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Valid for controls: SINUMERIK ONE, SINUMERIK 840D sl / SINUMERIK 828D / SINUMERIK PL SINUMERIK Service Assistance V2.3.0.2

Legal information

Warning notice system

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

♠ DANGER

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

⚠ WARNING

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

♠ CAUTION

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

NOTICE

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

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

№ WARNING

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

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

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

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Introduction

1.1 About SINUMERIK

From simple, standardized CNC machines to premium modular machine designs – the SINUMERIK CNCs offer the right solution for all machine concepts. Whether for individual parts or mass production, simple or complex workpieces – SINUMERIK is the highly dynamic automation solution, integrated for all areas of production. From prototype construction and tool design to mold making, all the way to large-scale series production.

Visit our website for more information SINUMERIK (https://www.siemens.com/sinumerik).

1.2 About this documentation

Content

This manual describes the administration and configuration of the MindSphere application SINUMERIK Service Assistance (SSA).

Below information is described in detail:

- How to configure Manage MyMachine File Upload functionality to activate SSA Machine Transparency
- How to administrate / configure aspects and assets
- · How to use SINUMERIK Service Assistance functionality

Target group

This publication is intended for machine operators, plant operators.

1.2.1 System requirements

The following system requirements are specified for using the MindApp **SINUMERIK Service Assistance**:

- It exists a MindSphere IoT plan with access to the account with corresponding resources in MindSphere via a link with specific identify / a specific login.
- The following MindSphere applications are set up and fully functional in the MindSphere IoT plan:
 - ManageMyMachines V2.1.3
 - SINUMERIK Service Assistance V2.2.1
- The SINUMERIK machines are connected via Manage MyMachines or BFC.
- The following web browsers are supported:
 - Chrome version from 65.0.3325.18 (64 bit) up to the current version.

Standard scope

This documentation only describes the functionality of the standard version. This may differ from the scope of the functionality of the system that is actually supplied. Please refer to the ordering documentation only for the functionality of the supplied drive system.

It may be possible to execute other functions in the system which are not described in this documentation. This does not, however, represent an obligation to supply such functions with a new control or when servicing.

1.2 About this documentation

For reasons of clarity, this documentation cannot include all of the detailed information on all product types. Further, this documentation cannot take into consideration every conceivable type of installation, operation and service/maintenance.

The machine manufacturer must document any additions or modifications they make to the product themselves.

Websites of third-party companies

This document may contain hyperlinks to third-party websites. Siemens is not responsible for and shall not be liable for these websites and their content. Siemens has no control over the information which appears on these websites and is not responsible for the content and information provided there. The user bears the risk for their use.

1.3 Documentation on the internet

Comprehensive documentation about the functions provided in SINUMERIK ONE Version 6.13 and higher is provided in the Documentation overview SINUMERIK ONE (https://butter.com/cs/ww/en/view/109768483).



You can display documents or download them in PDF and HTML5 format.

The documentation is divided into the following categories:

• User: Operating

User: Programming

• Manufacturer/Service: Functions

Manufacturer/Service: Hardware

Manufacturer/Service: Configuration/Setup

• Manufacturer/Service: Safety Integrated

· Information and training

Manufacturer/Service: SINAMICS

1.4 Feedback on the technical documentation

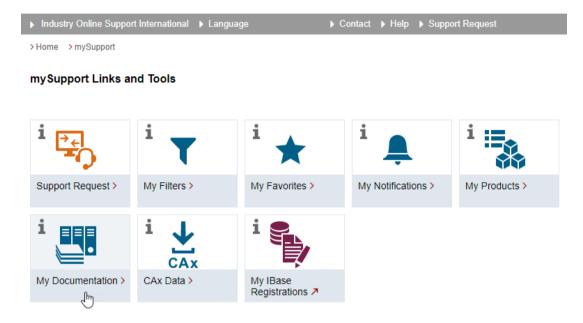
If you have any questions, suggestions or corrections regarding the technical documentation which is published in the Siemens Industry Online Support, use the link "Provide feedback" which appears at the end of the entry.

1.5 mySupport documentation

1.5 mySupport documentation

With the "mySupport documentation" web-based system you can compile your own individual documentation based on Siemens content, and adapt it for your own machine documentation.

To start the application, click on the "My Documentation" tile on the mySupport homepage (https://support.industry.siemens.com/cs/ww/en/my):



The configured manual can be exported in RTF, PDF or XML format.

Note

Siemens content that supports the mySupport documentation application can be identified by the presence of the "Configure" link.

1.6 Service and Support

Product support

You can find more information about products on the internet:

Product support (https://support.industry.siemens.com/cs/ww/en/)

The following is provided at this address:

- Up-to-date product information (product announcements)
- FAQs
- Manuals
- Downloads
- Newsletters with the latest information about your products
- Global forum for information and best practice sharing between users and specialists
- Local contact persons via our Contacts at Siemens database (→ "Contact")
- Information about field services, repairs, spare parts, and much more (→ "Field Service")

Technical support

Country-specific telephone numbers for technical support are provided on the internet at address (https://support.industry.siemens.com/cs/ww/en/sc/4868) in the "Contact" area.

If you have any technical questions, please use the online form in the "Support Request" area.

Training

You can find information on SITRAIN at the following address (https://www.siemens.com/ sitrain).

SITRAIN offers training courses for automation and drives products, systems and solutions from Siemens.

Siemens support on the go



1.6 Service and Support



With the award-winning "Siemens Industry Online Support" app, you can access more than 300,000 documents for Siemens Industry products – any time and from anywhere. The app can support you in areas including:

- Resolving problems when implementing a project
- Troubleshooting when faults develop
- Expanding a system or planning a new system

Furthermore, you have access to the Technical Forum and other articles from our experts:

- FAQs
- Application examples
- Manuals
- Certificates
- Product announcements and much more

The "Siemens Industry Online Support" app is available for Apple iOS and Android.

Data matrix code on the nameplate

The data matrix code on the nameplate contains the specific device data. This code can be read with a smartphone and technical information about the device displayed via the "Industry Online Support" mobile app.

1.7 Important product information

Using OpenSSL

This product can contain the following software:

- Software developed by the OpenSSL project for use in the OpenSSL toolkit
- Cryptographic software created by Eric Young.
- Software developed by Eric Young

You can find more information on the internet:

- OpenSSL (https://www.openssl.org)
- Cryptsoft (https://www.cryptsoft.com)

Compliance with the General Data Protection Regulation

Siemens observes standard data protection principles, in particular the data minimization rules (privacy by design).

For this product, this means:

The product does not process or store any personal data, only technical function data (e.g. time stamps). If the user links this data with other data (e.g. shift plans) or if he/she stores person-related data on the same data medium (e.g. hard disk), thus personalizing this data, he/she must ensure compliance with the applicable data protection stipulations.

1.7 Important product information

Safety notes 2

2.1 Fundamental safety instructions

2.1.1 General safety instructions



Danger to life if the safety instructions and residual risks are not observed

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

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

MARNING

Malfunctions of the machine as a result of incorrect or changed parameter settings

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

- Protect the parameterization against unauthorized access.
- Handle possible malfunctions by taking suitable measures, e.g. emergency stop or emergency off.

2.1.2 Warranty and liability for application examples

Application examples are not binding and do not claim to be complete regarding configuration, equipment or any eventuality which may arise. Application examples do not represent specific customer solutions, but are only intended to provide support for typical tasks.

As the user you yourself are responsible for ensuring that the products described are operated correctly. Application examples do not relieve you of your responsibility for safe handling when using, installing, operating and maintaining the equipment.

2.1.3 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

2.1 Fundamental safety instructions

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit

https://www.siemens.com/industrialsecurity (https://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under

https://www.siemens.com/industrialsecurity (https://new.siemens.com/global/en/products/services/cert.html#Subscriptions).

Further information is provided on the Internet:

Industrial Security Configuration Manual (https://support.industry.siemens.com/cs/ww/en/view/108862708)



Unsafe operating states resulting from software manipulation

Software manipulations, e.g. viruses, Trojans, or worms, can cause unsafe operating states in your system that may lead to death, serious injury, and property damage.

- Keep the software up to date.
- Incorporate the automation and drive components into a holistic, state-of-the-art industrial security concept for the installation or machine.
- Make sure that you include all installed products into the holistic industrial security concept.
- Protect files stored on exchangeable storage media from malicious software by with suitable protection measures, e.g. virus scanners.
- On completion of commissioning, check all security-related settings.

Product overview 3

SINUMERIK Service Assistance is a MindSphere Application which offers error analysis and troubleshootings for SINUMERIK controllers.

Based on information about the current state of the machine, as well as the record and evaluation of historical data, detailed statements can be made about the customer's situation. As a result, the service call required in the event of a fault can be carried out more efficiently, which enables a reduction in machine downtimes at customer's side.

SINUMERIK Service Assistance offers three digital services:

- Machine Transparency
- Machine Condition
- Machine Error Analysis

3.1 System concept

3.1 System concept

Boundary conditions for Manage MyMachines (MMM) based connectivity:

- MindSphere applications already purchased:
 - ManageMyMachines
 - SSA
- MindSphere access exists (IoT tenant)
- Machine is connected via ManageMyMachines.
- MMM Asset Manager Variable Toggles are activated
- Sinumerik Machine is connected via SINUMERIK Integrate Client (SI client)
- Each application (MMM, SSA) has its own variable set of standard aspects and all must be configured.

Boundary conditions for Brownfield Connectivity Services

- BFC Client and Gateway must be installed and a connection must be established.
- Tenant is available and SSA is purchased and provisioned.
- On the BFC Gateway, the middleware "SSA Service" and "Scriptlogic" are active for SSA gateway
- BFC Gateway must be connected for Mindsphere

Machine Configuration in MindSphere

4

Machine Configuration in MindSphere

The following chapter describes the necessary steps for connecting a machine to the MindApp "SINUMERIK Service Assistance (SSA)".

Machine connection to MindSphere

Note

For machine connection to MindSphere please refer to MMM Function Manual, Chapter 3 "Setting up the SINUMERIK control system for Manage MyMachines" (https://chapter 3 documentation.mindsphere.io/resources/html/manage-my-machine/en-US/index.html).

4.1.1 Overview

By Using the MindSphere Tool "Asset Manager" the following Aspects have to be initially configured:

- SINUMERIK CSPROTECTIONLEVEL
- SINUMERIK CSRESULTS
- SINUMERIK CSMACHINESTATUS

Note

For configuration details of the Aspects see Data Acquisition only in MindSphere (Page 121).

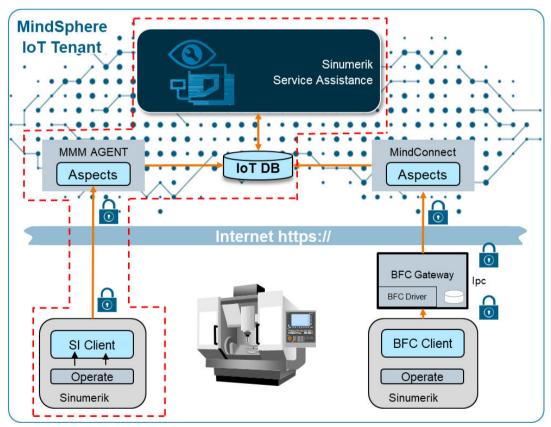


Figure 4-1 Overview aspect configuration

Aspect requirements

The minimum aspect requirements are listed following table:

Aspects	Asset Selection	Machine Transparency	Machine Condition	Machine Er- ror Analysis
AgentOnlineStatus	Mandatory	-	Mandatory	Mandatory
Alarms	-	-	-	Mandatory
CH1_BasicConfig	Mandatory	-	Mandatory	
CH1_MachineStatus	Mandatory	-	Mandatory	Mandatory
CSM_AX01	-	-	Optional	-
CSM_AX02	-	-	Optional	-
CSM_AX03	-	-	Optional	-
CSM_AX04	-	-	Optional	-
CSM_AX05	-	-	Optional	-
CSM_General_Info	-	-	Mandatory	
CSM_SP01	-	-	Mandatory	-
MachineModel	-	-	Mandatory	-
SINUMERIK_CSALARMREACTION	-	-	-	Mandatory
SINUMERIK_CSMACHINESTATUS	-	-	Mandatory	Mandatory
SINUMERIK_CSPROTECTIONLEVEL	Mandatory	-	Mandatory	-
SINUMERIK_CSRAW	-	-	Mandatory	Mandatory
SINUMERIK_CSRESULTS	-	-	Mandatory	-
Startup	-	-	Mandatory	Mandatory

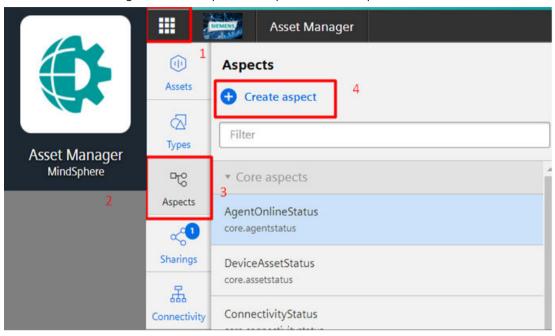
4.1.2 Initial creation of Aspects

Procedure

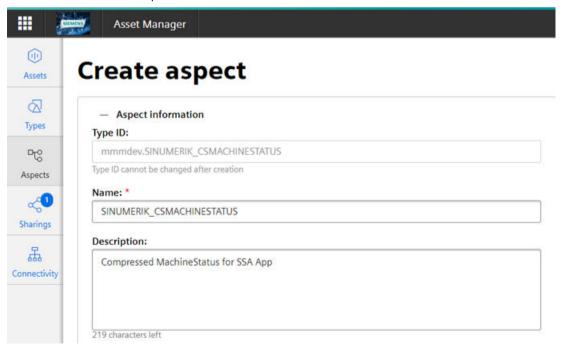
Repeat the following procedure for all aspects.

Here as an example the Aspect SINUMERIK CSMACHINESTATUS is created.

1. Load "Asset Manager", select "Aspects" and press "Create aspect".



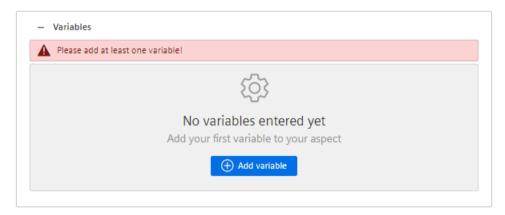
2. Edit Name and Description.



