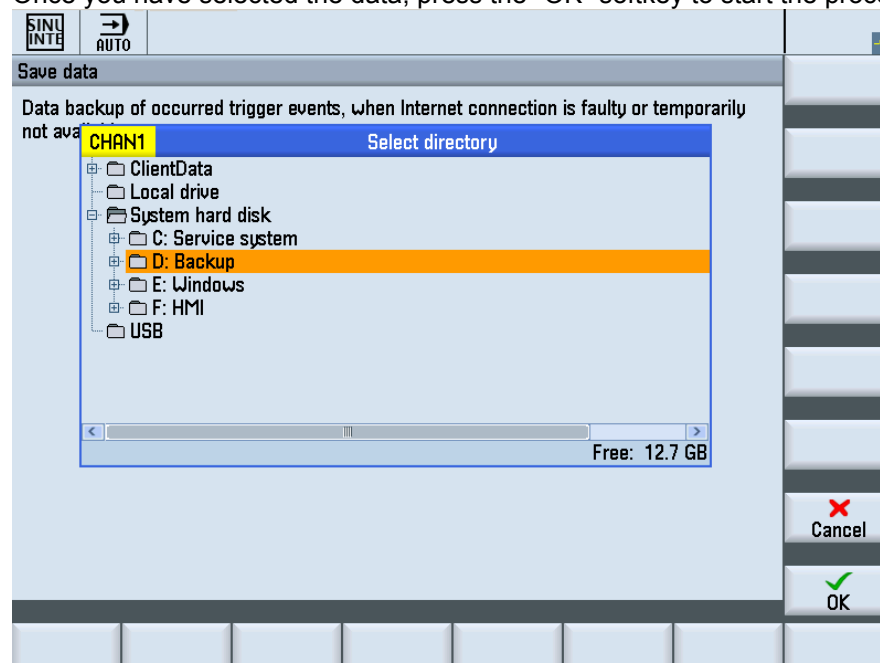


Fig. 5-36: Selecting the data with SINUMERIK Operate

A progress bar shows the progress.

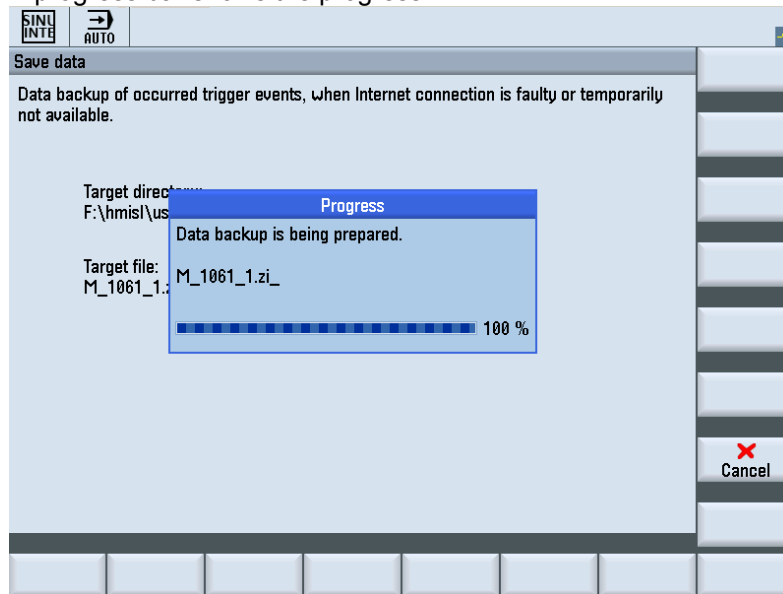


Fig. 5-37: Preparing data backup with SINUMERIK Operate

A message is output after completion.

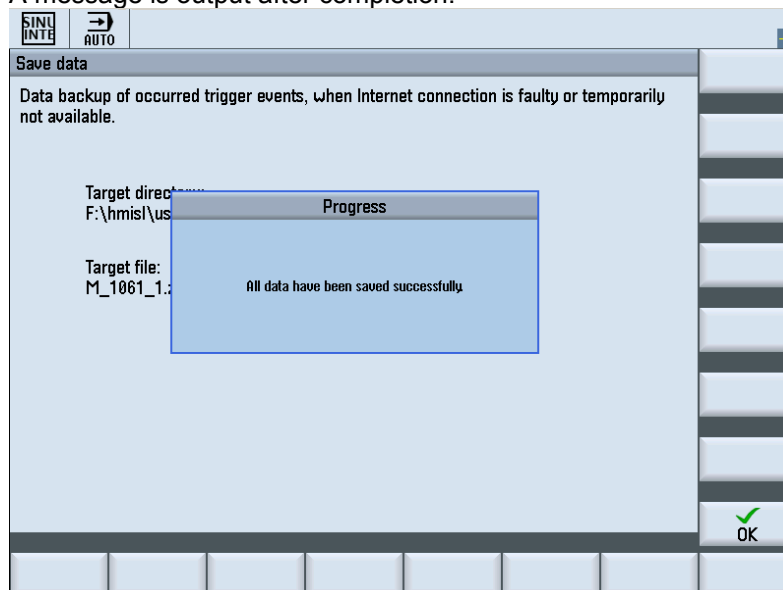


Fig. 5-38: Note

5.2.1 Active import processes

Function description

Here you can view all as yet incomplete file or directory import operations.

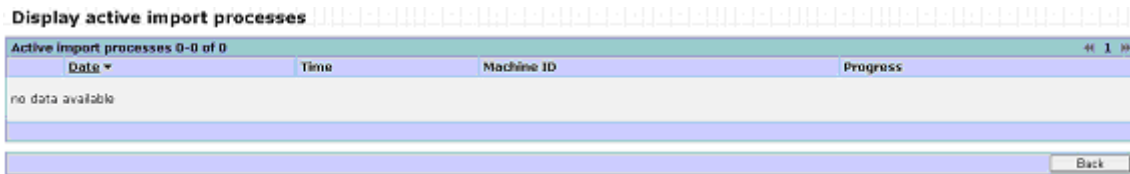


Fig. 5-39: Active import processes

5.2.2 Importing a file

Function description

The file import function permits files that result from "Robust operation" to be transferred individually to the server. This data must first be transferred via the "Backup" function (described in section:"Import") to an external storage medium (PC, notebook, PG, etc.). You can also change the suggested e-mail address if you want to receive notification after import.

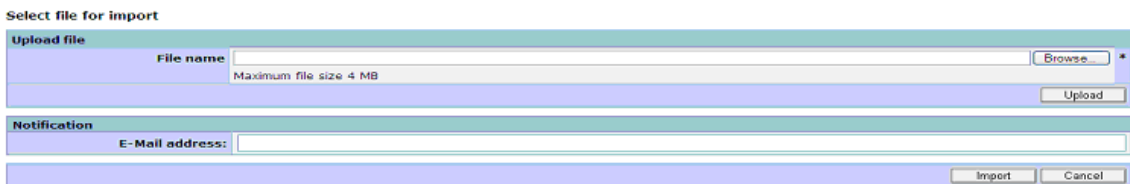


Fig. 5-40: Importing a file

Note

Prior to importing a data file from "Robust operation", activate the notification limit to avoid excessive generation of messages. This is only necessary if you have used notifications within the control monitor function.
See also Section: Setting the notification limit

5.2.3 Importing a directory (requires ActiveX)

Function description

The "Import directory" function permits data that result from "Robust operation" to be transferred to the server, even from several different machines. This data must first be transferred with the "Backup" function on the control to an external data medium (PC, notebook, PG, etc.).

All data must be in one directory. You can also change the suggested e-mail address if you want to receive notification after import.

Select a directory for import

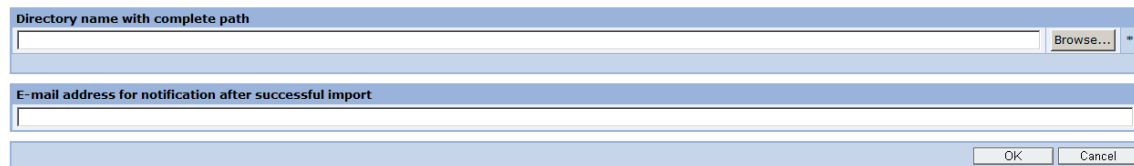


Fig. 5-41: Importing a directory

5.3 Export

Overview

In the export area you can export data, that was downloaded from the machine to the server, to external systems (local PC, for example). This makes the data available for further processing.

Function description

The "Export of PLC data" function can be used to export the uploaded contents of the PLC data blocks of a machine from the server into a file. The data that can be exported exists in binary format. It can be deleted from the server if required.



Fig. 5-42: Exporting PLC data blocks

5.4 Synchronization overview

Overview

Overviews provide a status overview of all or some of the machines. This overview helps in making a decision, for example, which machine should be synchronized although it did not have any scheduled contact with the server.

Function description

The "Synchronization overview" function can be used to display a summary of the synchronization data for local and external machines. The synchronization overview can also be used to show the activated and deactivated machines in a single display. Only machines that are online are displayed.

Synchronization overview

apna-machine-MMT_00, ST_MMT_1, Cybiohy, Omega_L, gk_machine, ...

Machine ID	Overdue since	Last sync.	Planned sync.	Mode
411-grend	-	6/9/2012 3:47 PM	6/9/2012 3:52 PM	Online
00	15 days 22 hours 35 minutes	4/9/2012 4:51 PM	4/9/2012 4:53 PM	Stability
Net_Fast	29 days 15 hours 6 minutes	4/9/2012 3:23 PM	4/9/2012 12:42 AM	Online
411-group	52 days 15 hours 15 minutes	3/9/2012 12:30 AM	3/9/2012 12:30 AM	Online
Omega_L	55 days 14 hours 23 minutes	3/9/2012 12:20 AM	3/9/2012 12:20 AM	Stability
apna-machine-out_01	61 days 14 hours 22 minutes	3/9/2012 12:20 AM	3/9/2012 12:20 AM	Stability
apna-machine-out_02	135 days 13 hours 32 minutes	12/12/2011 11:15 AM	12/12/2011 12:30 AM	Stability
FS_9_156	135 days 14 hours 04 minutes	12/12/2011 12:17 AM	12/12/2011 12:17 AM	Stability

Time zone: GMT+01:00 Amsterdam, Berlin, ...

Mode: all

Search

Back

Fig. 5-43: Synchronization overview

Functions

Function	Description
Machine ID	Shows the machine ID from the machine master data.
Overdue since	The user can start backup operation.
Last sync.	Shows date and time of the last synchronization.
Scheduled sync.	Date and time of the next scheduled synchronization of the machine with the current configuration on the server.

Function	Description
Mode	Online: All data is updated. Offline: The machine is not automatically synchronized with the server settings. Standby: Only the synchronization data is updated.
Time zone	Selection of the time zone configured on the server (Windows).
Mode	All
Search text	Filters all synchronization cases according to a free text.

6

6 Administration

6.1 Management of the organization

Function description

Before SINUMERIK Integrate can be used by machine operators, service engineers and commissioning engineers, the administrator must create users, their roles, and machines.

Administration

Organization administration	
▶	Addresses
▶	User
▶	Machines
▶	Editing master data of ...
▶	Organizational data
▶	Exporting and importing machines
▶	Download areas
Personal settings	
▶	Change password
▶	Data privacy guidelines
▶	Resetting filter and search settings

If you want to work together with other organizations on machines, you must set up the machines for use in cooperation areas.

A machine can only be released by the administrator of the source organization. The target organization cannot make a further release. This means that the source organization always retains the control over which other organizations can access its data and settings.

Users in the target organization have almost the same rights to access the released external machine as they would for a machine within their own organization.

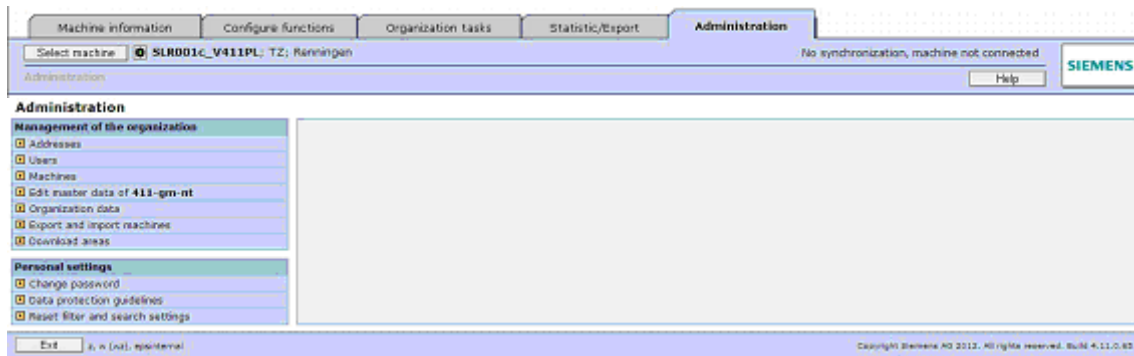


Fig. 6-1: Administration

Note

- "Exporting and importing machines":
Only for organizations with the default setting, that can be required for eP satellite, to move complete machines and data across servers.
 - "Download areas"
-

6.1.1 Addresses

Function description

The recipient addresses for SMS and e-mail notification are kept in the address book. This allows you to access existing recipients when creating messages or to create new recipients. Changes to addresses apply to all notifications for a recipient whose data is changed and are therefore always up to date.

Fig. 6-2: Adding an address to the address book

Function	Description	Type
Address data		
First name	First name of the notification recipient * Boxes marked with an asterisk must be completed.	INPUT
Last name	Last name of the notification recipient	INPUT
Company	Company of the notification recipient	INPUT
Department	Department of notification recipient	INPUT
Phone	Phone number of the notification recipient (for information only)	INPUT
E-mail address	E-mail address of the notification recipient (for information only)	DISPLAY
Data for a notification		
Test e-mail	The "Test e-mail" function is used to check that the e-mail address is correct. Check with the e-mail recipient that this test e-mail arrived at the correct recipient after it was sent.	ACTION
SMS number	SMS number of the notification recipient	INPUT
Test SMS	The "Test SMS" function is used to check that the SMS number is correct. Please check with the SMS recipient that this test SMS arrived at the correct recipient after it was sent.	ACTION
Comment	Comment on an address	INPUT

6.1.2 Users

Function description

User administration involves:

- Creating users,
- Changing their names and
- Assigning new passwords to them.