3. Choose category "Dynamic".



4. Press "Add variable".



5. Press "Add variable".



6. If required, add further variables and enter Name, Data type and Unit.



7. Press "Save".



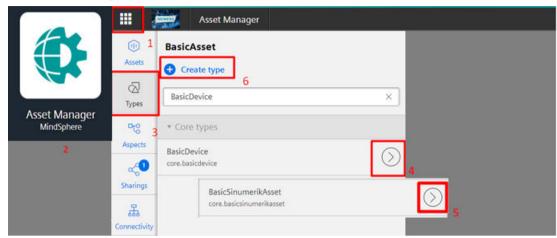
4.1.3 Creating Asset Type

Procedure

An Asset Type for every single Machine should be created.

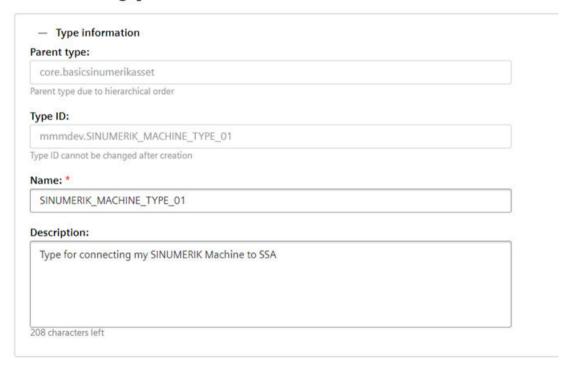
- 1. Load "Asset Manager" and select "Types".
- 2. Expand "BasicDevice".

- 3. Expand "BasicSinumericAsset".
- 4. Press "Create type".



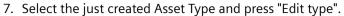
5. Edit "Name" and "Description".

Create type



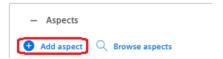
6. Press "Save".







8. Scroll down to the Aspects and press "Add aspect".



- 9. Select the following Aspects from the list and add them one after the other:
 - SINUMERIK_CSPROTECTIONLEVEL
 - SINUMERIK CSRESULTS
 - SINUMERIK CSMACHINESTATUS
- 10. The Name should not be changed, it will be filled automatically.



11. Press "Save".

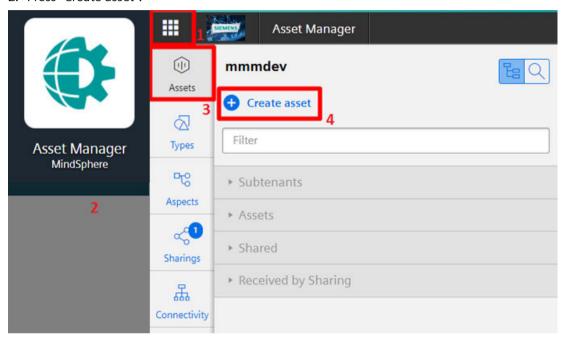


4.1.4 Creating Asset

Procedure

An Asset for every single Machine should be created.

- 1. Load "Asset Manager" and select "Assets".
- 2. Press "Create asset".

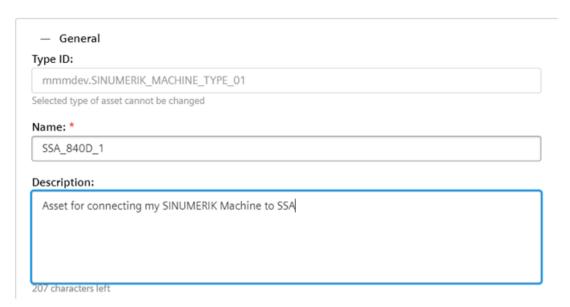


3. Select previously created Asset Type and press "Create".



4. Edit "Name" and "Description".

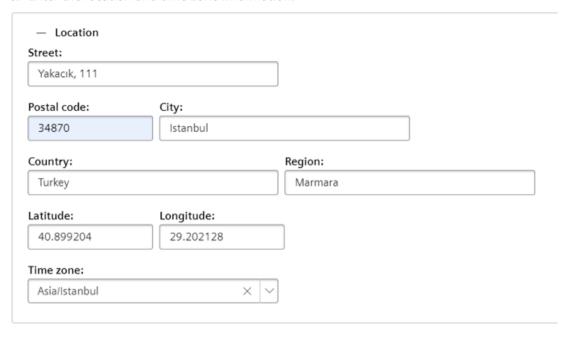
Add asset



5. Select "Performance" as classification.



6. Enter the location and time zone information.



7. Press "Save".



4.1.5 Connecting Machine to Asset

Procedure

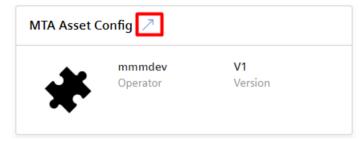
Note

You can find further information in MMM Function Manual, Chapter 3 "Setting up the SINUMERIK control system for Manage MyMachines" (https://documentation.mindsphere.io/resources/ httml/manage-my-machine/en-US/index.html).

- 1. Load "Asset Manager" and select "Assets".
- 2. Select your previously created Asset.



3. Press "MTA Asset Config".



4. On the "Connectivity" tab accepts the license conditions.



5. Then press "Connect SINUMERIK with MindSphere" to onboard the Machine.



6. The file "onboard.key" will be generated and downloaded.

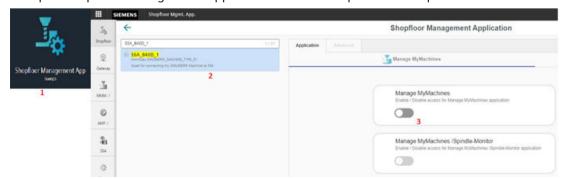


7. Please consult "MMM Function Manual" for details how to onboard your Machine.

4.1.6 Enabling MMM data acquisition

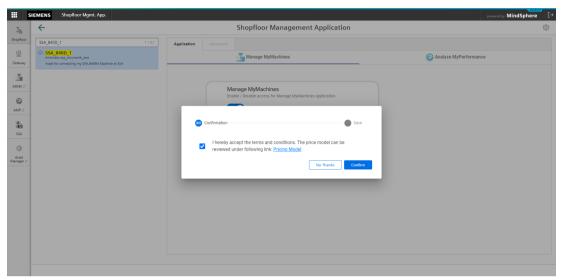
Procedure

1. Open Shopfloor Management Application from MindSphere Launchpad.

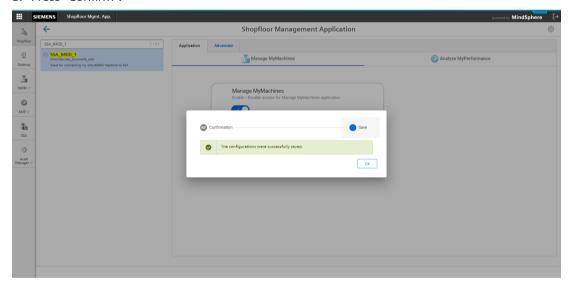


2. Search and select your previously created Asset.

- 3. On the Manage MyMachines tab, enable the Manage MyMachines switch.
- 4. Press "Confirm".



5. Press "Confirm".



4.1.7 Enabling SSA data acquisition

4.1.7.1 Overview

The following describes how to configure the required aspects so that SSA can successfully capture and process the machine data. Here is an example of the procedure described. Details of the configuration are listed in Data Acquisition in MMM - "Time-based / cyclic trigger" (Page 122) and Data Acquisition in MMM - "Variable value-based trigger" (Page 126).

Note

For assets created from type "basicsinumerikasset", shoopfloor aspect configuration will be automated with activation. For more detailed information, see chapter Machine model and auto aspect creation and configuration (Page 31).

The following aspects must be configured via MMM, as "Time-based / cyclic trigger":

- SINUMERIK CSRAW
- CSM General Info

The following aspects for the Axes and Spindles must be configured via MMM, as "Time-based / cyclic trigger":

- CSM AX01, CSM AX02, ... (depending on the number of axes)
- CSM_SP01, ... (depending on the number of spindles)

The following aspects must be configured via MMM, as "Variable value-based trigger":

SINUMERIK CSALARMREACTION

See also

Function Manual Manage MyMachines (https://documentation.mindsphere.io/resources/html/ manage-my-machine/en-US/index.html)

4.1.7.2 Machine model and auto aspect creation and configuration

Necessary aspects are created automatically depending on the machine model:

- If asset is onboarded, the machine model will be automatically detected as SINUMERIK 840D sl/SINUMERIK ONE or SINUMERIK 828D.
- If asset is not onboarded, select the machine model manually.

Note

- If machine model of the activated asset is changed after activation, change the machine model manually and save it.
- The address of some variables are different, so the machine model should be corrected to use SSA fully.

Auto aspect creation

Auto aspect creation depends on the machine model. The following aspects will be created:

Note

Condition for auto aspect creation

- Onboard.key downloaded and Manage MyMachine Toggle should be enabled.
- Auto aspect creation is **valid** for asset created from basicsinumerikasset type (MMM customer).
- If asset is created from the derived type from basicsinumerikasset type (e. g: basicsinumerikasset > ssa_asset_type > ssa_derived_asset_type), auto aspect creation is invalid.
- Aspect configuration will be sent only from active services (MC,EA).

Machine Transparency	Machine Condition	Machine Error Analysis
No aspect	• CSM_AX01, CSM_AX02,	SINUMERIK_CSRAW
	CSM_AX03, CSM_AX04, CSM_AX05	SINUMERIK_MACHINESTATUS
	CSM_SP01	SINUMERIK_CSALARMREACTION
	CSM_General_Info	_
	SINUMERIK_CSRAW	
	SINUMERIK_MACHINESTATUS	
	SINUMERIK_CSRESULTS	
	SINUMERIK_CSPROTECTIONLEVEL	

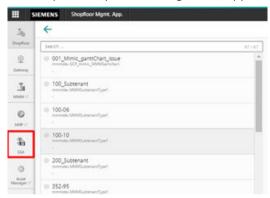
Procedure

The following procedure gives you an example how to configure an asset.

- 1. After downloading onboard.key and enabling MMM Toggle, choose one of the following applications:
- 2. EITHER Open "Sinumerik Service Assistance". Open the "Activation page" from "Asset Selection page" (only tenant admin).



- OR - Open "Shopfloor Management Application". Click the SSA tab to activation page.



3. Search the asset, which will be purchased.



4. Select the machine model (if the asset is not onboard).



5. Activate the services.



6. Press "Save".



7. Press "Activate for a fee" or "Yes I have a valid contract" (depends on billing system).



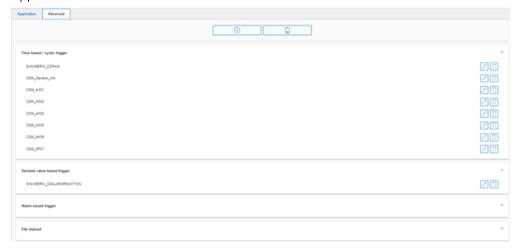
8. A notification is shown that saving is successful.



- 9. Wait until the end of operation.
 - If auto aspect configuration is successful, the below icon below is shown:



10. After successful configuration, aspects are be listed in the Shopfloor Management Application:



Note

If SSA toggles are enabled before MMM activation, you have to configure the assets manually . For manual aspect configuration, refer to chapter Overview (Page 31).

4.1.7.3 Configuring aspect for "time-based / cyclic trigger" acquisition

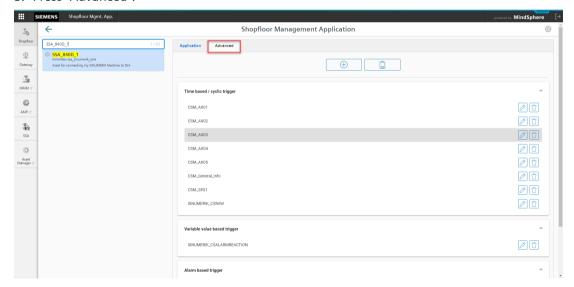
Note

If SSA toggles are enabled before MMM activation, you have to manually configure the assets . For manual asset aspect configuration, this section needs to be followed.

Procedure

In the following, you can find an example how to configure the Aspect "SINUMERIK CSRAW":

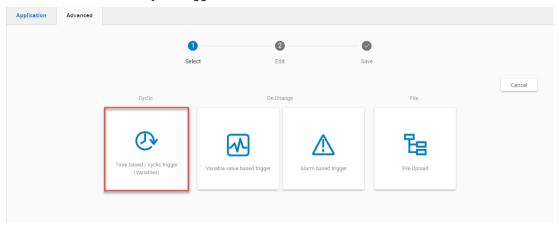
- 1. Load "Shopfloor Management Application".
- 2. Select your previously created Asset.
- 3. Press "Advanced".



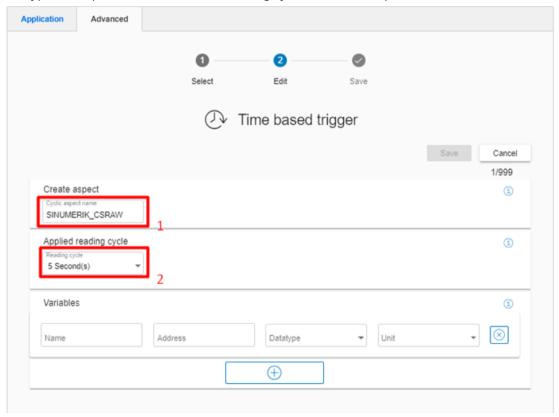
4. Press "Add".



5. Select "Time-based / cyclic trigger (Variables)".

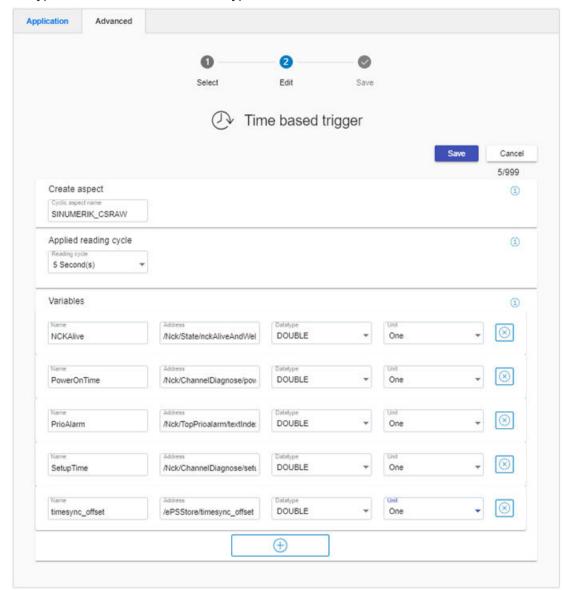


6. Type the Aspect name and select "Reading cycle" from the drop-down menu.



7. Press "Add" as many times as necessary to add the number of needed variables.





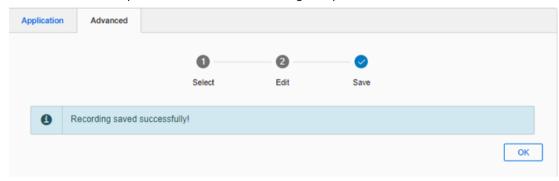
8. Type the "Name", "Address", "Datatype" and "Unit" of the variable to be added.