You can also assign one of the following roles to each user:

- Administrator
- Commissioning engineer
- Service engineer
- Machine operator

This assignment only gives users the predefined program options for the specific user roles.

For additional details, see also Section: Appendix

The user with the user name "Administrator" is not displayed in the user lists and so cannot be deleted. This ensures that the user "Administrator" of an organization is always able to perform machine and user administration, even if all other administrators of the organization have been inadvertently deleted.

Fig. 6-3: Creating/editing a user

Function	Description	Type
User name	Logon name for SINUMERIK Integrate. Notice: The "user name" must be unique within the organization.	INPUT
First name	First name of the user.	
Last name	Last name of the user.	
E-mail address	E-mail address of the user: It is used for information and can be used to transmit the user data.	INPUT
Password	User password: You can enter the suggested password or define your own password for the user. Please observe the criteria for a valid password.	INPUT
Suggested password	Suggestion of a valid password.	DISPLAY

Function	Description	Type
Login with	You can specify whether the user must change the password during the first logon.	SELECTION
User role	You can assign one or more roles to each user. <ul style="list-style-type: none">• Administrator• Commissioning engineer• Service engineer• Machine manufacturers	SELECTION

Notice

You can use the "Add user" function to specify a new password or use the suggested password. You can also force the user to change the assigned password during the first logon. For security reasons, we recommend that you activate this option for password assignment.
Do not use this option however if the user logs on with PKI.

For safety reasons, you should change the SINUMMERIK password at regular intervals. We recommend that you change the password in accordance with your company's guidelines. If this is not envisaged, we recommend that you change the password every four weeks at the latest.

6.1.3 Machines

Function description

Using SINUMERIK Integrate in a machine requires the machine to be set up first. The following options are available:

- Save and edit both the machine name and other information about the machine.
- Deactivate, activate, separate, or delete the machines.
- Release a machine for use by another organization (cooperation area), revoke a previously granted release, and reject an external machine released to your organization.
- Select the server software version of the machine.
- Define whether it is always necessary to have authorization to use particular functions on this machine during a teleservice session.
- Duplicate a machine with its settings.

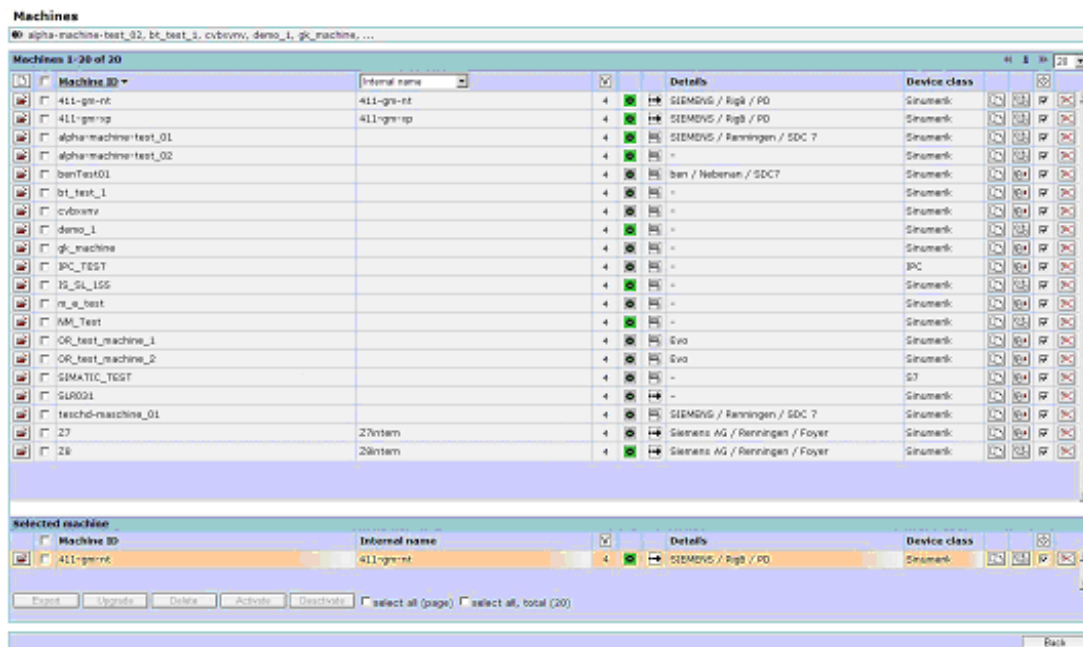











Fig. 6-4: Machines - List view

Function	Description	Type
	Creates a new machine in the user organization.	ACTION
Number of lines	The number in the display indicates the number of lines per screen that can be shown in this menu. You can select up to 200 lines. A scroll bar appears on the screen.	DISPLAY SELECTION
Machine ID	Displays all machines taken into account in the filter. The display can be in either descending or ascending order.	DISPLAY ACTION

Function	Description	Type
	To edit the master data of a machine, you can switch to the master data menu. See also Section: Editing the master data of a machine	ACTION
	For multimachine functions such as deleting, upgrading, or exporting, all machines or individual machines can be selected or cleared.	SELECTION
Internal name, Manufacturer Manufacturers number Manufacturer ID	This selection is used to specify which information is displayed in a column.	DISPLAY SELECTION
V	SINUMERIK Integrate: Version 3 or 4	DISPLAY
	The color changes to green to indicate that a machine is active or connected.	DISPLAY
	Lines displayed on this icon indicate that machine logon is required to operate SINUMERIK Integrate. An arrow indicates that logon is not necessary.	DISPLAY
Details	Company, location, and production unit are the details from the machine master data that are displayed.	DISPLAY
Device class	Displays the device class selected in the machine master data (SINUMERIK, SIMATIC, IPC).	DISPLAY
	Creates a new machine with same settings as an existing machine. Only a new machine name (ID) must be uniquely assigned.	ACTION
	If the function is enabled, the icon for the export of machines is displayed in this column. The function is necessary to move configurations and data between various servers (such as eP satellite).	ACTION
	If you want to run an individual machine with another server, export the machine and import it on the other server. The machine must first be disconnected before it is exported.	ACTION
	Activate the machine to use SINUMERIK Integrate. A deactivated machine can not use SINUMERIK Integrate applications.	ACTION (Toggle)
	Deletes a machine permanently. Data is no longer available for this machine.	ACTION
Selected	If an individual machine is selected, it is	ACTION

Function	Description	Type
machine	displayed again separately, as described above.	
Exporting	Launches the export function when multiple machines are selected.	ACTION
Upgrade	Launches the conversion from Version 3 to Version 4 when multiple machines are selected.	ACTION
Delete	Launches the machine deletion procedure when multiple machines are selected.	ACTION
Select entire page	Enables easy selection of all machines on the current page (up to 200).	SELECTION
Select all	Enables easy selection of all machines, even those not visible on the current page.	SELECTION

Exporting machines

A machine must be switched into an inactive state to export a machine, configurations and data. This is a function setting that can be selected and deselected from the PC for every machine. Export is only for your "own machines" (no external machines that have been released).

Destination data must be specified for the export. These include the name of the server to which the export should be imported (generally an eP satellite) and the organization on the server.

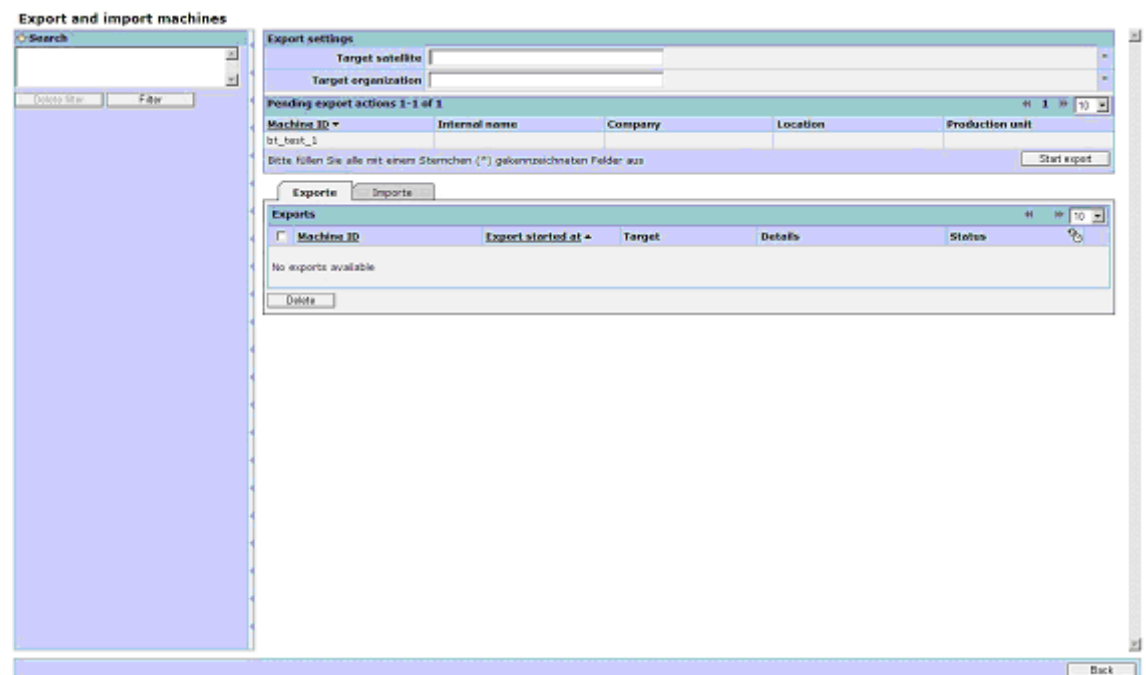


Fig. 6-5: Exporting and importing a machine

The export and import overview lists correspond to those that are described for exporting and importing.

6.1.4 Editing the master data of a machine

6.1.4 Editing the master data of a machine

"Master data" tab

The screenshot shows a software interface for editing machine master data. It has a title bar 'Own machine' and four tabs: 'Master data' (selected), 'Settings', 'Releases', and 'Comment'. The 'Master data' tab is divided into two main sections. The left section, 'Master data', contains several input fields: 'Machine ID' with the value '411-gw-01', 'Internal name' with '411-gw-01', 'Company' with 'SIEMENS', 'Location' with 'RgR', 'Production unit' with 'PD', 'Zip code', and 'Country'. The right section, 'Manufacturer data', contains three input fields: 'Manufacturer name', 'Manufacturer number', and 'Manufacturer ID'.

Fig. 6-6: Editing the master data of a machine

Function description

To make it easier to handle machines that have recently been created, the fields within the machine's "Master data" menu appear with their most recently entered contents. This prevents identical or similar entries from being reentered unnecessarily. Generally speaking, no distinction is made in these entries between upper- and lower-case letters.

Function	Description	Type
Machine ID (mandatory)	Name of the machine in the user's organization. This machine name must be unique within an organization.	DISPLAY INPUT (Max. 40 characters; return, backspace, °, \$, %, \, ;, >, <, ß, ä, ö, ü, Ä, Ö, Ü, ', € are not permitted)
Internal name	Freely selectable, additional name of the machine can be the name used by the end user (inventory number) or type designation.	DISPLAY INPUT (max. 40 characters, all characters are permissible)
Company	Name of the end user: Machines can be selected in the machine tree according to the end user.	DISPLAY INPUT (Max. 40 characters, return, backspace, °, \$, %, \, ;, >, <, are not permissible.)
Location	Specifies the location of the machine: Machines can be selected in the machine tree according to their location.	DISPLAY INPUT (Max. 40 characters, return, backspace, °, \$, %, \, ;, >, <, are not permissible.)

Function	Description	Type
Production unit	Specifies the production unit to which the machine belongs: Machines can be selected in the machine tree according to their production unit.	DISPLAY INPUT (Max. 25 characters, return, backspace, °, \$, \, , , >, <, are not permissible.)
Zip code	Input of the zip code of the location.	DISPLAY INPUT (max. 40 characters, all characters are permissible.)
Country	Input of the country (location) of the machine.	DISPLAY INPUT (max. 40 characters, all characters are permissible.)
Manufacturer-name	Optional entry, e.g. of the machine manufacturer.	DISPLAY INPUT (max. 40 characters, all characters are permissible.)
Manufacturer number	Optional entry, e.g. the machine name of the manufacturer.	DISPLAY INPUT (max. 40 characters, all characters are permissible.)
Manufacturer ID	Optional entry, e.g. a further identification number.	DISPLAY INPUT (max. 40 characters, all characters are permissible.)

Notice

Before clicking OK to save the master data you have entered, even if only for temporary storage, make sure you have selected the correct device class in the master data settings.

Device classes can no longer be changed once the machine has been "registered (connected)".