9. Press "Save".

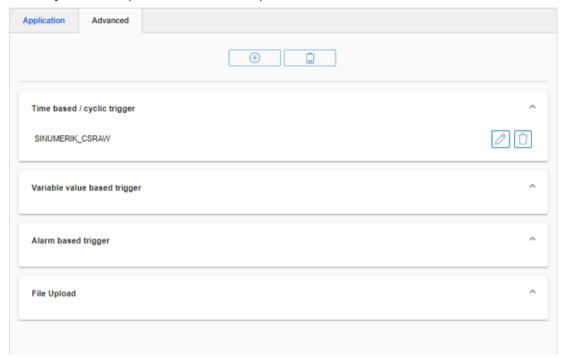
Save

4.1 Aspect configuration for SSA with MMM

10. Wait until the response of the successful saving and press "OK".



11. Verify that the Aspect was created as expected.



12. This procedure should be repeated until all the needed "Time-based / cyclic trigger" Aspects are created. For example:



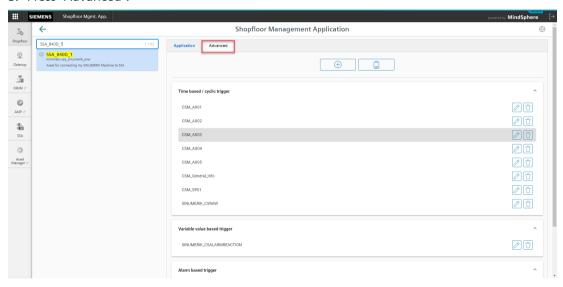
4.1 Aspect configuration for SSA with MMM

4.1.7.4 Configuring aspect "variable value-based trigger" acquisition

Procedure

In the following you can find an example how to configure "SINUMERIK_CSALARMREACTION" trigger.

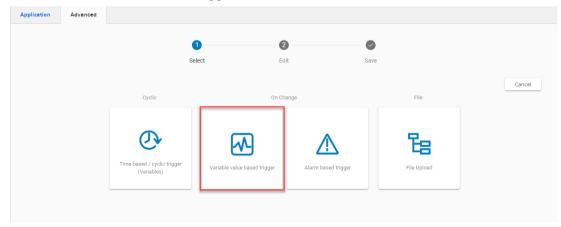
- 1. Load "Shopfloor Management Application".
- 2. Select your previously created Asset.
- 3. Press "Advanced".



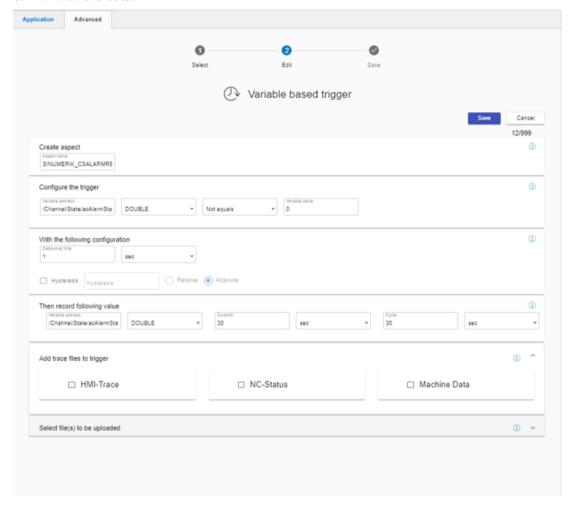
4. Press "Add".



5. Select "Variable value-based trigger".



6. Fill in all the data.

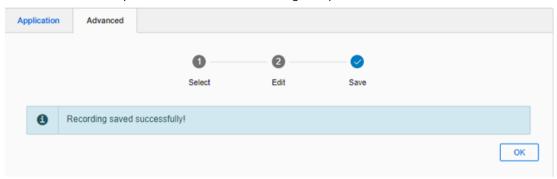


7. Press "Save".

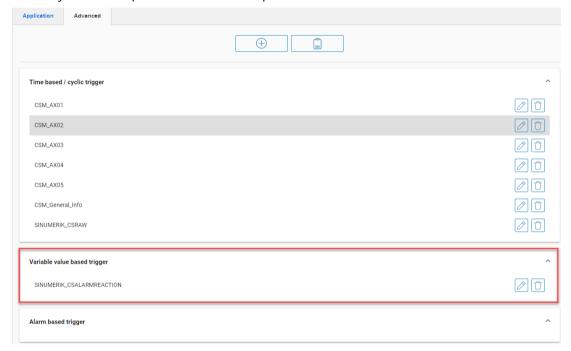
Save

4.1 Aspect configuration for SSA with MMM

8. Wait until the response of the successful saving and press "OK".



9. Verify that the Aspect was created as expected.



4.2.1 Overview

To connect a SINUMERIK controller to SSA via the BFC gateway, you carry out the following steps once:

- Creating the asset type "bfc_ssa_sinumerik"
- Connecting a new machine to SSA
- Configuring the BFC client data acquisition
- Creating and saving a machine identity

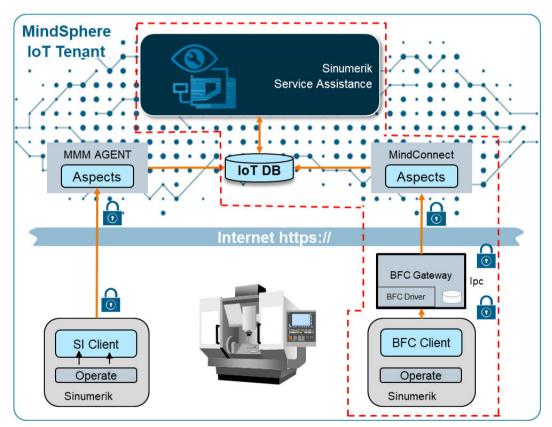


Figure 4-2 Overview aspect configuration

4.2.2 Requirements

The following preconditions must be fulfilled:

• The BFC client is connected to the BFC gateway

Note

Configuration activities for BFC client and BFC gateway are not part of this documentation. For more information about BFC client and BFC gateway, please follow this link:

Function Manual Brownfield Connectivity Services (https://support.industry.siemens.com/cs/at/en/sc/5392)

- MindSphere Tenant is available and set up with Mindsphere Application SSA activated
- The middleware "SSA Service" and "Scriptlogic" are active. More information on this topic can be found in chapter Checking the current status of middleware (logic) (Page 44).

4.2.3 Checking the current status of middleware (logic)

To check whether the middleware "SSA Service" and "Scriptlogic" are active, proceed as follows.

Procedure

- 1. Open the user interface of the BFC gateway.
- 2. Select the "Commissioning" area.
 - In the area "Middleware (Logic)", you will find the entries "SSA-Service" and "Scriptlogic".
 - You can recognize the current status by the symbols to the left of "SSA Service" and "Scriptlogic":

The symbol "Running" means "active".

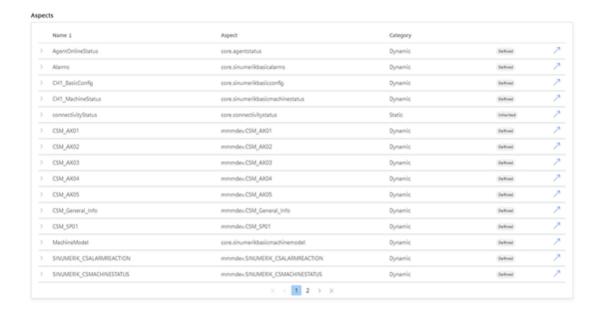
The symbol "Stopped" means "not active".

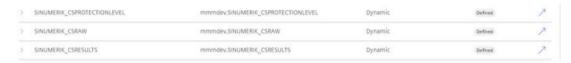


4.2.4 Creating aspects in Mindsphere

The following aspects must be created in Mindsphere. You can find further information in the chapter Aspect configuration for SSA with MMM (Page 20).

If the aspects listed here do not exist, you must create them.



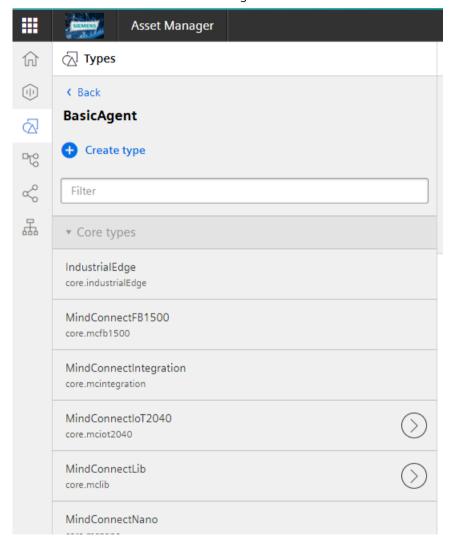


4.2.5 Creating the asset type "bfc_ssa_sinumerik"

If the asset type "bfc_ssa_sinumerik" does not exist in the Asset Manager of MindSphere, you have to create it.

Procedure

- 1. Open the Asset Manager in MindSphere.
 - Click on "Types" in the left hand window area.
 - The "Basic Asset" Windows opens. Navigate to the "BasicAgent" area and select the type
 "MindConnectLib" from the list in the right-hand window area.



2. The "MindConnectLib" window opens. Click the "Create Type" button.



- 3. The "Create type" window opens.
 - Fill in the input fields. Enter the designation "bfc ssa sinumerik" in the "Name" input field.

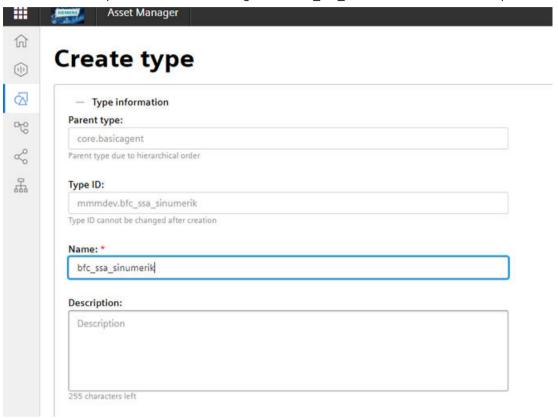


Figure 4-3 Createtype_bfcssasinumerik

- 4. Create the list of aspects according to the following overview.
 - Click on "Add aspect".
 - Select the aspects as shown in the following figure.

Click the "Save" button.

Aspects Category AgentOnlineStatus Defined core.agentstatus Dynamic Alarms core.sinumerikbasicalarms Dynamic Defined CH1 BasicConfig core.sinumerikbasicconfig Dynamic Defined > CH1_MachineStatus core.sinumerikbasicmachinestatus Defined > connectivityStatus Static core.connectivitystatus Inherited CSM AX01 mmmdev.CSM AX01 Dynamic Defined CSM_AX02 mmmdev.CSM_AX02 CSM_AX03 mmmdev.CSM_AX03 Defined Dynamic CSM AX04 mmmdev.CSM AX04 Dynamic Defined CSM_AX05 mmmdev.CSM_AX05 Dynamic CSM_General_Info mmmdev.CSM_General_Info Dynamic Defined CSM SP01 mmmdev.CSM SP01 Dynamic Defined MachineModel core.sinumerikbasicmachinemodel Dynamic Defined SINUMERIK_CSALARMREACTION mmmdev.SINUMERIK_CSALARMREACTION Dynamic Defined SINUMERIK CSMACHINESTATUS mmmdev.SINUMERIK CSMACHINESTATUS Dynamic Defined SINUMERIK_CSPROTECTIONLEVEL mmmdev.SINUMERIK_CSPROTECTIONLEVEL Dynamic Defined SINUMERIK_CSRAW mmmdev.SINUMERIK CSRAW Dynamic Defined SINUMERIK CSRESULTS mmmdev.SINUMERIK CSRESULTS Dynamic Defined



4.2.6 Connecting a new machine to SSA

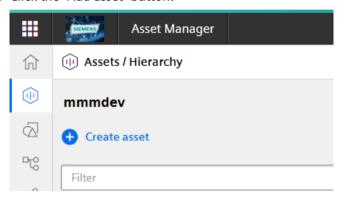
To connect a machine to MindSphere via BFC, perform the following steps:

- Creating a new asset of the type "bfc ssa sinumerik"
- Generating connection information of the assets
- · Creating a MindSphere gateway for SSA

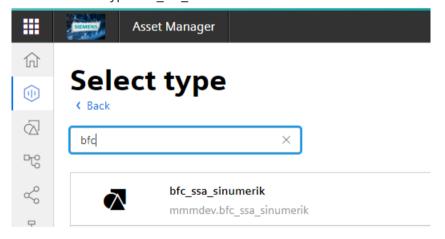
4.2.6.1 Creating a new asset of the type "bfc_ssa_sinumerik"

Procedure

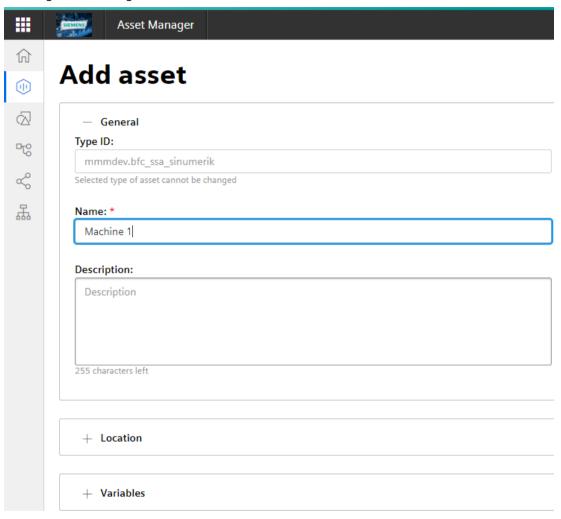
- 1. Open the Asset Manager in MindSphere.
 - Click on "Assets" in the left-hand window area.
 - In the right-hand window area navigate to the desired location in the asset hierarchy.
- 2. Click the "Add asset" button.