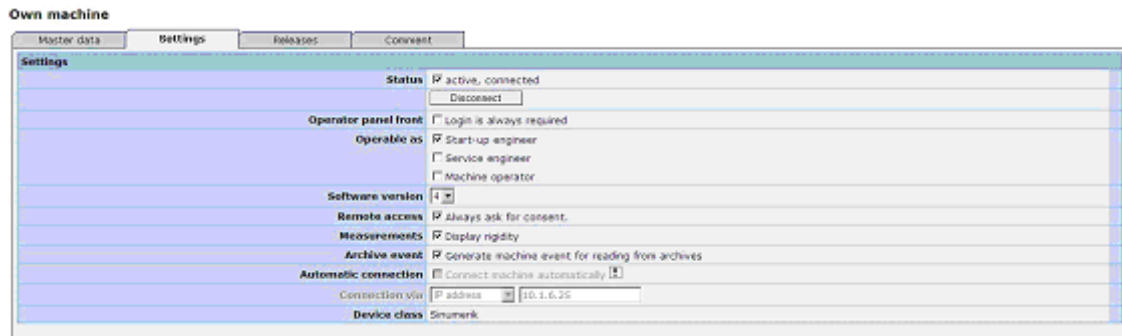
"Settings" tab

Fig. 6-7: Editing the settings of a machine

Function	Description	Type
Status		
	<p>Display of the machine's registration status and the only possibility of removing the machine registration (Database terminology: Disconnect).</p> <ul style="list-style-type: none"> Active: As described in the machine selection menu. Connected: Register the machine for using SINUMERIK Integrate (only possible from the machine) and disconnect it (requires a new registration of the machine). 	SELECTION / DISPLAY
Disconnecting machine	<p>Although a machine logged on with SINUMERIK Integrate can remotely be disconnected, it can only be reconnected directly on the machine.</p> <p>The disconnection means that data are no longer acquired and there is also no configuration that is synchronized from the server to the machine.</p>	DISPLAY ACTION
Operator panel front		
Logon always required	Here you can specify whether a user always has to log in manually, or whether he/she can log into the machine automatically in one of the roles mentioned below (without having to enter the user name, password, and organization manually).	DISPLAY SELECTION
Can be operated as	Here you can specify the role under which the user can log in "automatically" (system startup engineer, service engineer or machine operator).	DISPLAY SELECTION

Function	Description	Type
Software release	Adapting the server software version of the machine Notice: It is only possible to upgrade to a higher software version. The upgrade is performed the next time the machine is booted after the change. After that it is no longer possible to undo the change!	DISPLAY SELECTION
Remote access		
Always request approval	If the machine requests remote access (this is only possible from the machine), and the location to be accessed connects to the machine, access approval must be granted again on the machine. Where remote access is concerned, a distinction is still drawn between the different actions (visualization and operation; retrieving data; saving data; NC operation; PLC access) that must be acknowledged in a session as having approval.	DISPLAY SELECTION
Measurements		
Display rigidity	Here you can define whether the rigidity is also to be displayed for the axis test.	DISPLAY SELECTION
Machine status		
Activate machine status recognition	Client monitoring is activated automatically. The variables that can record start and end of the possible data acquisition are available.	DISPLAY SELECTION
Generate machine event	The data acquisition start and end status signals generate event entries.	DISPLAY SELECTION
Archive event	Machine events are generated for reading in archives at the control.	DISPLAY SELECTION
Automatic connection		
Connect machine automatically	The client of the machine automatically connects to the server as soon as a connection is established.	DISPLAY SELECTION
Connection via	The following can be selected to detect a connection: <ul style="list-style-type: none"> • IP address • MAC address • Machine name (max. 50 characters) 	DISPLAY SELECTION INPUT
Device class	The device class defines the SINUMERIK Integrate functions that can always be used on a particular machine. Various functions cannot be used depending on the device class. See also Section: Client diagnostics SINUMERIK, S7, and IPC are available in the selection.	DISPLAY

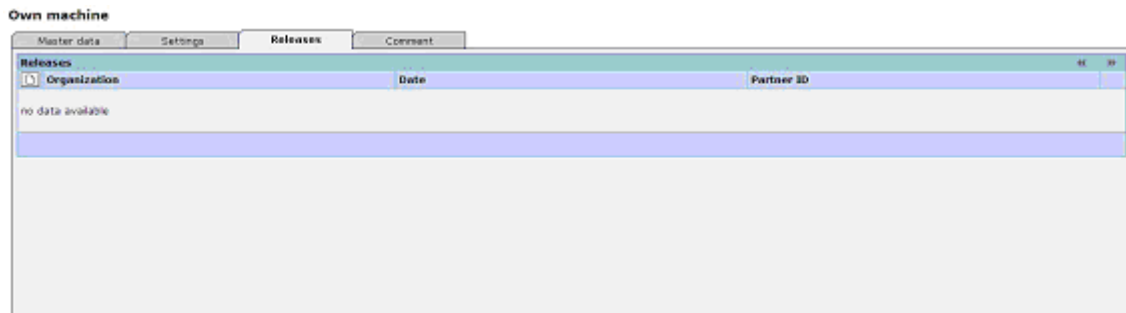
"Releases" tab

Fig. 6-8: Editing the releases of a machine

Function	Description	Type
	Opens the data for release.	ACTION
	Remove the release of a machine to another organization or modify the release rights.	ACTION
	To ensure that users within other organizations do not require access to the whole of your organization, it is possible to release a machine on an individual basis in the master data for another organization. Organizational data are never released for partner access. The privileges for machine-related functions are the same as those within your own organization for commissioning engineers, service engineers or machine operators.	ACTION

Create Sharing

Machine data			
Machine ID	MDEV-PCU341	Status	active
Internal name	MDEV-PCU341		connected
Device class	Sinumerik	Setting	Operator panel front, Login not required
Company	Siemens AG		Software version 4
Location	RIG 8		Remote access, Always ask for consent.
Production unit	1		Measurement, Do not display rigidity
Issue release			
to known organization	- Select known organization -	Right	<input type="checkbox"/> Start-up engineer
to new organization			<input type="checkbox"/> Service engineer
Organization password			<input type="checkbox"/> Machine operator
	<input checked="" type="radio"/> Manufacturing IT server		
	<input type="radio"/> eP satellite		
Name of the eP satellite			
OK Cancel			

Fig. 6-9: Master data – issuing, editing new releases

Function	Description	Type
Machine data	Summarizing display of the machine master data for the machine to be released	DISPLAY
Issue release		
to the known organization	Selection window of already known organizations, where machines were already released	SELECTION
To the new organization	Input window for the name of the organization to which the machine should be released	INPUT

Function	Description	Type
Organization password	In order that the release cannot be issued without prior knowledge of the organization to which the machine is to be released, its organization password must be entered.	INPUT
Server Name of the eP satellite	Select the server on which the organization is managed to which the machine is to be released. If the machine is released to an organization with an eP satellite then the name of the eP satellite must be entered.	SELECTION INPUT
Rights	The rights for the released organization can be issued to start-up engineers, service engineers, machine operators.	SELECTION

"Comment" tab

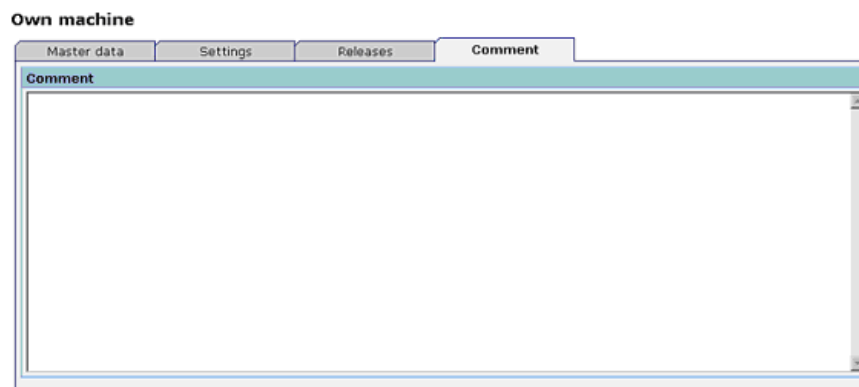


Fig. 6-10: Master data – comment

Function	Description	Type
Comment	Input an individual comment about the machine	DISPLAY INPUT

Note

You can release a machine for several different organizations. The users at the target organization see only their own release not those made to the other organizations. For the release, the master data of external machines in the target organization is initialized with the currently valid machine information (machine ID, internal name, etc.). This initialization is not necessary if the machine has already been released to the same organization in the past.

If the organization to which you want to release a machine does not appear in the list of known organizations ("release to"), you must request the organization designation and the release password from your partner organization.

See also Section: Cooperation areas

6.1.5 Creating a new machine as a copy

Function description

Using SINUMERIK Integrate in a machine requires the machine to be set up first in the server. To make it easier to set up similar machines, a machine that has already been set up can be created as a copy. All of the configurations are adopted by the existing machine, with the exception of the machine master data, which must be edited as the machine ID will be the unique point of identification for the new machine.

In addition to copying, the following functions are also available in the "Machines" menu:

- Editing the master data of the machine
- Deactivating, activating or deleting a machine
- Copying a machine with its settings and user configurations to a new machine that is then created.

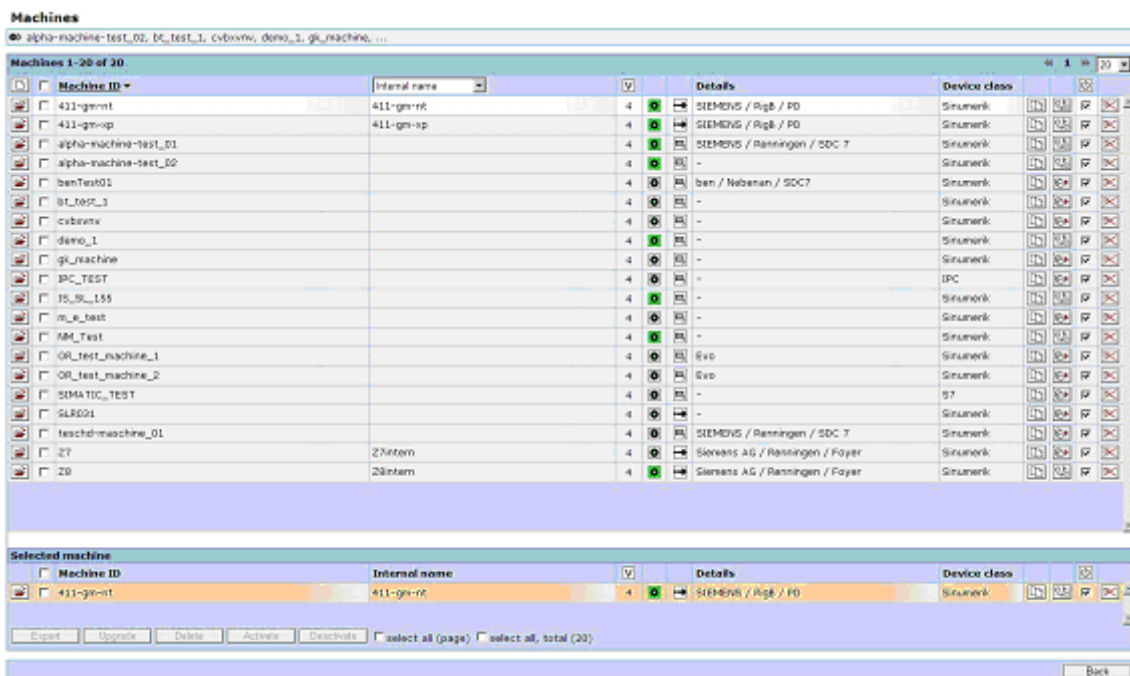










Fig. 6-11: Machine - list

Function	Description	Type
	Creates a new machine in the user organization.	ACTION
Number of lines	The number in the display indicates the number of lines per screen that can be shown in this menu. You can select up to 200 lines. A scroll bar appears on the screen.	DISPLAY SELECTION
Machine ID	Displays all machines taken into account in the filter. The display can be in either descending or ascending order.	DISPLAY ACTION

Function	Description	Type
	To edit the master data of a machine, you can switch to the master data menu. See also Section: Editing the master data of a machine	ACTION
	For multimachine functions such as deleting, upgrading, or exporting, all machines or individual machines can be selected or cleared.	SELECTION
Internal name Manufacturer Manufacturer's number Manufacturer ID	This selection is used to specify which information is displayed in a column.	DISPLAY SELECTION
V	SINUMERIK Integrate: Version 3 or 4	DISPLAY
	The color changes to green to indicate that a machine is active or connected.	DISPLAY
	Lines displayed on this icon indicate that machine logon is required to operate SINUMERIK Integrate. An arrow indicates that logon is not necessary.	DISPLAY
Details	Company, location, and production unit are the details from the machine master data that are displayed.	DISPLAY
Device class	Displays the device class selected in the machine master data (SINUMERIK, SIMATIC, IPC).	DISPLAY
	Creates a new machine with same settings as an existing machine. Only a new machine name (ID) must be uniquely assigned.	ACTION
Exporting machines	If you want to run an individual machine with another server, export the machine and import it on the other server. The machine must first be disconnected before it is exported.	ACTION
	Activate the machine to use SINUMERIK Integrate. A deactivated machine can not use any function.	ACTION (Toggle)
	Deletes a machine permanently. Data is no longer available for this machine.	ACTION

Function	Description	Type
Selected machine	If an individual machine is selected, it is displayed again separately, as described above.	ACTION
Exporting	Launches the export function when multiple machines are selected.	ACTION
Upgrade	Launches the conversion of SINUMERIK Integrate Version 3 to Version 4 when multiple machines are selected.	ACTION
Delete	Launches the machine deletion procedure when multiple machines are selected.	ACTION
Select entire page	Enables easy selection of all machines on the current page (up to 200).	SELECTION
Select all	Enables easy selection of all machines, even those not visible on the current page.	SELECTION

Copy function: Creating a new machine in the form of a copy

Click "Copy" to switch to the "Master data" menu of the machine:

Copy function settings - create machine

Edit master data of the new machine

Machine ID:

Internal name:

Company:

Location:

Device class:

Production unit:

Zip code:

Country:

Settings

Software version:

Remote access: ☒ Always ask for consent.

Measurements: ☒ Display rigidity

Archive event: ☒ Generate machine event for reading from archives

Status:

Operator panel front: ☐ Login is always required

Operable as: ☒ Start-up engineer
☐ Service engineer
☐ Machine operator

Automatic connection: ☐ Connect machine automatically

Connection via:

Manufacturer

Manufacturer number:

Manufacturer ID:

Manufacturer name:

Comment:

Releases

Organization	Date	Partner ID
Releases can be assigned after the copy process		

Please assign a machine ID for the newly created machine so that the copy process can start.

OK Cancel

Fig. 6-12: Entering the master data of the copied machine

After the machine master data has been completed and confirmed with "OK", you will be switched to the copy menu.

All you need to do is enter a new machine ID. However, you can also change the master data accordingly.

Function	Description	Type
Edit the master data of the new machine		
Machine ID (mandatory)	Name of the machine in the user's organization. This machine name must be unique within an organization.	DISPLAY INPUT (Max. 40 characters; return, backspace, °, \$, %, \, ;, >, <, ß, ä, ö, ü, Ä, Ö, Ü, ', € are not permitted)
Internal name	Freely selectable, additional name of the machine can be the name used by the end user (inventory number) or type designation.	DISPLAY INPUT (max. 40 characters, all characters are permissible)
Company	Name of the end user: Machines can be selected in the machine tree according to the end user.	DISPLAY INPUT (Max. 40 characters, return, backspace, °, \$, %, \, ;, >, <, are not permissible.)
Location	Specifies the location of the machine: Machines can be selected in the machine tree according to their location.	
Device class	The device class defines the functions that can always be used on a particular machine. Various functions cannot be used depending on the device class. See Section: Client diagnostics SINUMERIK, S7, and IPC are available in the selection. Notice: It is no longer possible to change the device class of a machine that has already been created and has been connected once.	DISPLAY SELECTION

Function	Description	Type
Prod. unit	Specifies the production unit to which the machine belongs: Machines can be selected in the machine tree according to their production unit.	DISPLAY INPUT (Max. 40 characters, return, backspace, °, \$, \, ;, >, <, are not permissible.)
Zip code	Entry for the zip code of the location	DISPLAY INPUT (max. 40 characters, all characters are permissible.)
Country	Entering the country (location) of the machine	
Settings		
Software version	Adapting the server software version of the machine Notice: It is only possible to upgrade to a higher software version. The upgrade is performed the next time the machine is booted after the change. After that it is no longer possible to undo the change!	DISPLAY SELECTION
Remote access	"Always request approval" When this option is selected, it is always necessary to have authorization to use particular functions on this machine for a remote access.	SELECTION
Measurements	"Display rigidity" When this option is selected, rigidity is displayed with the axis tests.	SELECTION
Machine status	"Activate machine status recognition" When this option is selected, client monitoring is activated automatically. The variables that can record start and end of the possible data acquisition are available. Generate machine event	SELECTION

Function	Description	Type
Status	<p>Active: Identical to the description in the machine selection menu.</p> <p>Connected: Register the machine for using SINUMERIK Integrate (only possible from the machine and referred to as connected from this point onwards), and disconnect it (requires a new registration from the machine).</p> <p>Display of the machine's registration status and the only possibility of eliminating the machine registration (disconnect - database terminology).</p>	SELECTION
Control panel front	<p>"Logon always required"</p> <p>When this option is selected, you can specify whether a user always has to log in manually, or whether he/she can log into the machine automatically in one of the roles mentioned below (without having to enter user name, password, and organization manually).</p>	DISPLAY
Can be operated as	<p>Here you can specify the role under which the user can log in "automatically" (system startup engineer, service engineer or machine operator).</p>	DISPLAY SELECTION
Automatic connection	<p>"Connect machine automatically"</p> <p>When this option is selected, the machine client automatically connects to the server as soon as a connection is established.</p>	SELECTION
Connection via	<p>The following can be selected to detect a connection:</p> <ul style="list-style-type: none"> • IP address • MAC address • Machine name 	SELECTION
Enables		
Organization Date Partner ID	<p>Displays a machine released to another organization.</p> <p>This requires changes to be made in the master data following the copying procedure.</p>	DISPLAY
Manufacturer		
Manufacturer number	Each manufacturer is obliged to assign a unique machine number (type plate).	DISPLAY INPUT (max. 40 characters, return, backspace, °, \$, \, ;, >, <, are not permissible.)
Manufacturer ID	The end user and/or machine operator generally have a unique ID for the machine supplier.	
Manufacturer -name	Each manufacturer is obliged to provide their name on the type plate.	

Function	Description	Type
Comment	Input of an individual comment for the copied configurations.	DISPLAY INPUT (max. 2000 characters, all characters are permissible.)

Preselecting the user configuration to be copied

This function selects all user configurations for copying.

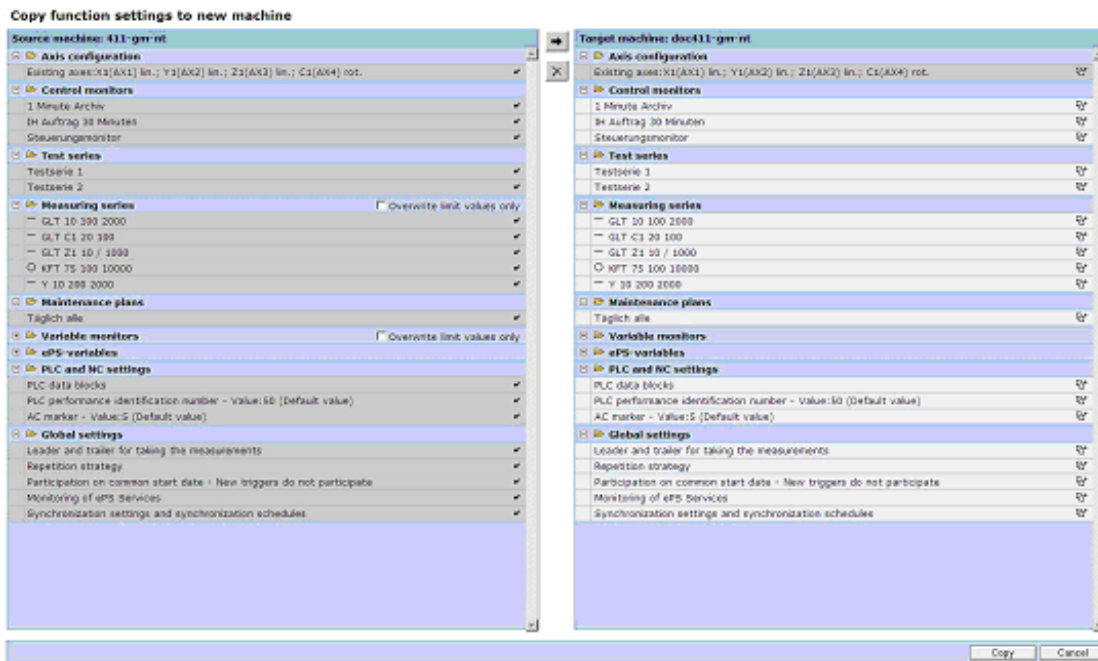


Fig. 6-13: Copying function settings to a new machine


As previously described for copying the user configuration, there is also the option of removing specific user configurations from the copy list and adding them again.

Function	Description	Type
	Adding the selected user configurations to the copy list	ACTION
	Removing the selected user configurations from the copy list	ACTION
+	Opening the user configuration group	ACTION
–	Closing the user configuration group	ACTION
Text selection	Select a user configuration.	ACTION (Toggle)

Function	Description	Type
Cancel	Cancel: Return to the machine menu without copying.	ACTION MENU
Copy	Start copying process	ACTION MENU

After confirming with "OK," the copy log will be output:

Copy log

21 Function settings have been copied		4/3/2013 	
Source machine	M-XR4/07	Overwritten	0
Target machine	clone	Not overwritten	0
Users	dev, eloper	Added	21
Notes	• All control monitors on the target machine have been globally deactivated for safety reasons.		Error 0

Details of the copying process		
Name	Type of copy	Status
Axis configuration		
Existing axes: X1(AX1) lin.; Y1(AX2) lin.; Z1(AX3) lin.; A1(AX4) lin.; B1(AX5) lin.	Added	OK
Control monitors		
PartProg Time Exceeds Limit	Added	OK
Channel 1 block identifier world not defined or option does not exist	Added	OK
VarControlMonitor	Added	OK
MB70=70 - archives	Added	OK
Test series		
Measuring series		
GLT X slowly (X)	Added	OK
GLT-X1	Added	OK
Maintenance plans		
Variable monitors		
machine status communication	Added	OK
machine status connection	Added	OK
machine status data acquisition	Added	OK
test	Added	OK
VarMon	Added	OK
VarMon2	Added	OK
User-defined variables		
time	Added	OK
PLC and NC settings		
PLC data blocks	Added	OK
PLC performance identification number	Added	OK

OK

Fig. 6-14: Log

Copy function settings - Cancel



Delete newly created machine?

Machine 'Copy_2_Achs_Einheit' has already been created. Is the machine now to be deleted again?

Note: If you select "Don't delete", the machine will be retained but it will not have any function settings.

Fig. 6-15: Cancel copy

Function	Description	Type
Delete	Deletes the newly created machine. A switch is made to the machine menu.	ACTION MENU
Do not delete	The newly created machine is retained without user configurations. A switch is made to the machine menu.	ACTION MENU
Cancel	Return to the copy menu to continue the copying process.	ACTION MENU

6.1.6 Organizational data

Overview

As the administrator, you can view the stored organizational data.

Here you define the following:

- The release password with which another organization can release a machine to be accessed by you
- The type of teleservice, used for defining the functions within a session.

This is also where you select the server software version and modify it centrally for the entire organization.

Organisationsdaten	
- Integration	
Organization password	<input type="text"/>
Software version	Version 4
Remote access via WebEx / session type	none
Remote access via Access MyMachine / settings	<input checked="" type="checkbox"/> Screen release <input checked="" type="checkbox"/> File transfer <input checked="" type="checkbox"/> Step7 via Internet <input type="text" value="10"/> Seconds <small>Waiting time until being informed that establishment of the connection has failed.</small> <input checked="" type="checkbox"/> Automatic recording of session
Machine-related settings	
PLC performance identification number	50 <input type="text"/> ? Default-Wert: 50
Block new configurations	<input type="checkbox"/> Switch all "online" machines to stand-by?
Common start date	<input type="checkbox"/> New triggers of new machines participate
E-mail notifications	<input type="checkbox"/> Please also send information about the company, location and production unit
Response to changes of measuring series	<input type="checkbox"/> Nachfragen, ob Geprüft-Status der Messreihe beibehalten werden soll
Behavior on cloning	<input type="checkbox"/> Accept the global status of the control monitors during cloning <input type="text"/> ?
Period prior to the due date of maintenance jobs	0 <input type="text"/> days <input type="text"/> ?
Download files to the machine	<input type="checkbox"/> May download files to the client <input type="checkbox"/> May download executable files to the client <input type="text"/> ?

Fig. 6-16: Editing organizational data

Function	Description	Type
Organization password	Individual specification of an organization password	DISPLAY INPUT
Software release	Select software version of SINUMERIK Integrate: Version 3 or 4	DISPLAY SELECTION
Type of remote access session	The following selection is possible: <ul style="list-style-type: none"> • Standard = ST • Option 1 to 4 (WebEx session types 1106 and Access MyMachine remote diagnostics) 	DISPLAY SELECTION
Remote access via Access MyMachine / settings	<ul style="list-style-type: none"> • Screen • File transmission • Step7 via Internet Including the waiting time in seconds until the information of a failed connection appears. • Automatic recording of the meeting 	

Function	Description	Type
Machine-related settings		
PLC performance identification number	Release of PLC resources for SINUMERIK Integrate: See also: Control monitors The higher the value, the more functions can be implemented with SINUMERIK Integrate. Default value: 50	DISPLAY INPUT [Values between 1 and 100]
Block new configurations	Switches all machines to "Standby".	SELECTION (Toggle)
Common start date	When creating control monitors for maintenance procedures, if you always want to start automatically with the same common maintenance start date, you can specify the date here. Independent of this, participation in a common start date can be individually defined for each control monitor.	SELECTION (Toggle)
E-mail notifications	Because e-mail notifications only have the machine ID of the machine owner for identification (the released responsible service organization may use a completely different ID), you also have the option of sending additional information about the location, company, and production unit along with the e-mail.	SELECTION (Toggle)
Response to changes of measuring series	The following applies when prompting before resetting the contour monitoring: <ul style="list-style-type: none"> • Not selected: After a change relevant for the axis test, a one-time manual execution of the axis test is required in order to be able to execute this automatically • Selected: An existing successful execution can be confirmed after a change relevant for the axis test so that a manual axis test does not have to be performed again 	SELECTION (Toggle)

Function	Description	Type
Behavior on cloning	<p>A "global status" can be set for control monitors on the overview screen of the control monitors. This allows all of the control monitors to be centrally deactivated and activated.</p> <p>If, when creating a new machine as copy of a machine, the individual status (active or deactivated) is not used as copy template, as then it cannot be simply checked as to whether all control monitors can be correctly activated, for all copied control monitors the status can be preset to the basic setting of the copy template that was set.</p>	SELECTION (Toggle)
Period to the due date of maintenance jobs	Maintenance jobs can be evaluated regarding when they are due. In order to be able to set a global individual filter function, the time by which a due date is brought forward can be set here in days. The filters respond accordingly to this data. Triggers do not retroactively respond to a change where the due date has been brought forward, as they can only initiate if a due date that has been brought forward is really overdue.	INPUT DISPLAY (max. 9-digit)
Downloading files to the machine	<p>For each organization, configuration settings can be made to download files to machines.</p> <p>It can be selected as to whether files should be able to be downloaded to machines at all.</p> <p>It can be set whether executable files may be downloaded to the machine.</p> <p>The risk of also downloading executable files is transparent, as the target directory must be available on the PC front end and must be permanently specified in the "settings ini" in parallel to the "temp" directory.</p>	SELECTION (Toggle) SELECTION (Toggle) 'privatesyncd ata'
OK	Saves the organization data and returns to the "Management" menu.	ACTION
Cancel	Returns to the "Management" menu without applying any changes you may have made.	ACTION

Remote access session type

By selecting a session type, the administrator can define the functions that can be used in a teleservice session for the entire organization.