3. Select the asset type "bfc_ssa_sinumerik".



4. Assign a name, e.g. "Machine 1", to the new asset.



5. All required assets are listed. Click the "Save" button.

Aspects

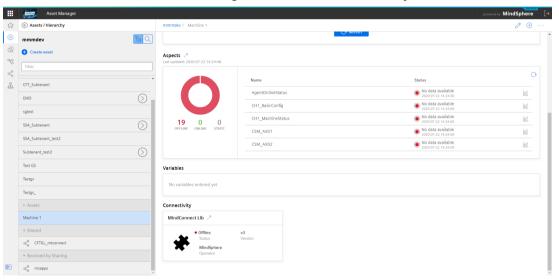
	Name ‡	Aspect	Category		
>	AgentOnlineStatus	core.agentstatus	Dynamic	Defined	7
>	Alarms	core.sinumerikbasicalarms	Dynamic	Defined	7
>	CH1_BasicConfig	core.sinumerikbasicconfig	Dynamic	Defined	7
>	CH1_MachineStatus	core.sinumerikbasicmachinestatus	Dynamic	Defined	7
>	connectivityStatus	core.connectivitystatus	Static	Inherited	7
>	CSM_AX01	mmmdev.CSM_AX01	Dynamic	Defined	7
>	CSM_AX02	mmmdev.CSM_AX02	Dynamic	Defined	7
>	CSM_AX03	mmmdev.CSM_AX03	Dynamic	Defined	7
>	CSM_AX04	mmmdev.CSM_AX04	Dynamic	Defined	7
>	CSM_AX05	mmmdev.CSM_AX05	Dynamic	Defined	7
>	CSM_General_Info	mmmdev.CSM_General_Info	Dynamic	Defined	7
>	CSM_SP01	mmmdev.CSM_SP01	Dynamic	Defined	7
>	MachineModel	core.sinumerikbasicmachinemodel	Dynamic	Defined	
>	SINUMERIK_CSALARMREACTION	mmmdev.SINUMERIK_CSALARMREACTION	Dynamic	Defined	7
>	SINUMERIK_CSMACHINESTATUS	mmmdev.SINUMERIK_CSMACHINESTATUS	Dynamic	Defined	
>	SINUMERIK_CSPROTECTIONLEVEL	mmmdev.SINUMERIK_CSPROTECTIONLEVEL	Dynamic	Defined	7
	SINUMERIK_CSRAW	mmmdev.SINUMERIK_CSRAW	Dynamic	Defined	7
	SINUMERIK_CSRESULTS	mmmdev.SINUMERIK_CSRESULTS	Dynamic	Defined	7

Save

4.2.6.2 Generating connection information of the assets

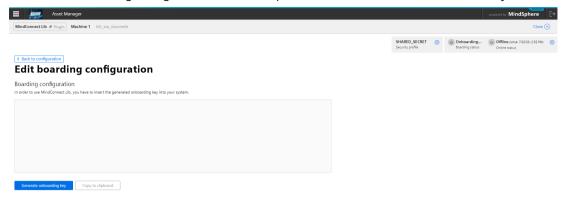
Procedure

- 1. Open the Asset Manager in MindSphere.
 - Click on "Assets" in the left-hand window area.
 - In the middle area of the window navigate to the BFC asset, you have just created.
 - Click on the arrow in the lower right window area "Connectivity".



- 2. The "Configure MindConnect Lib" window opens.
 - Select the option field "SHARED SECRET" for the secure data connection.
 - Click the "Save" button.





4. Copy the generated connection key to the clipboard.



4.2.6.3 Creating a MindSphere gateway for SSA

Perform the following steps to create a MindSphere gateway for SSA:

- Step 1: "Select gateway type"
- Step 2: "Define basic configuration"
- Step 3: "Define dataset configuration"
- Step 4: "Define alarm configuration"
- Step 5: "Advanced configuration"

Requirement

The "Commissioning" area is open.

Parameter

Parameter	Description	
1 Select gateway type		
Select target Store*	Selection of the gateway	
② Define basic configuration		
Type gateway name*	Gateway name	
Type gateway description	Gateway description	

Parameter	Description
Paste MindSphere connection info*	Connection information
	Entry of the MindSphere connection string in JSON format
	Remark:
	Paste the copied connection key from the clipboard.
Type proxy address if needed	Enter the proxy address if a proxy is required for Internet access
③ Define dataset configuration / Optional	
Pick a client ID	Client ID of the client, from which data is to be sent to MindSphere.
	Remark:
	All IDs of the clients, which were created under this "Plant hierarchy", are displayed.
Pick a dataset	Select the client data set that should be sent to MindSphere.
	Remark:
	All data sets of the selected client ID are displayed
- OR -	
All dataset	All client data is sent to MindSphere
4 Define alarm configuration / Optional	
Pick a client ID	All IDs of the clients, which were created under this "Plant hierarchy", are displayed.
(5) Advanced configuration / Optional	
Remark:	
These fields do not require any entries, and are only	
Type image path*	Path to MindSphere docker image
Type username to access the image path	Username to access the image path
Type password to access the image path	Password to access the image path
Set message TTL (time to live) in milliseconds*	AMQP lifetime of the data
Set queue expiration in milliseconds*	AMQP queue execution time
Set max queue size*	AMQP maximum queue size
Set max queue size bytes*	AMQP maximum queue size in bytes
Select queue mode*	AMQP queue mode
Set prefetch count*	AMQP prefetch counter
Type alarm topic*	MQTT topic alarm event
Type new reading topic*	MQTT topic new dataset
Environment variable 1	Environment variable to store the data from "CurrentAlarms" as BIG STRING in MindSphere
Environment variable 2	Environment variable to store the data from "MachineModel" as BIG STRING in MindSphere
Environment variable 3	Note that in the variable "IOTGATEWAY_OVER-RIDE" the file topic is changed to the client ID of the connected machine.
Type new environment variable*	New environment variable for the image

*: Obligatory data

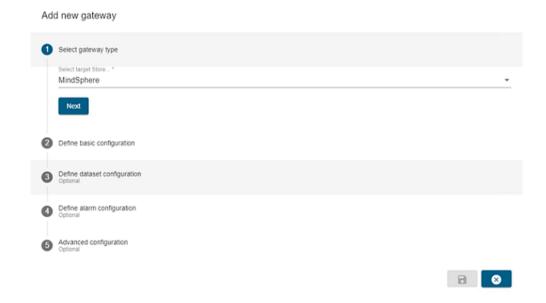
The character sequence to be used for the various entries is provided in the input windows.

Procedure

1. In the "Gateway (Export)" area, click on "+" to add a new gateway.



- 2. Step 1: "Select gateway type"
 - From the drop-down list, select entry "MindSphere".
 - Click on "Next".



- 3. Step 2: "Define basic configuration"
 - Populate the fields to perform the basic configuration.
 Paste the copied connection key from the clipboard into the "Paste MindSphere connection info" input field.
 - Click on "Next".



- 4. Step 3: "Define dataset configuration" / Optional With this step, you define which data is to be sent to MindSphere.
 - Select one data set, several or all data sets.

Note

Several entries

- Click on "+" to add an additional entry.
- Click on "Next".



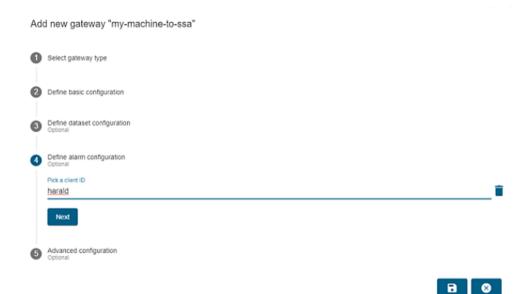
B 8

- 5. Step 4: "Define alarm configuration" / Optional With this step, you define which alarms are to be sent to MindSphere.
 - Select the alarms.

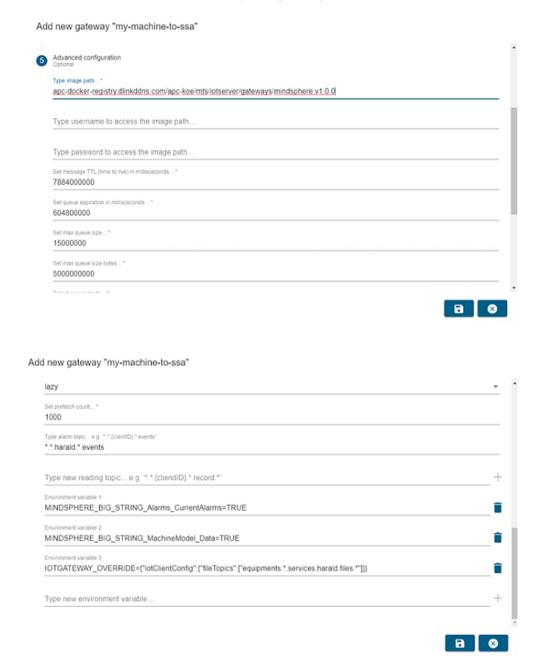
Note

Several entries

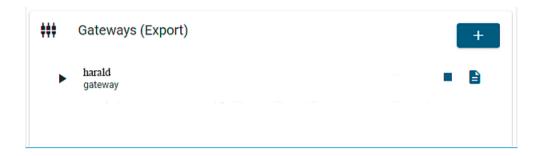
- Click on "+" to add an additional entry.
- Click on "Next"



- 6. Step 5: "Advanced configuration" / Optional
 - Add the environment variables.
 Replace the exemplary designation "harald" with the ID of your machine.
 - Click on "Save" to save the MindSphere gateway.



7. The MindSphere gateway was successfully created, and is shown in the overview in the "Gateways (Export)" area.

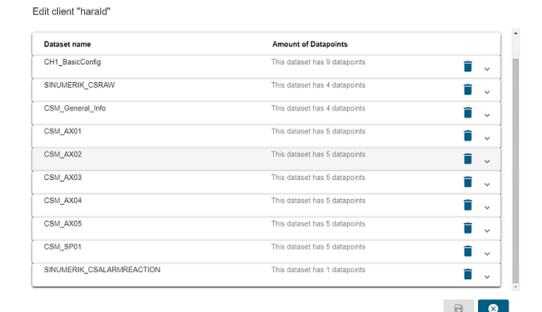


4.2.7 Configuring the BFC client data acquisition

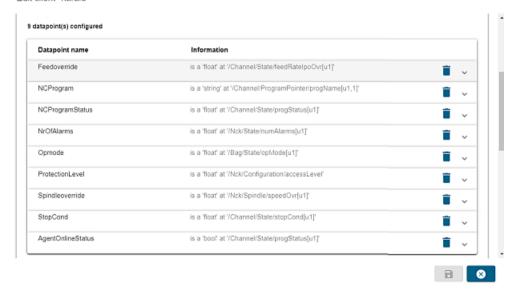
You can use the BFC client to record certain "data sets". To do this, you must configure selected variables.

Procedure

Configure the variables shown in the following figures.



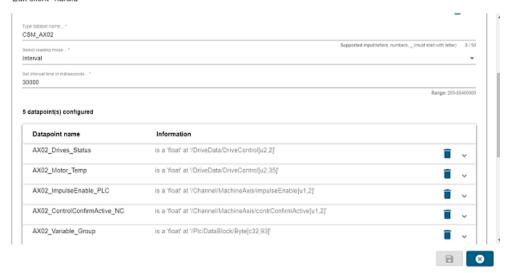






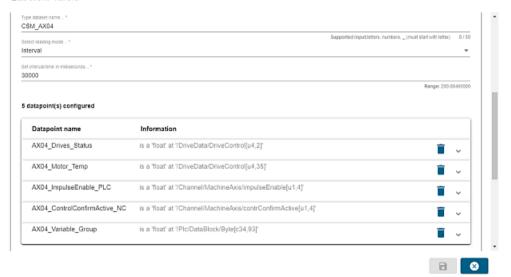


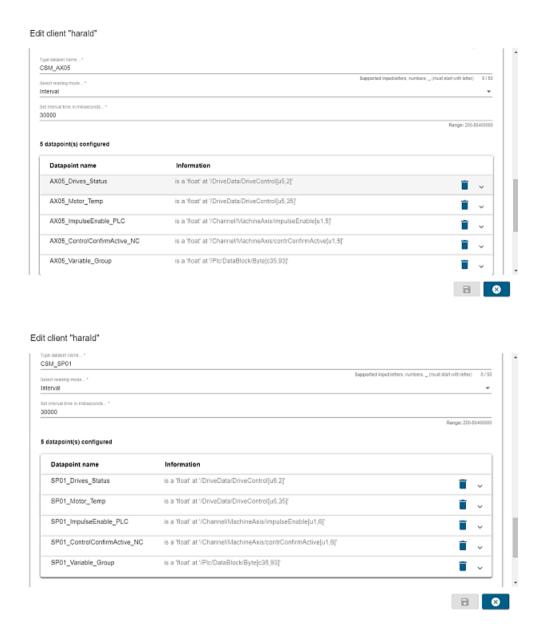




Edit client "harald"









4.2.8 Creating and saving a machine identity

You can store important information such as machine information and address information for each machine using an identSNAPSHOT.xml file.

The creation of an identSNAPSHOT.xml file only applies to SINUMERIK Operate. You can find further information in the chapter Creating identSNAPSHOT file on SINUMERIK controller (Page 68).

Module description

5.1 Overview

The service app **SINUMERIK Service Assistance** is modular and consists of three independent service packages, which can be combined with each other in a customer-specific manner:

- Machine Transparency (Page 85) enables the automated acquisition of information about hardware components and software versions that are used within the machine tool with a SINUMERIK control system. With the help of transparency regarding the components installed at the customer, it is possible for the expert to provide advice on hardware and software handling. Furthermore the Change Protocol page offers information for detecting the changes which are important for experts or any user who cares the machines current state.
 - Machine Transparency is the base of SINUMERIK Service Assistance (SSA), which means in every combination, Machine Transparency is used.
- Machine Condition (Page 99) enables the cyclic acquisition of advanced state data via the
 control and drive technology and their targeted evaluation with the help of intelligent
 analysis methods. Within a MindSphere application, the basic system information such as the
 SINUMERIK version or the number of axes, the machine accesses with information about the
 respective protection level as well as the boot events and their causes are recorded and
 visualized.
- Error Analysis (Page 108) enables the identification and evaluation of error states that occur on the machine tool with SINUMERIK control. For this purpose, the error messages of the machine tool are continuously documented via a MindSphere application. Based on the collected information, a data analysis can be performed to identify the original cause of the error as well as existing causal relationships between the errors that occurred.