The exact scope of functions of the individual session types can be found in the following documentation: Operating Manual SINUMERIK Integrate MMT, MMP, AMM/E, AMC, AMB, AMP.

PLC performance index

Use the PLC performance index to define the performance that may be used for the PLC triggers. Each PLC trigger uses a certain number of performance points. In this way you can control to what extent the PLC may be occupied by the SINUMERIK Integrate PLC triggers. The PLC performance index has to be defined individually by the machine manufacturer.

Block new configurations

This function serves to only release new server versions for all machines after they have been tested on single machines. For this purpose, this function allows you to switch all machines from "ONLINE" to "STANDBY" synchronization mode to temporarily prevent any changes at the client scripts by new server versions.

Note

In "standby", the machine will continue to synchronize regularly and check whether any online requests are pending. Client jobs are neither started nor completed, and the job machine will not be restarted either due to changed scripts.

Notice

When restarting the machine, it will in any case get the new boot script from the server, regardless of these settings. Thereafter, also the new scripts will be started.

6.1.7 Exporting and importing a machine

Function description

This function can be set up in conjunction with SINUMERIK Integrate.

With the export, complete machines, configurations and data are copied to another server if a move is involved.

The export must be made from the server and the organization to which the machine belongs.

With the import, the exported machines are completely accepted with the configurations and data in the associated database on the target server.

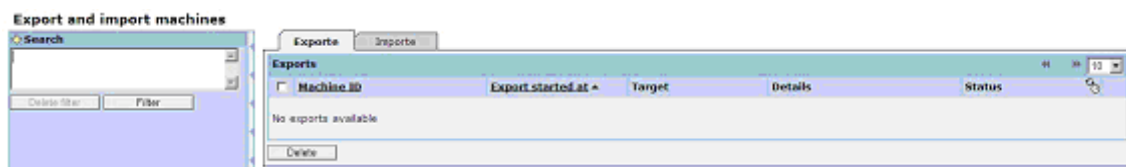


Fig. 6-17: Exporting and importing machines - export

All of the machines that have been exported are included in the list.

Details on the export operation are shown in the labeled columns.

If a machine is deleted here during an export operation, then it is removed from this view and can also not appear in the list of machines that can be imported.

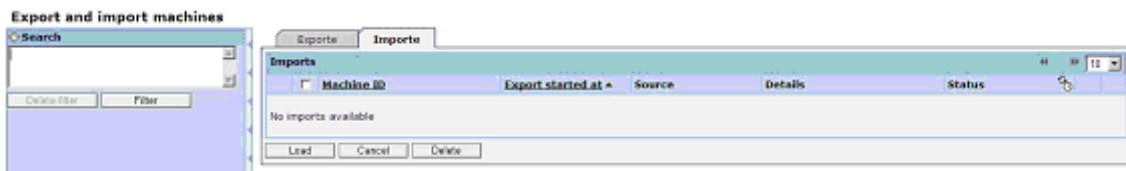


Fig. 6-18: Exporting and importing machines - import

All of the machines that have been exported and are available for import are included in the list.

The import is initiated with "Load". Details on the load operation are shown in the labeled columns.

The import must be made from the server and the organization for which the machine has been exported.

If a machine is deleted here during an export operation, then it is removed from this view and also does not appear in the list of existing machines.

6.1.8 Download areas

Function description

SINUMERIK Integrate allows you to access new download areas for the utilization statistics and security patches for Microsoft Windows NT.

The download areas can only be accessed by the user named "Administrator" (use statistics) or users assigned the administrator role (security patches for Microsoft Windows NT) and can be reached via the "Management" tab under the "Download Areas" menu item of the "Management of Organization" menu group.

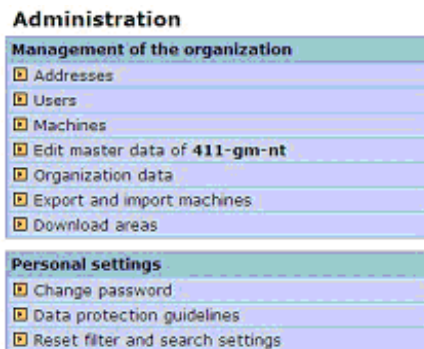


Fig. 6-19: Download areas

Three tabs are available to you in the download area:

- Evaluations
- Security patches
- Services

Use the "Services" tab to return to SINUMERIK Integrate.

"Evaluations" tab

On the "Evaluations" tab, you can filter the display of the activated utilization statistics with criteria such as number and period of reports, and influence the sequence in which reports are displayed.

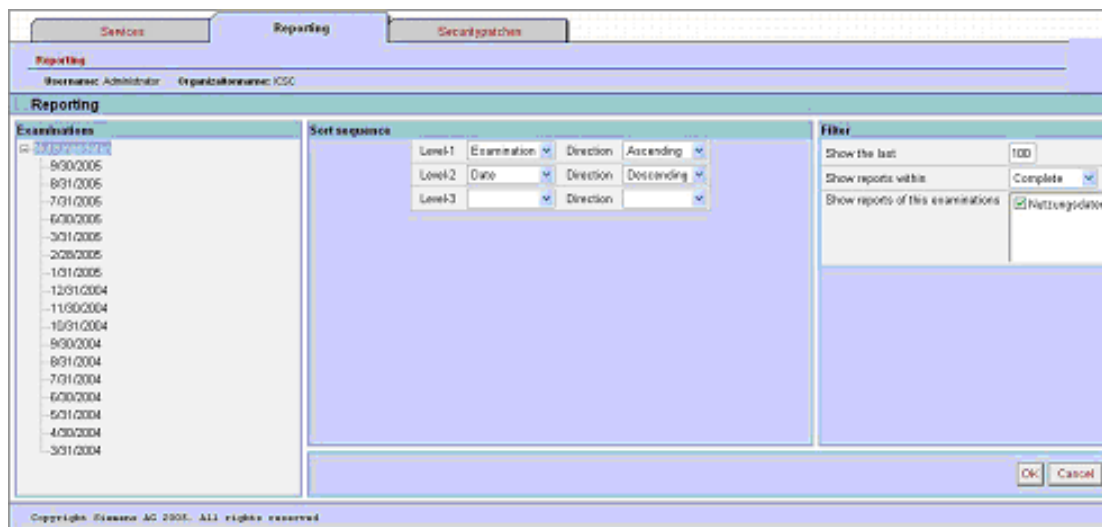


Fig. 6-20: Evaluations

"Security Patches" tab

On the "Security patches" tab, you can download the security patches for Microsoft Windows NT after you have agreed to the conditions of use.

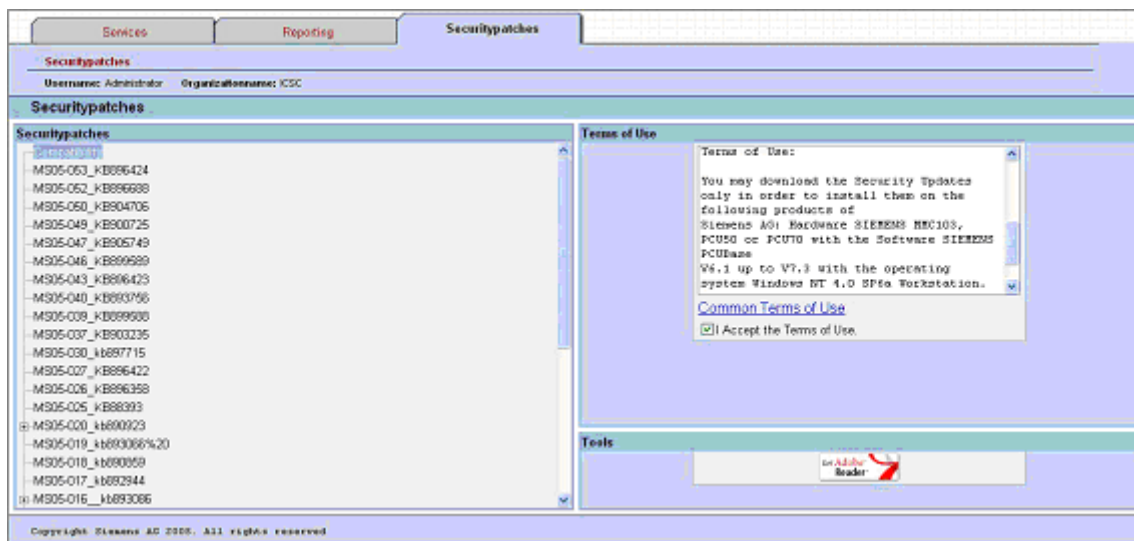


Fig. 6-21: Security patches - terms of use

6.2 Personal settings

Change password

Every user can change his or her own password according to the set rules using the "Change password" function.

Data protection guidelines

Each user must acknowledge the valid data protection guidelines using the "Data protection guidelines" function before using the system.

The user confirms that he or she will only enter personal data in the system after having first obtained the consent of the person concerned and will comply with the valid data protection guidelines. For more details, please read the document that the function itself provides.

Agreement to the data protection guidelines can be revoked at any time.

Note: A user can not access SINUMERIK Integrate without first agreeing to the current data protection guidelines.

Reset filter and search settings

Any user can reset the settings to the system default settings by means of the "Reset filter and search settings" function.

7

7 Establishing a connection and diagnostics

7.1 Connecting the machine

Description

Use the following procedure to be able to use the SINUMERIK Integrate applications in the control:

1. An administrator creates the machine with the associated master data on the server.
2. It is then necessary to register the machine. SINUMERIK Integrate assigns the machine an unambiguous identification.
3. The machine is connected with SINUMERIK Integrate.
4. The alarm model can then be uploaded and the machine synchronized.