5.2 Handling of identSNAPSHOT file

5.2.1 Overview

All the information in the service Machine Transparency is generated from a single xml file of the controller, called identSNAPSHOT. This file is imported into the app SINUMERIK Service Assistance after creating the identSNAPSHOT file manually on the controller.

Creating and uploading the identSNAPSHOT file is described in this chapter. Furthermore limitations on file upload are listed.

Note

The identSNAPSHOT file needs to be created manually with the instructions below every time there is a change (software or/and hardware) on the machine.

5.2.2 Creating identSNAPSHOT file on SINUMERIK controller

Procedure



1. Open SINUMERIK Operate and select the "Diagnostics" operating area.



2. Press the "Version" softkey.

It takes some time to call the version display. While the version data is being determined a progress message box and the appropriate text are displayed in the dialog line.

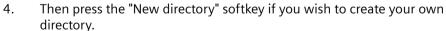


3. Press the "Save" softkey.

The "Save version information: Select Archive" window opens. The following storage locations are offered depending on the configuration:

- Local drive
- Network drives
- USB
- Version data (archive: Data tree in the "HMI data" directory)







5. Press the "OK" softkey. The directory is created.



6. Press the "OK" softkey again to confirm the storage location. The "Save version information: Name" window opens.

7. Specify the desired settings.

- "Name:" input field the file name is pre-assigned with <Machine name/no.>+<CF-card number>. "_config.xml" or "_version.txt" is automatically attached to the file names.
- "Comment:" input field
 You can enter a comment that is stored with the configuration data.
- Version data (.TXT)
 Deactivate the checkbox.
- Configuration data (.XML) Activate the checkbox.



8. Press the "OK" softkey to start the data transfer.

Result

After the process is completed, the identSNAPSHOT file should appear under the path "/user/sinumerik/hmi/data/version".



Figure 5-1 Path identSNAPTSHOT

5.2.3 Uploading identSNAPSHOT file to Mindsphere

Procedure

- 1. Connect to Mindsphere and go to "Shopfloor Management" app.
- 2. Select your asset name.

5.2 Handling of identSNAPSHOT file

3. On "Manage MyMachines" tab, make sure you have enabled the following options:

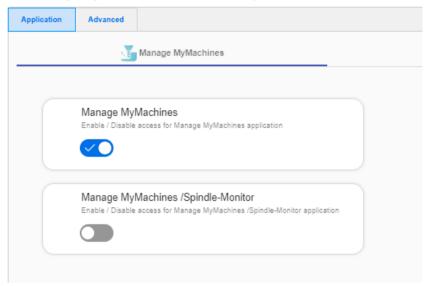
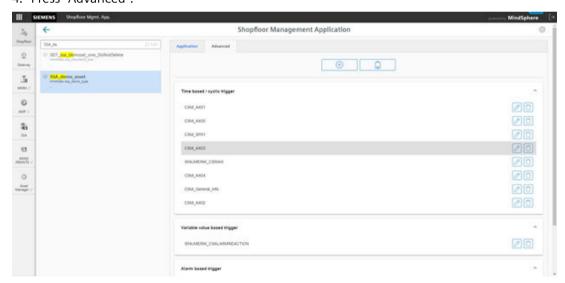


Figure 5-2 Shopfloor Management Application - options

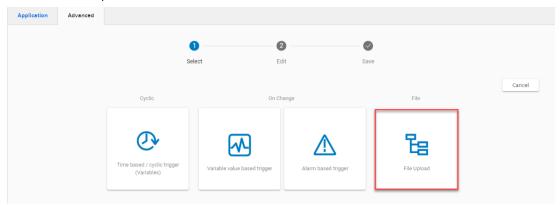
4. Press "Advanced".



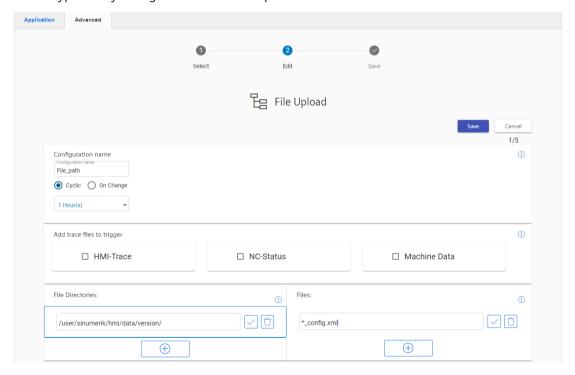
5. Press "Add".





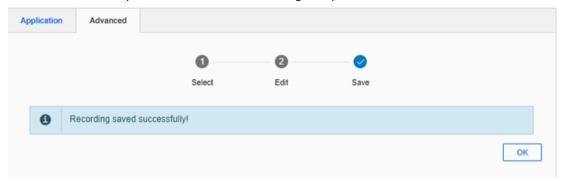


- 7. Press "Add file upload item".
- 8. Enter path of identSNAPSHOT file in the input box of "File Directories".
 - Enter a file name or a term like "*_config.xml" (it uploads all _config.xml files) in the input box of "Files".
 - Select "On Change" (recomended) or "Cyclic".
 - Type in any configuration name and press "Save".



5.2 Handling of identSNAPSHOT file

9. Wait until the response of the successful saving and press "OK".



10. Verify that the path was entered as expected.



5.2.4 Limitations on file upload

The following file upload feature limitations come from Manage MyMachine (MMM) project:

Note

File Upload Limitations

For file upload limitations , please check MMM readme documentation ($\frac{https://}{documentation.mindsphere.io/resources/html/manage-my-machine-readme/en-US/index.html$).

Supported directories and folders

To ensure secure file upload, a white list is defined, which limits the configured path of a file upload item. A file upload item's path must follow the limitation rules which are presented below:

Directories for BFC Gateway

Below directory list is supported for fileupload operation and SSA. You cannot upload files from other directories and use it in SSA:

- C:\temp\files\
 On the PCU
- C:\temp\datatransfer\
 On the PCU
- /var/temp/datatransfer/ On the NCU
- /var/tmp/
 On the NCU
- /user/sinumerik/hmi/data/version/ On the NCU

Directories for MMM

All MMM directories are supported by SSA.

Special directory: C:/temp/files

For the C:/temp/files, it must be configured as <temp>/files in the MTA Asset Config.

Note

Epsconfig.xml: temp file is C:/temp for PCU

Directory of <temp> comes from epsconfig.xml. Don't change this path and epsConfig tempdir must not end with *l*.

File Extensions

Only .xml extension is supported by SSA.

Note

Name of identSNAPSHOT

The name of identSNAPSHOT must be like one of these below:

- <filename>_config.xmli.e: SPG2019052401933_config.xml
- <file_name>_config_<DD-MM-YYYY_HH-MM-SS-SSS>.xml i.e:000060161897FC000014_config_01-04-2020_21-39-58-101.xml

Sending the correct files or adding the files under the specific file upload directories belongs to user's own responsibility.

Note

Because of Fanuc File Transfer driver not implemented yet, file upload functionality on Fanuc machines is currently not supported.

5.2.5 Uploading identSNAPSHOT file via Fleet Manager

Procedure

- 1. Extract the identSNAPSHOT file from the controller.
- 2. Connect to MindSphere and go to "Fleet Manager" app.



Figure 5-3 Logo Fleet Manager

- 3. Search and select your asset name.
- 4. Select files tab.

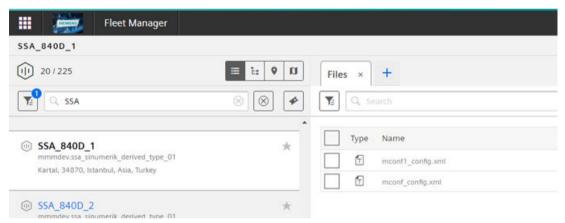


Figure 5-4 Fleet Manager files tab

- 5. Press "Upload".
- 6. Select your identSNAPSHOT.
- 7. Press "Open".

Note

Name of identSNAPSHOT

The name of identSNAPSHOT must be like one of these below:

- <filename>_config.xml i.e: SPG2019052401933_config.xml
- <file_name>_config_<DD-MM-YYYY_HH-MM-SS-SSS>.xmli.e:000060161897FC000014_config_01-04-2020_21-39-58-101.xml

5.3 Asset Selection

The Asset Selection page is the main page of the app SINUMERIK Service Assistance. It offers an overview over all the connected controllers.

Note

Select one of the assets in the table, before choosing one of the main services of the app:

- Machine Transparency
- Machine Condition
- Machine Error Analysis

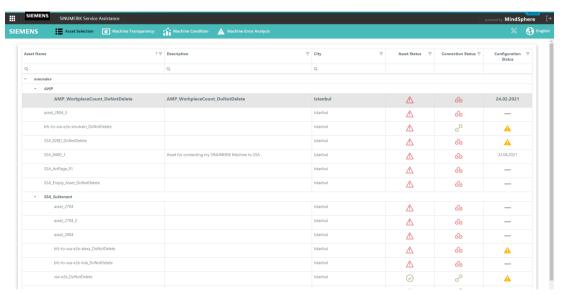


Figure 5-5 Asset Selection (to be updated)

The following values are shown in a table:

- Asset Name
- Description
- City
- Asset Status
- Connection Status
- Configuration Status

You can search or filter the table after certain values.

Asset Status

Symbol	Meaning
	A Warning has occurred when there is an organizational disturbance or the controller is used in a user (service) or service (commissioning engineer) access level
\triangle	An Error has occurred when there is a technical disturbance or the controller is used in a manufacturer (development) or Siemens access level.
\odot	Everything is okay when there is no disturbance and the controller is used in a key-switch access level.
_	If CH1_MachineStatus/ SINUMERIK_CSPROTEC- TIONLEVEL is not configured, this symbol appears.

Connection Status

Symbol	Meaning	
P	Controller is connected	
<i>లే</i> ప	Controller is disconnected	
_	If AgentOnlineStatus is not configured, this symbol appears.	

Configuration Status

Symbol	Meaning
24.02.2021	Upload date of the last acknowledged IdentSNAP-SHOT file
<u> </u>	Symbolizes a change in the configuration.
_	No configuration

5.3 Asset Selection

Remaining Trial Usage

With this feature you can see the remaining days and hours during the trial period. This line is only visible if you have activated trial usage.



Interlinking to Change Protocol

By clicking the warning symbol on the configuration column, you will be directed to the Change l page.

5.3.1 Billing

5.3.1.1 Billing systems

After the SSA application is purchased and registration is done, it is required to activate billing toggles of SSA assets. By that way, SSA components (Machine Transparency, Machine Condition and Machine Error Analysis) are going to be enabled. Each component has a different pricing. Please check the product sheet from the Activation Page pop up, before enabling it:

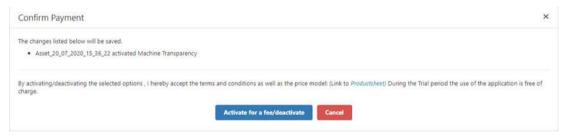


Figure 5-6 Pop up Activation page - confirm payment

5.3.1.2 Activation page

The activation page can either be accessed from Shopfloor Management Application or from the settings icon of the SINUMERIK Service Assistance. On the activation page it is possible to activate/deactivate services and see the summary of activated assets. You can search for assets and add or delete columns with the "Column Chooser."

Note

Please keep in mind that Activation Page can be used by SSA admins only.

Note

Only assets created from MindConnectLib or BasicSinumerikAsset type are shown on the activation page.

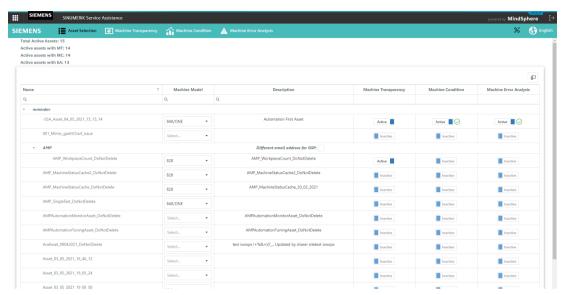


Figure 5-7 Activation page

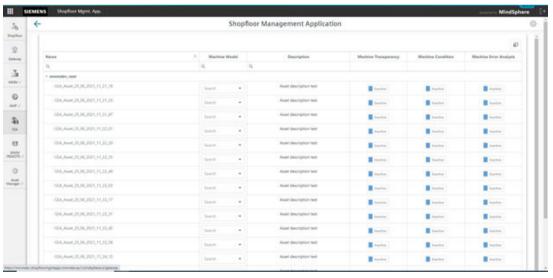


Figure 5-8 Shopfloor Management Software: Activation page view

Note

Please keep in mind that if SSA admin right are missing, the user will see an empty page in Shopfloor Management View.

5.3 Asset Selection



Figure 5-9 Shopfloor Management Software: Activation page view with no admin rights

Choosing machine model

In the table of the activation page it is also possible to choose a valid machine model for the listed assets. You can select a valid machine model by choosing a control in drop down menu.

Adding extra column from Column Chooser

1. Press "Column Chooser".



Figure 5-10 Column Chooser

- 2. Select checkbox to add the desired column.
- 3. Close the "Column Chooser".

Showing active assets as a count

With this feature, you can learn how many assets are active and active with MT(Machine Transparency), MC(Machine Condition) and EA(Machine Error Analysis). It is located on the left side of the top.

Total Active Assets: 7
Active assets with MT: 4
Active assets with MC: 4
Active assets with EA: 5

Note

Only assets which have prior been activated and saved, are counted as active in the counter.

Activating billing toggles of assets

Note

Activation from Shoopfloor Management Application

Activation operations also can be executed from the Shoopfloor Manangement Application by tenant admin. Only tenant admin will see the SSA button on the Shoopfloor Manangement Application.

Repeat the following procedure for all activations. In this example Machine Condition and Machine Error Analysis are activated for one asset.