Operating sequence on the machine

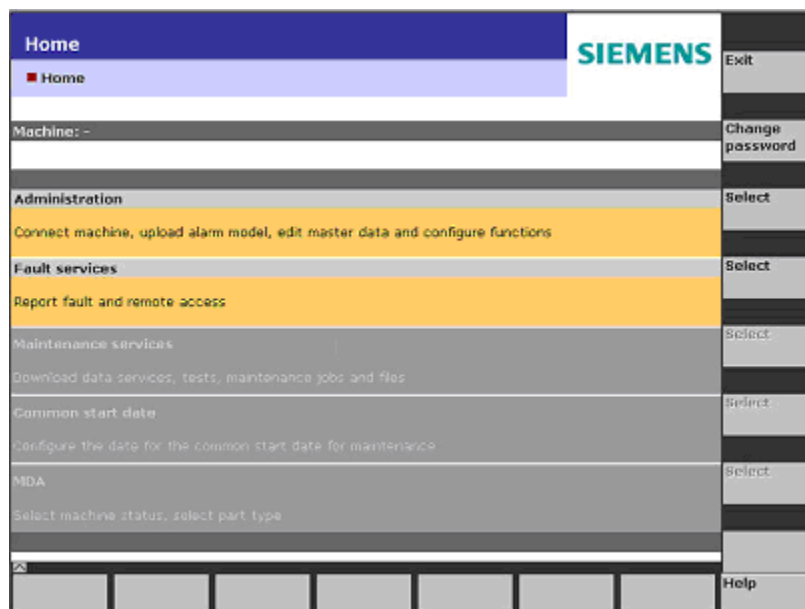


Fig. 7-1: After logging on to the control

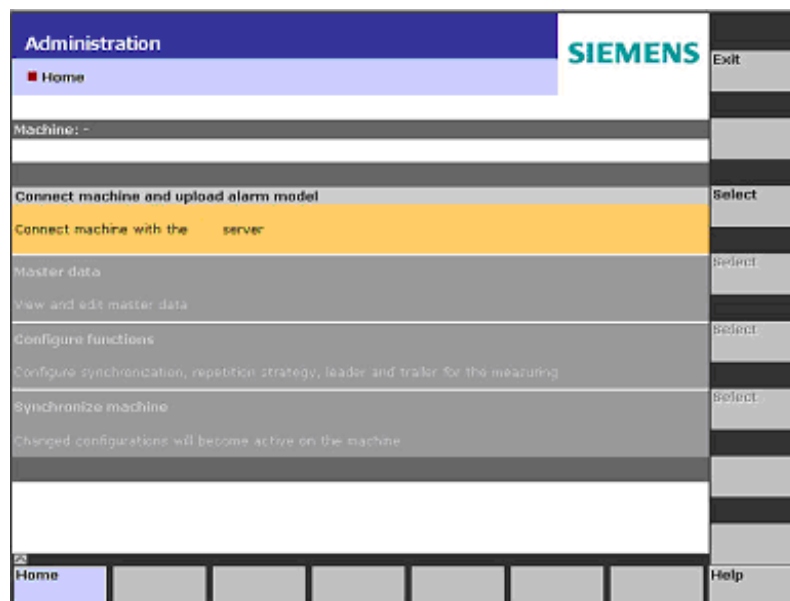


Fig. 7-2: Connection to the server

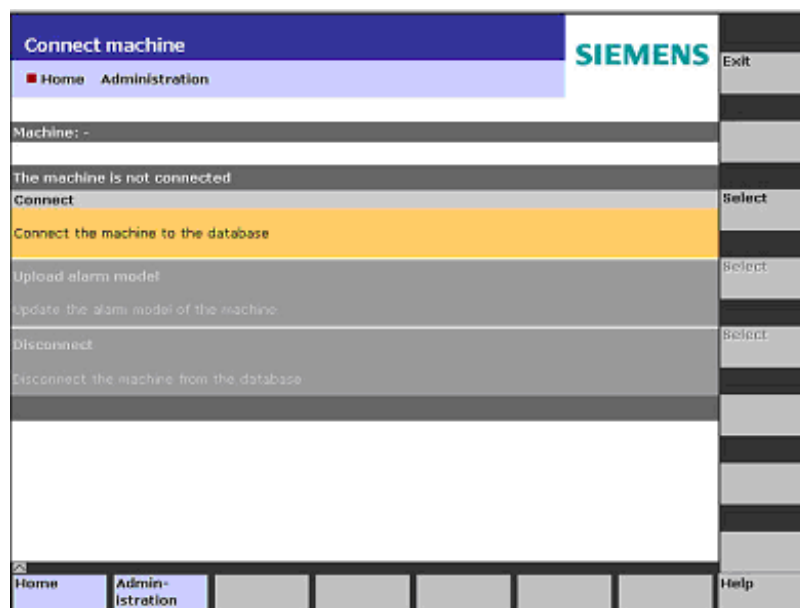


Fig. 7-3: Connection to the database

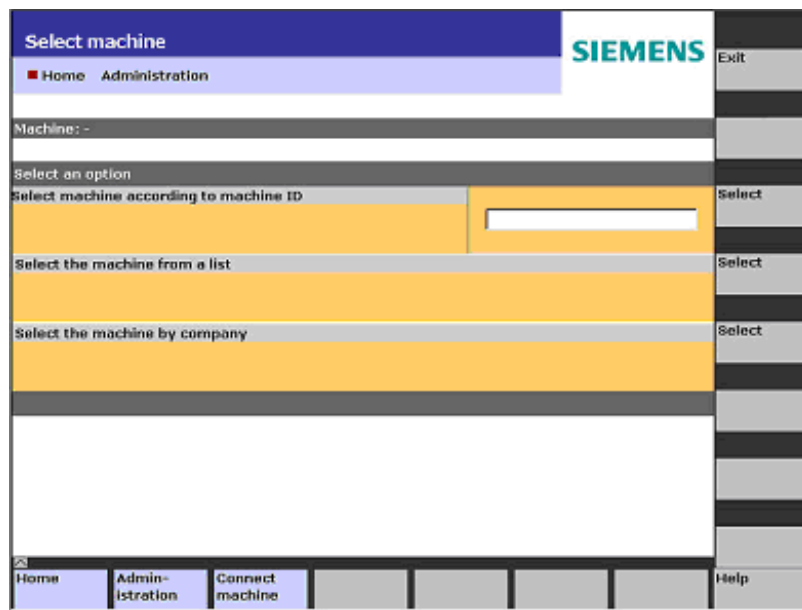


Fig. 7-4: Connection to the machine - entering machine ID

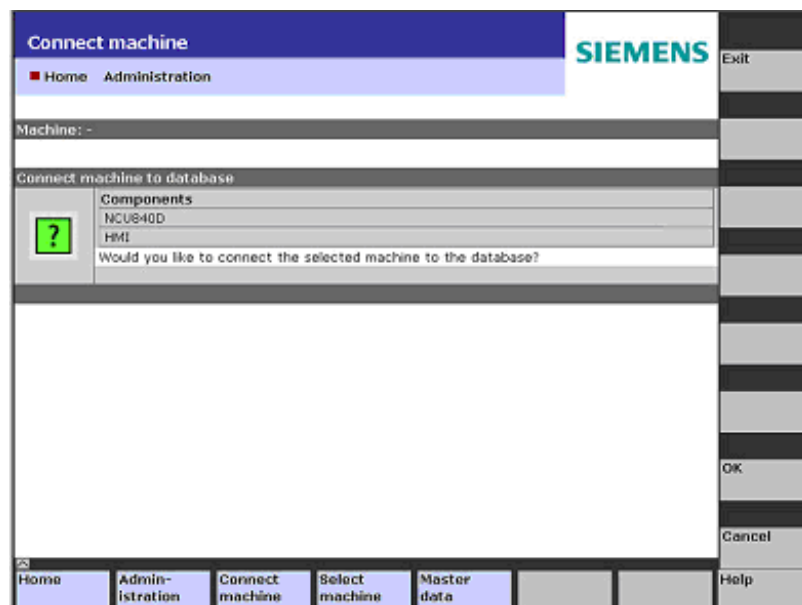


Fig. 7-5: Connection to the machine - confirmation prompt

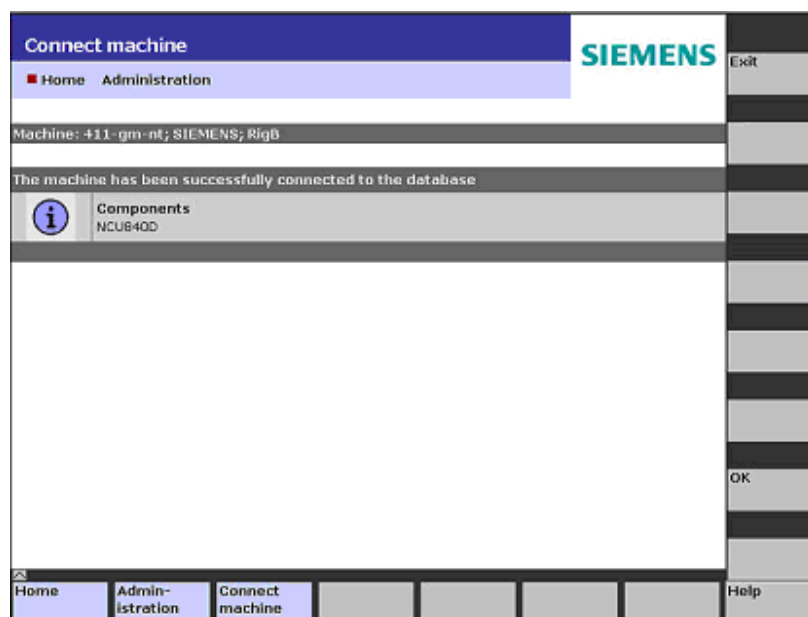


Fig. 7-6: Connection to the machine - success message.

7.1.1 Uploading an alarm model

Operating sequence on the machine

Language-specific alarm texts are made available on the server. This allows alarm messages to be displayed in the currently set browser language.

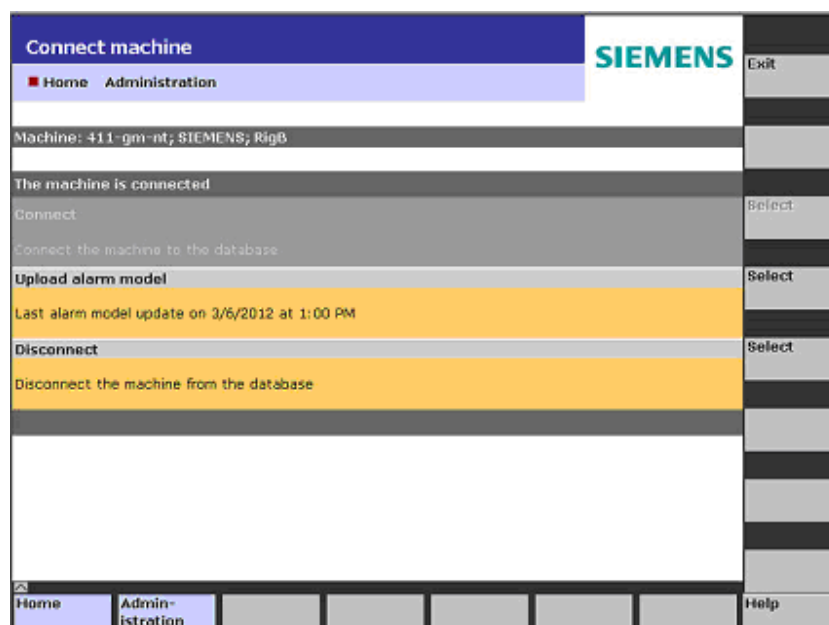


Fig. 7-7: Upload the alarm model

7.1.2 Synchronizing the machine

Operating sequence on the machine

Synchronization transfers the defined configurations, such as alarm notifications and trigger events, from the server to the control, and activates them.

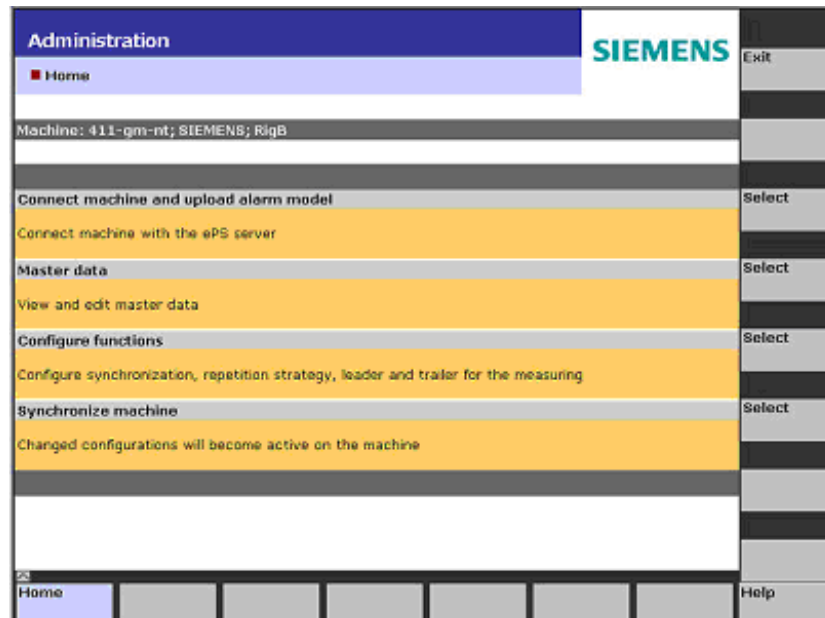


Fig. 7-8: Synchronizing the machine



Fig. 7-9: Initiating synchronization

7.1.3 Disconnecting the machine (on the control and on the PC)

Operating sequence on the control

A machine is disconnected from the database:

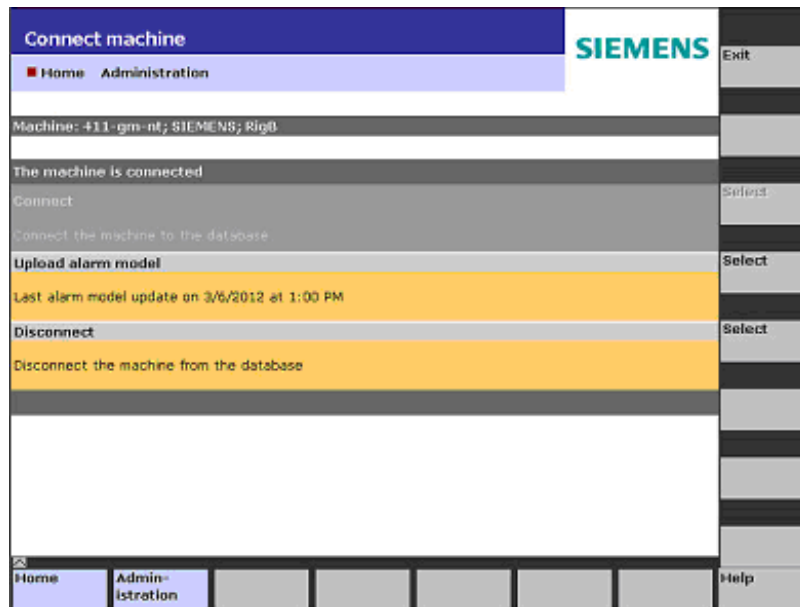


Fig. 7-10: Disconnecting a machine on the control

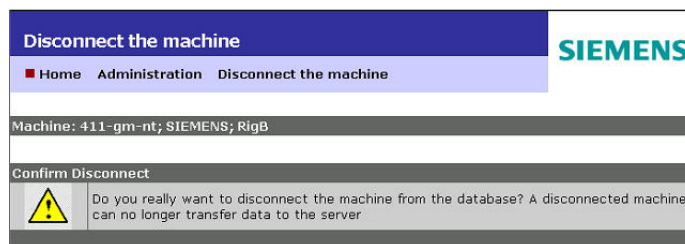


Fig. 7-11: Confirming the disconnection

After disconnection, all the information regarding the database has been removed from the local hard disk of the PCU.

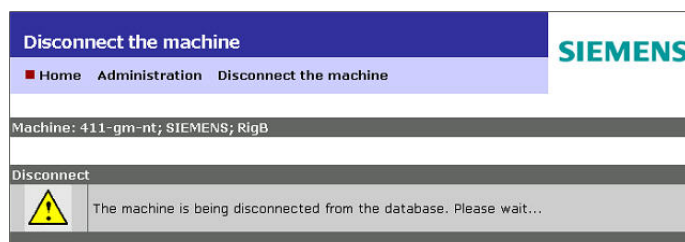


Fig. 7-12: Information about the disconnection

Note

After the disconnection from the server:

As soon as a machine operator contacts SINUMERIK Integrate that was disconnected at the server side from the database, a message is displayed informing the user that this machine is disconnected from the server. All actions of the client are canceled, and disconnection is initiated in the client.

Operating procedure on the PC

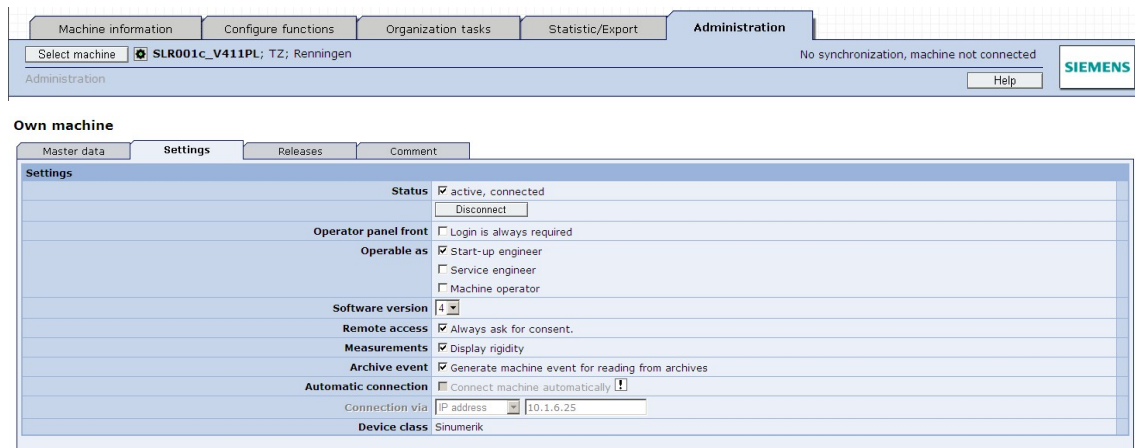


Fig. 7-13: Disconnecting a machine on the PC

Disconnect

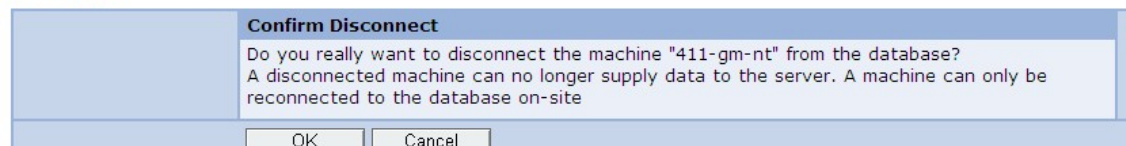


Fig. 7-14: Confirming disconnection on the PC

Function	Description
OK	Disconnects a machine from a connected database machine after a confirmation prompt.
Cancel	Aborts the disconnection.

7.1.4 Repetition strategy

Function description

The repetition strategy allows you to define how the client responds if communication via Internet with the server fails. You can activate and deactivate the repetition strategy and define when the repetition strategy will be started.

The screenshot displays the 'Repetition strategy for transmission faults' configuration window. At the top, there is a title bar with the Siemens logo and an 'Exit' button. Below the title bar, a navigation bar includes 'Home', 'Administration', and 'Configure functions'. The main area shows the 'Machine: 411-gm-nt; SIEMENS; RigB'. Under the 'Repetition strategy' section, the 'Status' is set to 'active' (indicated by a radio button). Below this, there are five rows for defining repetition delays: '1st repetition after' (10 minutes), '2nd repetition after' (1 hours), '3rd repetition after' (3 hours), '4th repetition after' (1 days), and '5th repetition after' (0 days). Each row has a text input field for the value and a dropdown menu for the unit. At the bottom of the window, there is a bar with 'Home', 'Admin-istration', 'Configure functions', and 'Help' buttons. On the right side of the window, there are 'OK' and 'Cancel' buttons.

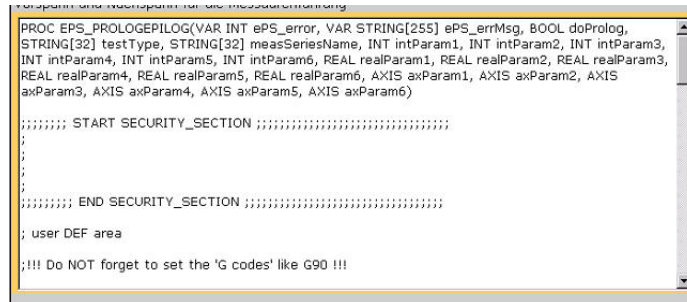
Fig. 7-15: Configuring the repetition strategy

Function	Description
active/inactive	Change the status of the repetition strategy
1st - 5th repetition	Time delay after which access to the Internet will be retried.

7.1.5 Editing prolog and epilog program

Editing the prolog and epilog program

The prolog and epilog program is reloaded into the control with name "N_EPS_PROLOGEPILOG_SPF" every time a test is run. HMI Advanced can be used as program editor on the operator panel in order to adjust this program.



```
PROC EPS_PROLOGEPILOG(VAR INT ePS_error, VAR STRING[255] ePS_errMsg, BOOL doProlog,
STRING[32] testType, STRING[32] measSeriesName, INT intParam1, INT intParam2, INT intParam3,
INT intParam4, INT intParam5, INT intParam6, REAL realParam1, REAL realParam2, REAL realParam3,
REAL realParam4, REAL realParam5, REAL realParam6, AXIS axParam1, AXIS axParam2, AXIS
axParam3, AXIS axParam4, AXIS axParam5, AXIS axParam6)

;;;;;;;; START SECURITY_SECTION ;;;;;;;;;
;
;
;
;;;;;;;; END SECURITY_SECTION ;;;;;;;;;

; user DEF area

;!!! Do NOT forget to set the 'G codes' like G90 !!!
```

Fig. 7-16: Example of a prolog and epilog program

7.2 Cooperation areas

Function description

The owner organization can use the "cooperation area" function to make one of its machines in SINUMERIK Integrate accessible to other organizations. This allows experts from different organizations to cooperate efficiently when performing troubleshooting on a machine.

Each person involved can access the released machine as if it were within their own organization. This applies with just a few exceptions: "Administrator" (machine manufacturer), "service engineer" or "machine operator"

See also Section: Appendix.

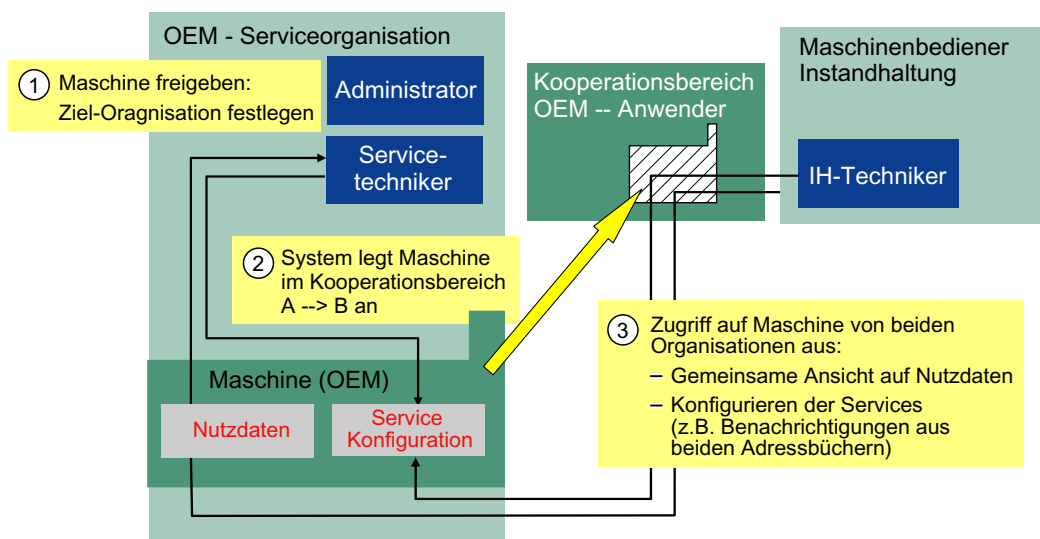


Fig. 7-17: How cooperation areas work

"Cooperation area between machine OEM and end user"; the machine tool is located on the end user's premises but is managed by the OEM (e.g. during the warranty period).

This function therefore permits cooperation between companies (machine manufacturers, machine users, external service providers) because release is not limited to one additional partner but any number of organizations can be connected to one machine.

The release mechanism is conveniently designed to permit short-term release for eliminating faults quickly as well as long-term release, e.g. for maintenance by an external service provider.

A requirement for using the cooperation area is that the organization to which a machine is to be released for use is also set up as an OEM service organization.

7.2.1 Releasing a machine to an organization

Overview

After a machine has been created in SINUMERIK Integrate, it is always assigned to exactly one organization. Depending on their assigned user roles, the machine operators in an organization can access the functions of the machine. The administrator of the owner organization can use the "cooperation area" function to release a machine of that organization for use by another organization.

Note

In this documentation, source organization designates the organization that releases a machine. In this documentation, target organization designates the organization to which a machine is released.

Release privileges specified by the administrator of the source organization define the type of access granted to the target organization. Machine function rights may be further limited in the target organization by the user roles that apply there.

A machine can only be released by the administrator of the source organization. A target organization cannot pass on a release to other organizations. This means that the source organization always maintains control over the other organizations that have access rights to its machine, data and settings.

The administrator of the target organization must define a release password for receiving machines from other organizations. The target organization administrator discloses the release password together with the name of its organization to the administrator of the source organization.

This allows the source organization to release machines to its organization.



Caution

Release password and organization name must be communicated outside the SINUMERIK Integrate system (by phone or fax, for example). On no account must the current password for the generic "administrator" account be used as the release password for the "cooperation area" function.

As soon as the administrator of the source organization has received the release password and the name of the target organization, he or she enters it in SINUMERIK Integrate, and can release machines of his/her organization to the target organization with immediate effect. A machine can be released to several target organizations simultaneously. Once the machine has been released to the target organization, the target organization administrator can enter his/her own name in the Machine ID field (Machine Alias) by which users in his or her organization will be able to find the machine.

Any changes to the settings made by any participants – either in the source organization or target organization – will be effective on the machine.

The configurations (control monitors, variable monitors, etc.) and user data (uploaded data, archives, etc.) that result from using SINUMERIK Integrate are always assigned to the machine. By consulting the machine list, a user can easily find out at any particular time whether the machine on which he/she is currently working belongs to his/her own or an external organization (machine list divided up according to organizations).

The users of the source organization see the organizations for which the machine is released and the users of the target organization see the organization that is making a machine accessible. This applies to the "administrator", "system startup engineer", and "service engineer" user roles on a PC; users on the control are unable to see that it is an external machine.

To end cooperation, either the administrator of the source organization can remove the machine from the cooperation area (cancel access rights of other organization) or the administrator of the target organization can reject the machine from the cooperation area.

In both cases, the administrators can choose whether the recipients in the target organization will be removed from the notification configuration of the machine or whether they are kept. The other settings (configuration of monitors, service case notification configuration, etc.) are kept on the machine.

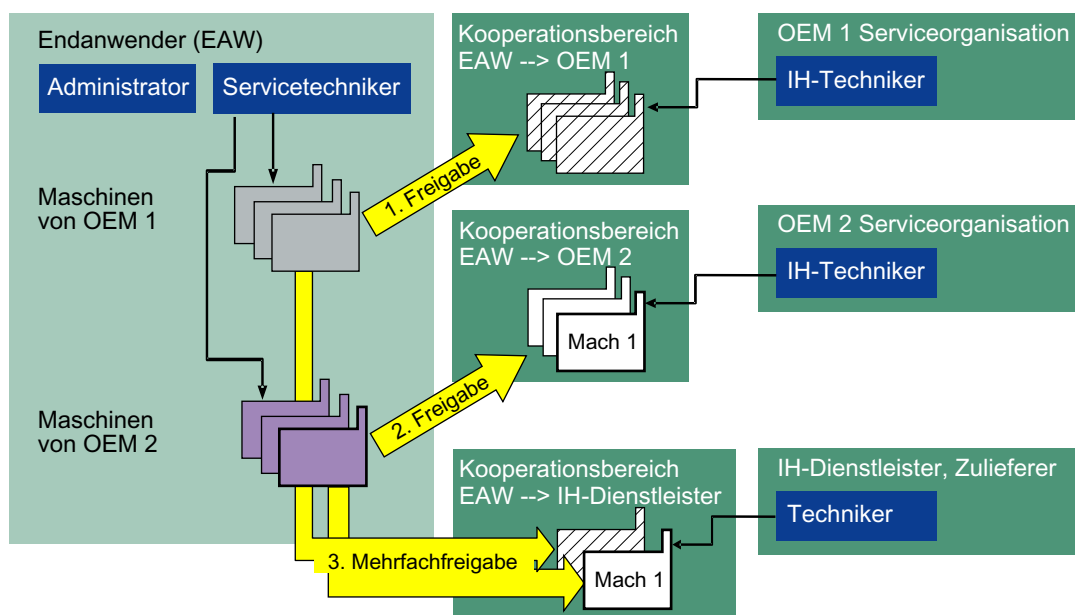


Fig. 7-18: Multiple release of machines

Cooperation area between one end user with a large machine park and various OEMs or service providers. One machine can be released simultaneously to several organizations (machine "Mach 1" surrounded by thick border)

As soon as the machine has been removed from the cooperation area, the target organization and its users cannot access the data of the machine until it is released again.

If recipients in the target organization are still in the notification configuration of the machine they will continue to receive service case notifications etc. if an alarm occurs until they are deleted by the source organization.

7.2.2 Machines in a cooperation area

Overview

The limitations and special aspects of the functions of SINUMERIK Integrate that result from the immediate use of a machine via a cooperation area are described below.

Machine tree

The machine ID used by the partner can be viewed in the machine tree views in the machine selection or machine management for machines in the cooperation area:

- "Partner of external machines" view (machines that the organization of the user can access when granted release)
- "Partner of own machines" view (machines released by the organization of the machine operator)

This ensures that the machine can always be clearly identified, e.g. during a hotline call. The partner's valid machine ID is displayed in the "Partner ID" field.

Managing/releasing machines

For security reasons, a machine can only be released by the administrator of the owner organization. The administrator always keeps control over which other organizations can work with his or her machines.

That is why the administrator of a target organization cannot release a machine released to his or her organization to other organizations via the cooperation area.

Deleting/deactivating machines

Only the administrator of the owner organization can delete a machine from the server. Only the administrator can activate/deactivate the machines and change or re-release the machine master data.

The administrators of both the source organization and the target organization can change the master data of a machine released via a cooperation area. These changes do not affect the other organization, so both organizations keep separate versions of machine master data (for example, if they use different naming and numbering systems).

The users of a target organization can only access the configuration and user data of a machine while it is released to their organization. If a machine is removed from the cooperation area by one of the administrators of the source or target organization, its users can no longer view or change that data.

Recipient addresses for notifications

A user can only enter the addresses from the address book of his or her own organization in a list of notification recipients.

A user can remove all the addresses from a list of recipients, even if they originate from another organization.

A user has no access to the address books of other organizations and cannot change the content of external recipient addresses (address book entry).

Upgrading the server software version

The server software version of the machine can only be upgraded by the administrator of the owner organization.

Reading/processing service cases

Service cases (synonym: trouble tickets), generated, for example, by a request to process a fault, can be read or processed by any organization that has access to the machine.