1. Open the "Activation page" from "Asset Selection page" (only tenant admin).



2. Search the asset, which will be purchased.



5.3 Asset Selection

3. Select the Machine Model, if the asset is not onboarded ever.



4. Change toggles to "Activate".



5. Press "Save".



6. Press "Activate for a fee" or "Yes, I have a valid contract" (depends on billing system).



7. A notification is shown that saving is successful. After the configuration is saved, you can see new icons (configured / not configured) next to the toggles.



8. Click "Asset Selection". You will see the assets in a list.



9. Services will be open for 1 minute. If the service didn't activate, you will see the following warnings:

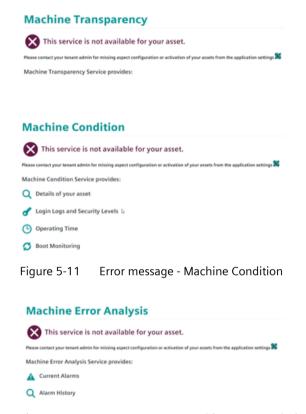


Figure 5-12 Error message - Machine Error Analysis

Rules of purchase

Note

During trial period, you can access all services of an active asset, which is correctly configured.

- All activation will start immediately.
- All deactivation will start at the beginning of the next month.
- All services which are enabled after the last day of the month at 13:00 will be charged for the next month.
- Service usages will be calculated based on total usages days of service, after that it will be divided into days in the month. The result will be rounded to the upper digit.

5.3 Asset Selection

Asset not found

If you try to get data of an asset, which does not exist in MindSphere (e. g: Asset not found (https://mmmdev-ssa-mmmdev.eu1.mindsphere.io/#/Transparency/Overview?assetId=aa // XmlEditor.InternalXmlClipboard:abffb0ad-8731-a519-d192-1743afd82a03)), you will see the following screen:



Figure 5-13 Asset not found

Page not found

If you try to go to a meaningless page by editing the URL (e. g: Meaningless URL (https://mmmdev-ssa-mmmdev.eu1.mindsphere.io/#/Transparency/meaninglessUrl)), you will see the following screen:



Figure 5-14 Page not found

5.4.1 Overview

The overview page for Machine Transparency service shows all clusters for this service. Each cluster shows a summary information for the subservice. By clicking on a specific cluster the page of this service will open.

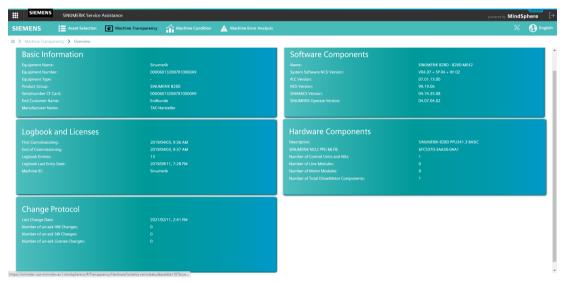


Figure 5-15 Overview Machine Transparency

The following values are shown for each cluster:

• Basic Information:

- Equipment Name
- Equipment Number
- Equipment Type
- Product Group
- Serialnumber CF Card
- End Customer Name
- Manufacturer Name

• Logbook and Licenses:

- First Commissioning
- End of Commissioning
- Logbook Entries
- Logbook Last Entry Date
- Machine ID

• Change Protocol:

- Last Change Date
- Number of un-ack HW Changes
- Number of un-ack SW Changes
- Number of un-ack License Changes

• Software Components:

- Name
- System Software NCU Version
- PLC Version
- NCK Version
- SINAMICS Version
- SINUMERIK Operate Version

• Hardware Components:

- Description
- SINUMERIK NCU/PPU MLFB
- Number of Control Units and NXs
- Number of Line Modules
- Number of Motor Modules
- Number of Total Drive/Motor Components

5.4.2 Basic Information

The Basic Information page shows information on the controller and customer. The customer data is divided in three main groups:

- User data: this section contains information of the end customer/buyer of the controller
- Manufacturer data: this section contains important information on the manufacturer of the controller
- Dealer data: this section contains information on the OEM/dealer of the controller

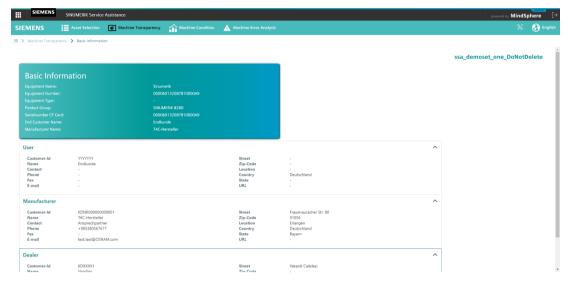


Figure 5-16 Basic Information

5.4.3 Hardware Components

The Hardware Components page shows information on the hardware of the controller. You can choose one of the following views:

- Tree View
- List View

Tree View

The tree view in the Hardware Components page shows all the information in a hierarchichal form. You can choose one hardware component in the tree, i.e. NCU, and can see the relevant data on the right hand side.

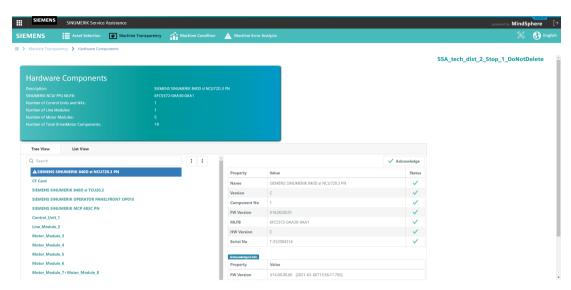


Figure 5-17 Hardware Components Tree View

List View

The List View in the Hardware Components page shows all relevant data of all hardware components in one table. You can filter the table and search for certain values. Furthermore it is possible to export the table to an excel file (*.xls) by clicking the button "Export to XLS".

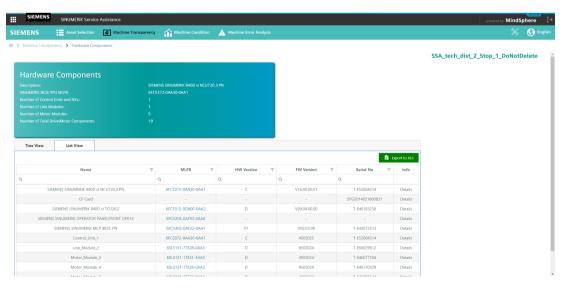


Figure 5-18 Hardware Components List View

Note

Exported hardware components

Please note, that the .xls file is downloaded to default file location, which is set from browser settings.

Note

SIOS link

By clicking on the MLFB number you can directly open the Siemens Industry Online Support (SIOS) page. This way you can find related user manuals, handbooks or engineering manuals for the hardware components.

Acknowledgment feature

The SINUMERIK Service Assistance application provides an acknowledgment feature for detecting the changes which may harm the machine or enlightening some crucial changes on machine side. With this feature, system can detect the following hardware changes:

- which hardware components have been replaced with new ones
- which hardware components have been removed or are missing

When an identSNAPSHOT file is uploaded to an asset for the first time, there is no warning about it. But when another identSNAPSHOT file is uploaded to the asset and if there are any changes between current and previous file, you will be warned with an unacknowledged sign on the component name and corresponding items' status section. Additionally, the differences between the current value and last acknowledged value of the components' items are shown.

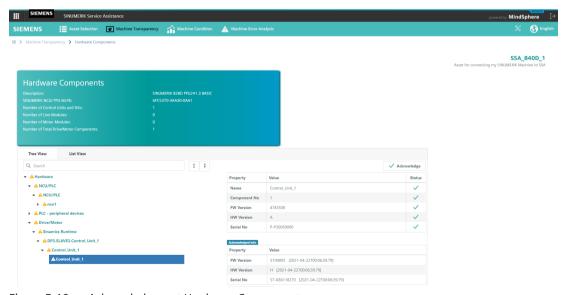


Figure 5-19 Acknowledgment Hardware Components

To acknowledge a component select the component in the tree view and click the acknowledge button.

You can directly navigate to the Change Protocol page by pressing the Change Protocol button.

5.4.4 GSP (Global Service Platform)

To give a better support to Siemens customers, Hardware components will be registered to the Global Service Platform (GSP) automatically by checking identSNAPSHOT file daily. If you have a new or updated identSNAPSHOT file, tenant admin or specified subtenant user will get a notification email after the ion of the component.

Registering subtenant user for email notification

1. Check the checkbox.



2. Insert the email address.



3. Press "Save".



4. Press "Activate for a fee" or "Yes, I have a valid contract" (depends on the billing system).



5. A notification is shown that saving is successful.



Note

If subtenant user isn't determined, the tenant admin of the host tenant will get the notification.

Example of email notification

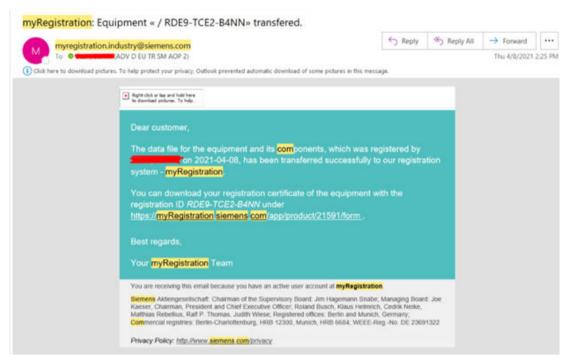


Figure 5-20 GSP registration email

Checking the registration on the Myregistration website

- You can either go to the link (https://myregistration.siemens.com/app/my-registrations) directly or from the email.
- Registration certificate can be downloaded by clicking the button below.

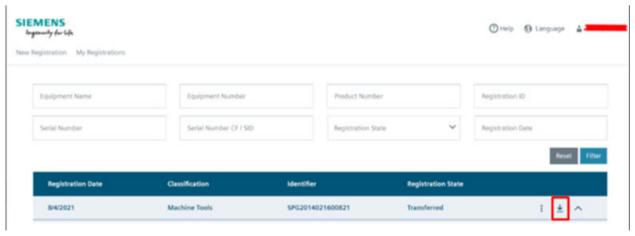


Figure 5-21 SIEMENS MyRegistration website

Note

If you have no account for the registration website yet, it will be created and you will get an email to complete account registration.

5.4.5 Logbook and Licenses

The Logbook and Licenses page shows information on the Logbook of the controller and the installed and active licenses. You can choose one of the following views:

- Logbook
- Licenses

Logbook view

The logbook view shows all relevant information about the logbooks of the controller:

- First Commissioning: Date, when the controller was commissioned at the machine builder's site
- End of Commissioning: Date, when the controller was running at the customer's site.
- Logbook Entries: Number of Entries in the logbook
- Logbook Last Entry Date: last date, when an entry was added to the logbook
- Machine ID: machine ID of the controller

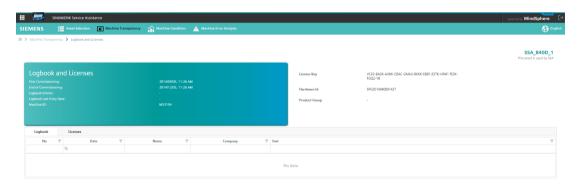


Figure 5-22 Logbook

Note

Changing logbook

If you change a logbook manually on the controller, be aware to save the identSNAPSHOT file. Otherwise the changes will not be visible in the Logbook view.

Licenses view

The licenses view shows all relevant information about the active and installed licenses of the machine in one table. You can filter the table and search for certain values. Furthmore it is possible to export the table to an excel file (*.xls) by clicking the button "Export to XLS".

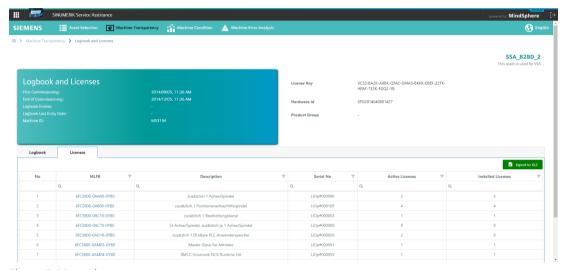


Figure 5-23 Licenses

Note

SIOS link

By clicking on the MLFB number you can directly open the Siemens Industry Online Support (SIOS) page. This way you can find related user manuals, handbooks or engineering manuals for the installed licenses.

5.4.6 Software Components

The Software Components page shows information on the installed software of the controller. You can choose one of the following views:

- Tree View
- List View

Tree View

The tree view in the Software Components page shows all the information in a hierarchichal form. You can choose one software component in the tree, i. e., and can see the relevant data on the right hand side.

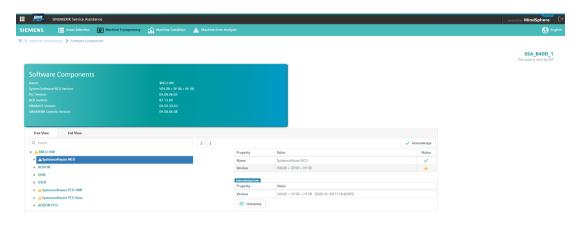


Figure 5-24 Software Components Tree View

List View

The List View in the Software Components page shows all relevant data of all software components in one table. You can filter the table and search for certain values. Furthermore it is possible to export the table to an excel file (*.xls) by clicking the button "Export to XLS".

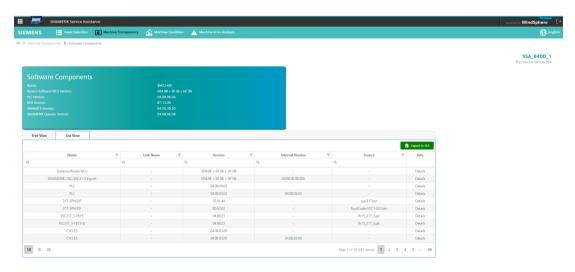


Figure 5-25 Software Components List View

Note

Exported software components

Please note, that the .xls file is downloaded to default file location, which is set from browser settings.

Acknowledgment feature

The SINUMERIK Service Assistance application provides an acknowledgment feature for detecting the changes which may harm the machine or enlightening some crucial changes on machine side. With this feature, system can detect the following software changes:

- which softwares at the machine is upgraded/downgraded
- which new softwares are added/removed

When an identSNAPSHOT file is uploaded to an asset for the first time, there is no warning about it. But when another identSNAPSHOT file is uploaded to the asset, you will be warned with an unacknowledged sign on the component name and corresponding items' status section. Additionally, the differences between the current value and last acknowledged value of the components' items are shown.