Users of target organizations that access an external machine via a cooperation area can also set up service cases for this machine using the "Create Service Case" function.

Linking a machine / uploading an alarm model

To link a control with the machine image on the SINUMERIK Integrate server, the user of the control must be a member of the owner organization of the machine.

7.3 Client diagnostics

Function description

A local application has been developed for client diagnostics, which the user at the machine can use to analyze the client software while the control is running.

As soon as client diagnostics is started a screen displaying the main diagnostic information required for an initial problem analysis appears.

The user can also start a comprehensive "diagnostics session" if problems occur, and transmit detailed information to SINUMERIK Integrate. (Start session)

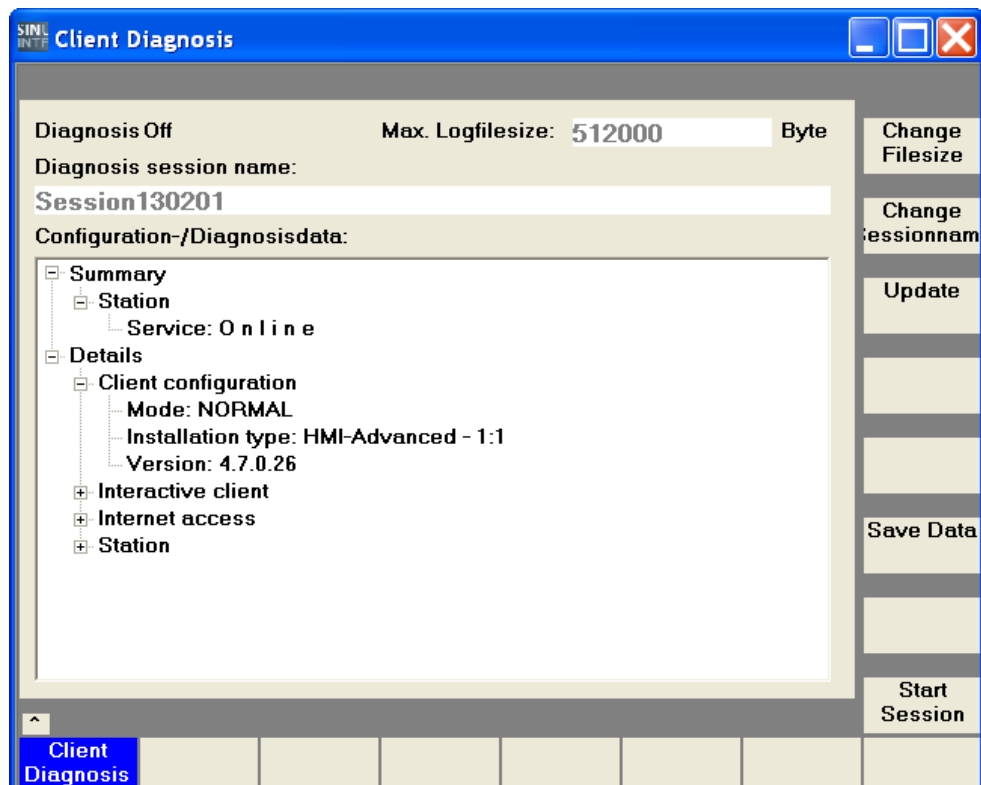


Fig. 7-19: Example of client diagnostics

7.3.1 Components of client diagnostics

Status information

Diagnosis Off	Max. Logfilesize: 512000	Byte
Diagnosis session name:		
Session130201		

Fig. 7-20: Session name

Operating functions

Softkey	Description
	Change maximum file size of log files
	Change the name of the diagnostics session
	Update diagnostics information
	Save diagnostic data of a diagnostics session
	Start a diagnostics session

Summary of diagnostics functions

When diagnostics is started, a summary states whether the client is connected to the Internet.

Configuration-/Diagnosisdata:

- [-] Summary
 - [-] Station
 - Service: O n l i n e

Fig. 7-21: Diagnostics summary

Detailed information

More precise information required for further diagnostics is shown under Details.

Configuration-/Diagnosisdata:

- [-] Summary
 - [-] Station
 - Service: O n l i n e
 - [-] Details
 - [-] Client configuration
 - Mode: NORMAL
 - Installation type: HMI-Advanced - 1:1
 - Version: 4.7.0.26
 - [-] Interactive client
 - [-] Internet access
 - [-] Station
 - Machine is not connected

Fig. 7-22: Detailed diagnostics

Client configuration

This display informs the user whether the installation is a normal 1:1 or a 1:N configuration.

Interactive client

The URL of the IAC is displayed for information purposes and to provide a comparison with the URL Web service.

Station

```

Station
+ Machine is not connected
+ Web service
  - Available
  - URL: https://www.epsnetwork.com/Services/MHC/Mhcomm.aspx
+ Internet access
  - Direct internet access
  - AutomaticProxyConfiguration = 0
  - AutomaticSearchForConfigServer = 0
  - AutoProxyConfigServer = ""
  - ProxyName = -.-
  - ProxyPort = -.-
  - UseProxyAuthentication = 0
  - FixedProxy = 0
  - FixedProxyURL = -.-
  - BridgeAutoProxyAdaption = 0
+ Active ePS jobs
  - BootScript (-1)

```

Fig. 7-23: Station details

The user is informed whether the control is connected or not connected to a database machine.

- **Web services**
URL of the machine handler (for comparison with the URL of the IAC)
- **Internet access**
Proxy configuration overview
- **Active ePS jobs**
Status of active ePS jobs
Status of the repetition strategy

7.3.2 Performing a diagnostics session

Start of the diagnostics session

Start the diagnostics session with the "Start Session" softkey to execute the following actions:

- Rename existing log files
- Create new log files with maximum LOG level

Executing SINUMERIK Integrate functions that cause problems

Functions are executed that cause problems and shall be diagnosed.

Stopping the diagnostics session

Stop the diagnostics session with the "Stop Session" softkey to execute the following actions:

- Place script files in a buffer
- Place log files generated during the session in a buffer
- Place SETTINGS.INI in a buffer
- Place file with session information in XML format in a buffer
- Reset LOG level to default value

Storing the LOG data

Generated data can be stored on any storage medium as long as it can be accessed online. Pressing the "Save Data" softkey starts an application that allows you to save any data you have generated as a ZIP file.

You can enter a storage path and an archive name. You can also define a maximum ZIP archive size to make transmission by e-mail easier.

Transferring the diagnostics information to SINUMERIK Integrate

The stored ZIP archive should be transferred to the OEM service or to the hotline, for example.

7.3.3 Other functions

Starting the client software

"Diagnosis" softkey via HMI Advanced

Restarting the client job

Diagnostics might require all client jobs to be restarted. After a safety query the jobs are restarted.

update

The "Update" softkey is used to update the screen content.

7.4 Configuring 1:N connections

Configuring connections

Each NCU of a 1:N connection can be selected via a configuration tool and, like a "standard machine", be connected to a database machine.

The configuration tool is called up automatically during the client installation if SINUMERIK Integrate recognizes a 1:N configuration.

After installation, one instance of the Machine Handler service is started for each NCU selected.

Note

Every NCU selected must be connected to a separate database machine.

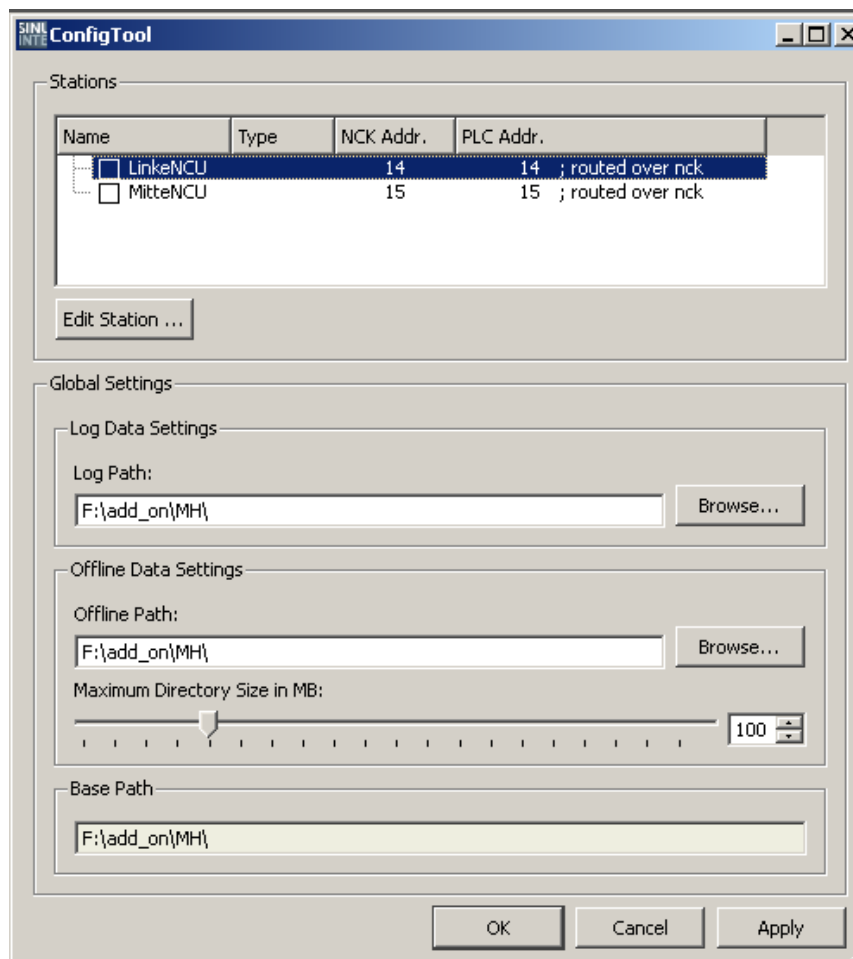


Fig. 7-24: 1:N configuration

Function description

SINUMERIK Integrate reads information from MMC.INI and NETNAMES.INI, and displays the contained information about the individual NCUs.

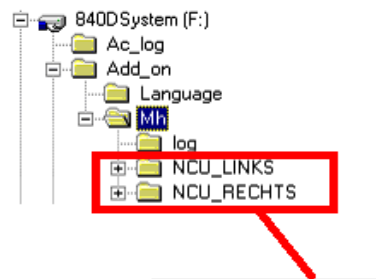
Selecting an NCU makes it available to SINUMERIK Integrate for connection to a database machine.

Changing the LOG path

Directories for the LOG files of the individually selected NCUs are created below this path.

Changing the path for OFFLINE data

Directories for the OFFLINE data of the individually selected NCUs are created below this path.



Directory structure

Fig. 7-25: Path for offline data 1:N

Changing the maximum directory size for OFFLINE data

Specify the maximum directory size for the OFFLINE data.

Saving the configuration

Press the OK button to save and activate the settings you have selected.

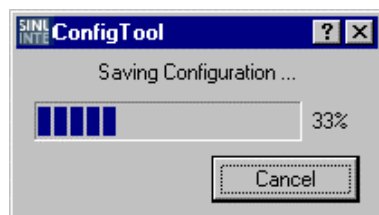


Fig. 7-26: Saving the 1:N configuration

When the control starts up, the associated "machine handlers" are automatically started in succession.

A

A Appendix

A.1 Useful functions of the various device classes

Functions at the control

The device class defines the SINUMERIK Integrate functions that can always be used on a particular machine.

A.2 Functions of the individual roles (privilege matrix)

Admin	Administrator
IB	Commissioning engineer
SE	Service engineer
MO	Machine operator

Administrator

The administrator may perform all necessary administration activities. In contrast to the role of the commissioning engineer, these include at the working PC / machine PC:

- Creating a new machine
- Activating / deactivating a machine
- Deleting a machine
- Creating a user
- Editing master data / password of any user
- Activating / deactivating a user
- Viewing / editing organizational data

Note

The administrator may not connect any machines.

Commissioning engineer

The commissioning engineer may perform and view all necessary configuration activities.

Note

Only a commissioning engineer with administrator privilege may create a new machine as a copy of an existing machine.

Service engineer

The service engineer may view all configurations. In addition, the service engineer may create or edit the following configurations at the PC – UI:

- Personal password
- Resetting filter and search settings
- Configuring the maintenance schedule (creating, editing, copying, deleting, etc.)
- Service case (creating, editing, copying, deleting, etc.)
- Activating / deactivating individual control monitors
- Activating / deactivating all control monitors
- New trigger participate in a common start date
- Preparing files to be downloaded into the machine

Machine operator

At the control, the machine operator may perform pending maintenance jobs and condition monitoring tests, request fault processing, and participate in a Teleservice session.

A.3 Abbreviations

Admin	Administrator (user role)
AMB	Access MyBackup
AMC	Analyze MyCondition
AMM	Access MyMachine
AMP	Analyze MyPerformance
ASP	Application Service Providing
CNC	Computerized Numerical Control:
EH	Event History
FQDN	Full Qualified Domain Name
FTP	File Transfer Protocol
GAC	Global Assembly Cache
GLT	Gleichform-Achsentest
HDD	Hard Disk Drive: Festplattenlaufwerk
HMI	Human Machine Interface:
IB	Commissioning engineer (user role)
IPC	Maschinen PC (Industrie PC)
KFT	Circularity test
MO	Machine Operator: (Benutzerrolle)
MT	Maintenance Ticket
NC	Numerical Control:
NCK	Numerical Control Kernel: NC kernel with block preparation, traversing range, etc.
NCU	Numerical Control Unit:
OEM	Original Equipment Manufacturer
OS	Operating System
PCU	Programmable Control Unit
PG	Programming device
PLC	Programmable Logic Control:
RANG	Remote Access Next Generation
SE	Service Engineer: Service-Ingenieur (Benutzerrolle)
SLA	Service Level Agreement
SOAP	Simple Object Access Protocol
SW	Software
TE	Trigger Event
UAT	Universal axis test
VPN	Virtual Private Network
WSDL	Web Services Description Language

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