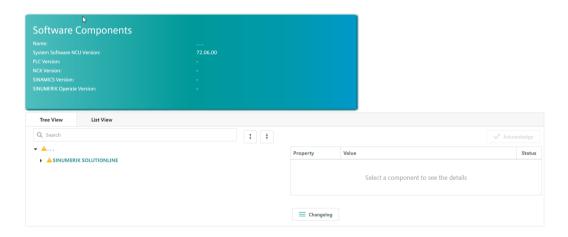


Figure 5-26 Acknowledgment Software Components

To acknowledge a component select the component in the tree view and click the acknowledge button.

You can directly navigate to the Change Protocol page by pressing the Change Protocol button.

5.4.7 Change Protocol

The Change Protocol page offers information for detecting the changes which are important for experts or any user who cares the machines current state. With this feature, system can list the following changes:

• Software changes

- which softwares at the machine is upgraded/downgraded
- which new softwares are added/removed

Hardware changes

- which new hardware added
- which hardware is removed or missing.

License changes

- which licenses are newly added
- which licenses are missing

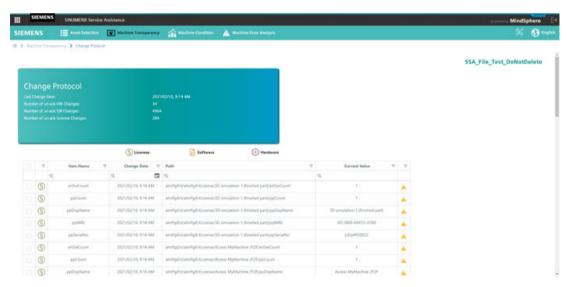


Figure 5-27 Change Protocol

The Change Protocol page displays all software, hardware and license changes that are coming from differences of each identSNAPSHOT file. Change Protocol items are labeled with hardware, software and licenses tags. The Change Protocol table can be filtered by "Item Name", "Change Date", "Path", "Current Value" and "Acknowledge status". You can search items by name, change date, path and current value.

Changed Item History

You can see the detailed history of each component item by clicking on the list. On the right hand side of the list the "Changed Item History" with details is displayed.

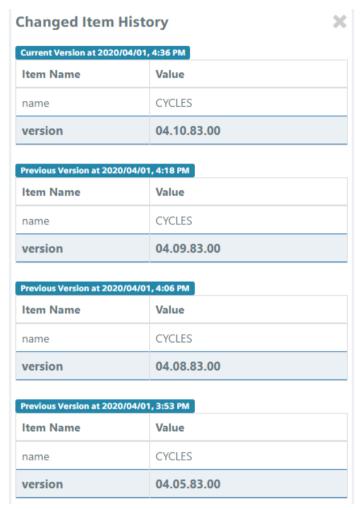


Figure 5-28 Changed Item History

Acknowledge changed items

The page summary window displays the last date, when the identSNAPSHOT file was uploaded, the number of unacknowledged hardware, software and Licenses changes as a summary.

1. Select the unacknowledged entries you would like to acknowledge. All unacknowledged items are marked with the following symbol:



2. Active the checkbox in the left column of the table.

- 3. Press the button "Acklowlege Changes".
- 4. Confirm the acknowledgment by pressing the button "Confirm"

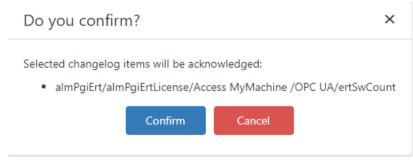


Figure 5-29 Confirmation acknowledgment

The selected entries are now marked as acknowledged.



It is also possible to acknowledge all items at once by pressing the button "Acknowledge All Changes" without selecting any item.

5.5 Machine Condition

5.5.1 Overview

The overview page for Machine Condition service shows all clusters for this service. Each cluster shows a summary information for the subservice. By clicking on a specific cluster the page of this service will open.



Figure 5-30 Overview Machine Condition

The following values are shown for each cluster:

• Process Data:

- NCK Type/Device Type
- HMI Version
- Number Axes of Channel 1
- Drives cyclic
- NC ready

• Security Level:

- Development
- OEM/Commissioning
- Customer Service
- Customer Programmer
- Customer Qualified Operator

5.5 Machine Condition

• Operating Time:

- Machine On
- Production

• Boot Monitoring:

- Last boot event
- Time since last boot event
- No. of boot events
- Meantime between boot events

5.5.2 Process Data

The Process Data page offers a graphical view of variables of the controller over a certain period.

Setting up a graph

To set up a graph proceed as follows:

1. Select a time range in the drop down menu "Selected Time Range".

Note

Restriction on time range

Please note, that if you select 30 days as time range, there will be a note to use a smaller date range (max. 7 days).

- 2. Select one or several units (maximum three units).
- 3. Select one or several Aspects. One Aspect may consist of several variables itself.



Figure 5-31 Process Data

The constructed graph shows the change of the variables over the selected time range. You can zoom in and out of the graph by marking a rectangular area with the mouse.

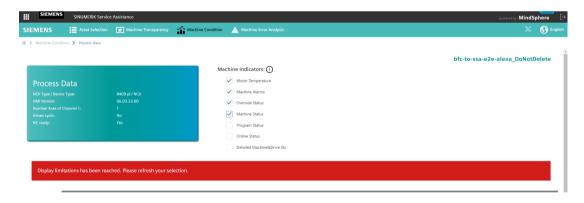
Machine indicators

Note

To learn more about the meaning of variables, click on the trademark symbol (i button).

Indicators	Variables	
Motor Temperature	AX01_Motor_TempSP01_Motor_Temp	
Machine Alarms	NrOfAlarms	
Override Status	Feedoverride	
	Spindleoverride	
Machine Status	MachineStatus	
Program Status	atus NCProgramStatus	
OpMode		
	ProtectionLevel	
	StopCond	
Online Status	OnlineStatus	

If you reach the limitation of indicator selection, you will see the following warning:



Units of aspects

The units of aspects are listed the following table:

Aspects	Variables	Units
Basic Configuration	Feedoverride	%
	Spindleoverride	%
	NCProgramStatus	One
	Opmode	One
	ProtectionLevel	One
	StopCond	One
	NrOfAlarms	Number
Machine Status	MachineStatus	One
Online Status	onlineStatus	boolean
CSM_General_Info	All variables	One
CSM_AX/SP	Drives_Status	One
	Motor_Temp	°C
	ImpulseEnable_PLC	One
	ControlConfirmActive_NC	One

5.5.3 Security Level

The Security Level page offers an overview of users of the machine with different access levels. If there is a problem with the control, the service technician can monitor which person was working at the control at what time.

Setting up a graph

To set up a graph proceed as follows:

1. Click on the graph icon, if it's not already activated.



2. Select a time range in the drop down menu "Selected Time Range".

A graph shows how many times a user with a certain access level has used the control.



Figure 5-32 Security Level Graph

Table of values

1. Click on the table icon, if it's not already activated.



A table shows start time and end time of usage, the duration and the access level of the user. It is possible to search for values in the search box above the table. Furthermore it is possible to export the table to an excel file (*.xls) by clicking the button "Export to XLS".

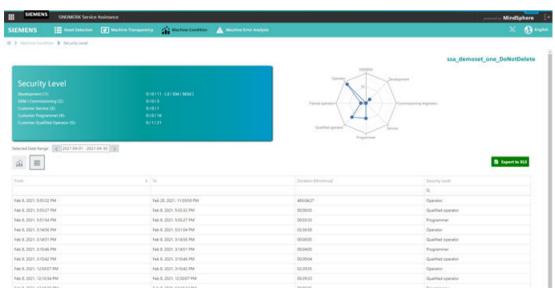


Figure 5-33 Security Level Table

5.5.4 Operating Time

The Operating Time page offers a graphical and a list view of power on, power off and operating time of the controller over a certain period.

Setting up a graph

To set up a graph proceed as follows:

1. Click on the graph icon, if not already activated.



2. Select a time range in the drop down menu "Selected Time Range".

A graph shows how many times a user with a certain access level has used the control.

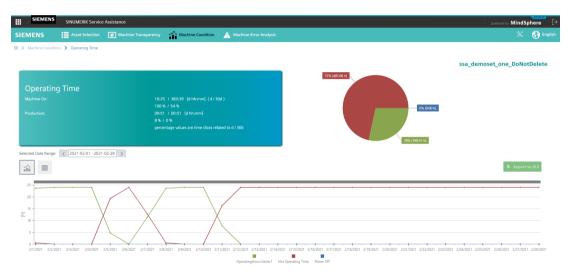


Figure 5-34 Operating Time Graph

You can zoom in and out of the graph by marking a rectangular area with the mouse.

Table of values

1. Click on the table icon, if not already activated.



The table below shows the start and the end times for power on, power off and operating time of the controller. Furthermore the duration and the machine status are shown. It is possible to search for values in the search box above the table. Furthermore it is possible to export the table to an excel file (*.xls) by clicking the button "Export to XLS".

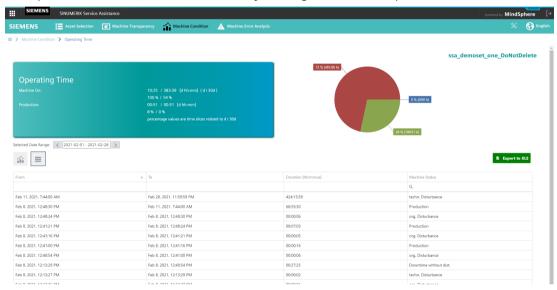


Figure 5-35 Operating Time Table

5.5.5 Boot Monitoring

The Boot Monitoring page offers a graphical and a list overview of boot events over a certain period.

5.5 Machine Condition

Setting up a graph

To set up a graph proceed as follows:

1. Click on the graph icon, if not already activated.



2. Select a time range in the drop down menu "Selected Time Range".

A graph shows how many times a certain boot event has occurred at the control.

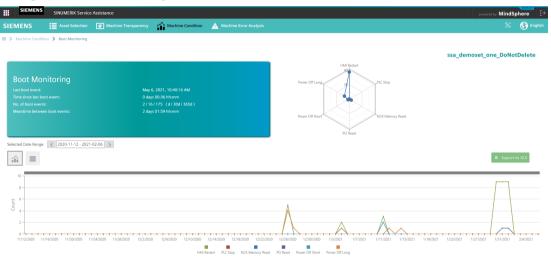


Figure 5-36 Boot Monitoring Graph

Table of values

1. Click on the table icon, if not already activated.



A table shows the exact date and time, when a certain boot event occurred at the control. It is possible to search for values in the search box above the table. Furthermore it is possible to export the table to an excel file (*.xls) by clicking the button "Export to XLS".

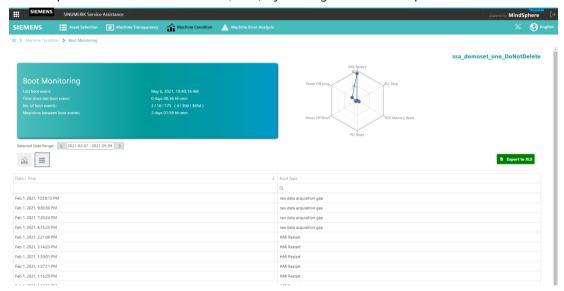


Figure 5-37 Boot Monitoring Table

5.6 Machine Error Analysis

5.6.1 Overview

The overview page for Machine Error Analysis service shows all clusters for this service. Each cluster shows a summary information for the subservice. By clicking on a specific cluster the page of this service will open.

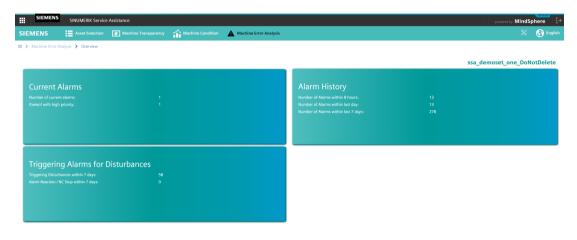


Figure 5-38 Machine Error Analysis

The following values are shown for each cluster:

• Current Alarms:

- Number of current alarms
- thereof with high priority

• Alarm History:

- Number of alarms within 8 hours
- Number of alarms within last day
- Number of alarms within last 7 days

• Triggering Alarms for Disturbances:

- Triggering Disturbances within 7 days
- Alarm reaction / NC Stop within 7 days

Note

Restrictions for best usage

Please consider the following restrictions, in order to work with Machine Error Analysis with high quality:

- There should be max 10 current alarms.
- There should be max 1000 alarms in alarm history.

5.6.2 Current Alarms

The Current Alarms page offers a graphical and a list view of current alarms, which are active at the control over the period of one day.

Setting up a graph

To set up a graph proceed as follows:

1. Click on the graph icon, if not already activated.



A graph shows which alarms occurred at what time at the control.

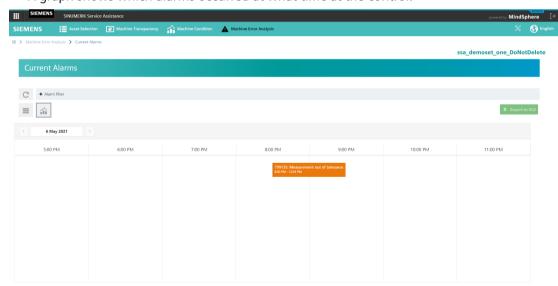


Figure 5-39 Current Alarms Graph

You can zoom in and out of the graph by marking a rectangular area with the mouse.

Table of values

1. Click on the table icon, if not already activated.



A table shows detailed information on the current alarms. Furthermore it is possible to export the table to an excel file (*.xls) by clicking the button "Export to XLS".

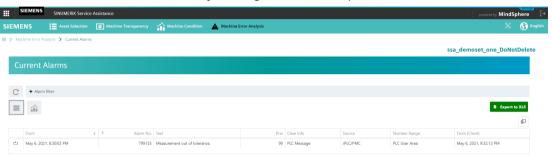


Figure 5-40 Current Alarms Table

Filtering for an alarm

- 1. Click on button "Alarm Filter".
- 2. Select a source for the alarm.

- 3. Type in a search parameter either for "Number Range", "Clear Info", "Text" or "Alarm Number".
- 4. Click on "Execute Filter".

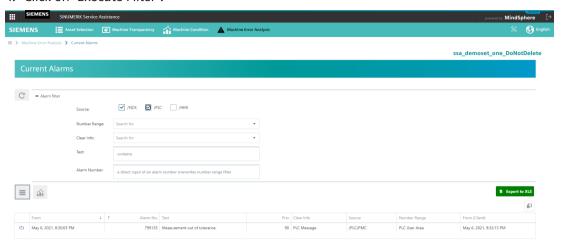


Figure 5-41 Filtering for alarms

5.6.3 Alarm History

The Alarms History page offers a graphical and a list view of historical alarms, which were active at the control over a period of time.

Setting up a graph

To set up a graph proceed as follows:

1. Click on the graph icon, if not already activated.



A graph shows which alarms occurred at what time at the control.

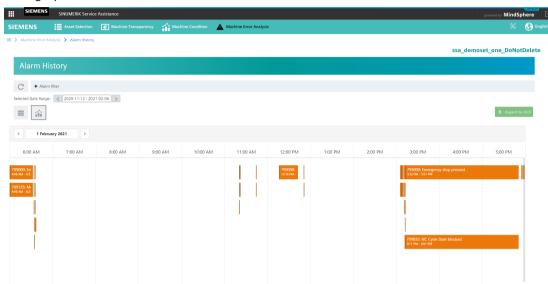


Figure 5-42 Alarm History Graph

2. Select a time range in the drop down menu "Selected Time Range".

You can zoom in and out of the graph by marking a rectangular area with the mouse.

Table of values

1. Click on the table icon, if not already activated.



The table below shows detailed information on the historic alarms. Furthermore it is possible to export the table to an excel file (*.xls) by clicking the button "Export to XLS".

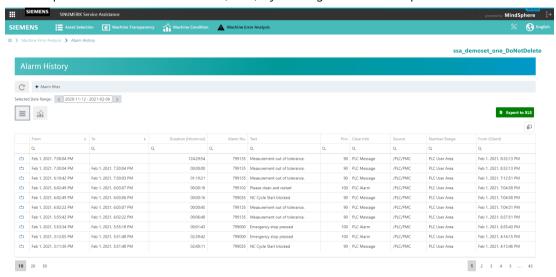


Figure 5-43 Alarm History Table

Filtering for an alarm

- 1. Click on button "Alarm Filter".
- 2. Select a source for the alarm.
- 3. Type in a search parameter either for "Number Range", "Clear Info", "Text" or "Alarm Number".
- 4. Click on "Execute Filter".

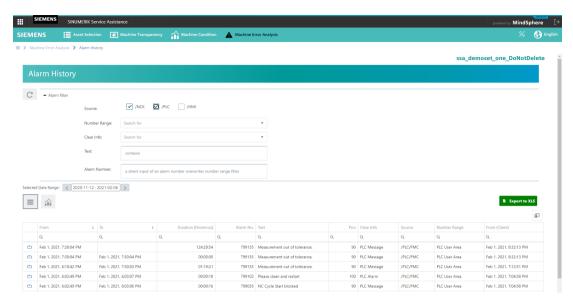


Figure 5-44 Alarm History Filter

5.6.4 Triggering Alarms for Disturbances

The Triggering Alarms for Disturbances page offers a graphical and a list view of technical disturbances and NC stops, which occurred at the control 60 seconds ago and lasted for antother 60 seconds.

Setting up a graph

To set up a graph proceed as follows:

1. Click on the graph icon, if not already activated.



- 2. Select a date range in the drop down menu "Selected Date Range".
- 3. Select either tab "Techn. Disturbances" or "Alarm Reaction / NC Stop".

A graph shows which technical disturbances or NC stops occurred at the control in the selected date range.

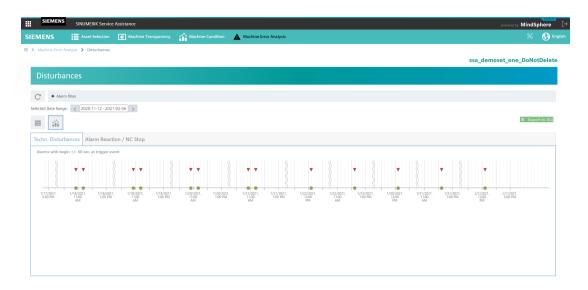


Figure 5-45 Disturbances Graph

You can zoom in and out of the graph by marking a rectangular area with the mouse.

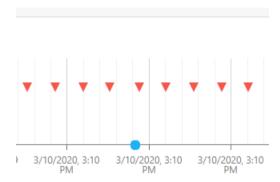


Table of values

1. Click on the table icon, if not already activated.



A table shows detailed information on the technical disturbances or NC stops, i.e. alarm number or source. Furthermore it is possible to export the table to an excel file (*.xls) by clicking the button "Export to XLS".

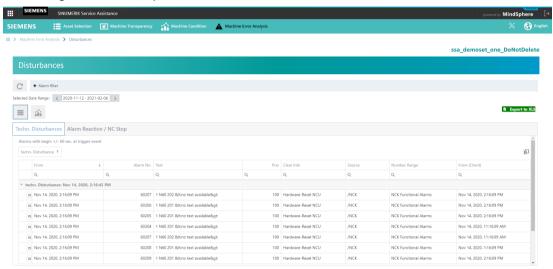


Figure 5-46 Disturbances List

Filtering for disturbances

- 1. Click on button "Alarm Filter".
- 2. Select a source for the alarm.
- 3. Type in a search parameter either for "Number Range", "Clear Info", "Text" or "Alarm Number".
- 4. Click on "Execute Filter".

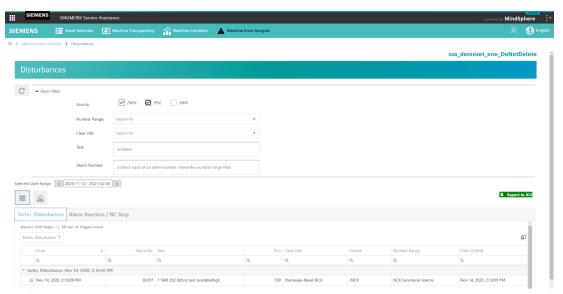


Figure 5-47 Disturbances Filter

5.6.5 MMM & SSA Interlinking

If both MMM and SSA application are registered to the tenant and SSA user rights are granted, SSA Error Analysis page can also be reached from MMM screens.

MMM Overview

Reaching SSA Error Analysis Page from MMM Overview:

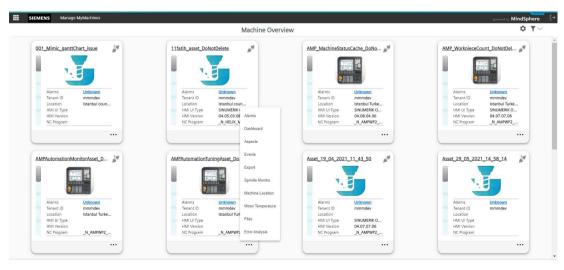


Figure 5-48 Machine Overview

MMM Dashboard

Reaching SSA Error Analysis Page from MMM Dashboard:

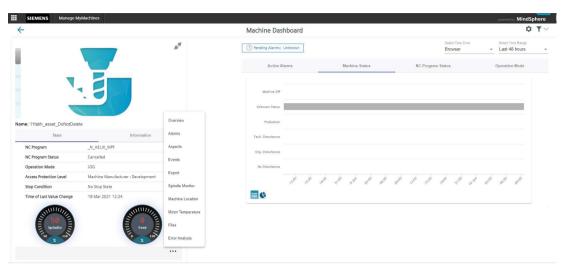


Figure 5-49 MMM Dashboard

Other MMM pages

Reaching SSA Error Analysis Page at from other MMM pages:

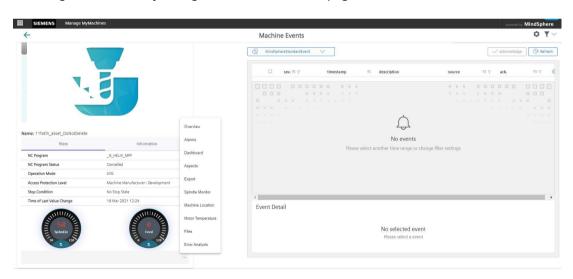


Figure 5-50 MMM other pages

Troubleshooting

Problem	Solution
Machine connection to MindSphere	In case of problems with the machine connection, the latest MMM documentation should be consulted.

Appendix

A.1 Data Acquisition only in MindSphere

Data Acquisition only in MindSphere

Aspect	Category	Description	#	Variable	Da-	Unit	Data	Unit
	caragary		Vars		ta type MM M	MM M	type Mind- Sphere	Mind- Sphere
SINUMERIK_CSPRO- TECTIONLEVEL	Dynamic	Compressed Protection- Level for SSA App	1	ProtectionLevel	-	-	DOU- BLE	ONE
			2	ProtectionLevel0	-	-	DOU- BLE	ONE
			3	ProtectionLevel1	-	-	DOU- BLE	ONE
			4	ProtectionLevel2	-	-	DOU- BLE	ONE
			5	ProtectionLevel3	-	-	DOU- BLE	ONE
			6	ProtectionLevel4	-	-	DOU- BLE	ONE
			7	ProtectionLevel5	-	-	DOU- BLE	ONE
			8	ProtectionLevel6	-	-	DOU- BLE	ONE
			9	ProtectionLevel7	-	-	DOU- BLE	ONE
SINUMERIK_CSRE- SULTS	Dynamic	Result Values for SSA App	1	BootStatus	-	-	INT	ONE
SINUMERIK_CSMA- CHINESTATUS	Dynamic	Compressed MaschineS- tatus for SSA App	1	MachineStatus	-	-	DOU- BLE	ONE

Data Acquisition in MMM - "Time-based / cyclic trigger"

SINUMERIK S in 5 sec. read			stance - Data acqu	isition in MMM - "Time-	based / cyclic trigge	er" (max. 5	0 var	iables, of	which #5
Aspect/ Configura- tion	Rea ding cy- cle	# Va rs	Variable	Address SIN840 / SIN- UMERIK ONE	Adress SIN828	Data type MMM	Uni t M M M	Data type Mind- Sphere	Unit Mind- Sphere
SINUMER- IK_CSRAW	5 sec.	1	NCKAlive	/Nck/State/nckAli- veAndWell	/Nck/State/nckAli- veAndWell	DOUBLE	On e	DOUBLE	ONE
		2	PowerOnTime	/Nck/ChannelDiag- nose/poweronTime	/Nck/Channel- Diagnose/power- onTime	DOUBLE	On e	DOUBLE	ONE
		3	PrioAlarm	/NCK/TopPrioalarm/ textIndex[1]	/Nck/TopPrioa- larm/textIndex[1]	DOUBLE	On e	DOUBLE	ONE
		4	SetupTime	/Nck/ChannelDiag- nose/setupTime	/Nck/Channel- Diagnose/setup- Time	DOUBLE	On e	DOUBLE	ONE
		5	timesync_offset	/ePSStore/time- sync_offset	/ePSStore/time- sync_offset	DOUBLE	On e	DOUBLE	ONE
	30 sec.	1	NUM_AX- ES_IN_SYSTEM	/Nck/ChannelDiag- nose/dpAxisCfgNu- mAxes	/Nck/Channel- Diagnose/dpAx- isCfgNumAxes	DOUBLE	On e	DOUBLE	ONE
		2	NC_CPU_Ready	/Plc/DataBlock/ Bit[c10,104.7]	n/a	DOUBLE	On e	DOUBLE	ONE
		3	Varia- ble_Group1 1)	/Plc/DataBlock/ Byte[c10,108]	/Plc/DataBlock/ Byte[c2700,2]	DOUBLE	On e	DOUBLE	ONE
		4				DOUBLE	On e	DOUBLE	ONE
		5				DOUBLE	On e	DOUBLE	ONE
		6	Varia- ble_Group2 2)	/Plc/DataBlock/ Byte[c10,109]	/Plc/DataBlock/ Byte[c2700,3]	DOUBLE	On e	DOUBLE	ONE
		7				DOUBLE	On e	DOUBLE	ONE
		8				DOUBLE	On e	DOUBLE	ONE
		9				DOUBLE	On e	DOUBLE	ONE
		10				DOUBLE	On e	DOUBLE	ONE

CSM_AX01	30 sec.	1	AX01_Drives_Sta	2,3,1	2,3,1	DOUBLE	On e	DOUBLE	ONE			
		2	AX01_Mo- tor_Temp	35,3,1	35,3,1	DOUBLE	°C	DOUBLE	°C			
		3	AX01_Impul- seEnable_PLC	/Channel/MachineAx- is/impulseEna- ble[u1,1]	/Channel/Machi- neAxis/impul- seEnable[u1,1]	DOUBLE	On e	DOUBLE	ONE			
		4	AX01_Control- ConfirmAc- tive_NC	/Channel/MachineAx- is/contrConfirmAc- tive[u1,1]	/Channel/Machi- neAxis/contrCon- firmActive[u1,1]	DOUBLE	On e	DOUBLE	ONE			
		5	AX01_Varia- ble_Group 3)	/Plc/DataBlock/ Byte[c31,93]	/Plc/DataBlock/ Byte[c3900,4001	DOUBLE	On e	DOUBLE	ONE			
		6			J	DOUBLE	On e	DOUBLE	ONE			
CSM_AX02	30 sec.	1	AX02_Drives_Sta tus	2,3,2	2,3,2	DOUBLE	On e	DOUBLE	ONE			
		2	AX02_Mo- tor_Temp	35,3,2	35,3,2	DOUBLE	°C	DOUBLE	°C			
		3	AX02_Impul- seEnable_PLC	/Channel/MachineAx- is/impulseEna- ble[u1,2]	/Channel/Machi- neAxis/impul- seEnable[u1,2]	DOUBLE	On e	DOUBLE	ONE			
		4	AX02_Control- ConfirmAc- tive_NC	/Channel/MachineAx- is/contrConfirmAc- tive[u1,2]	/Channel/Machi- neAxis/contrCon- firmActive[u1,2]	DOUBLE	On e	DOUBLE	ONE			
		5	AX02_Varia- ble_Group ³⁾	/Plc/DataBlock/ Byte[c32,93]	/Plc/DataBlock/ Byte[c3901,4001	DOUBLE	On e	DOUBLE	ONE			
		6]	DOUBLE	On e	DOUBLE	ONE			
CSM_AX03	30 sec.	1	AX03_Drives_Sta tus	2,3,3	2,3,3	DOUBLE	On e	DOUBLE	ONE			
		2	AX03_Mo- tor_Temp	35,3,3	35,3,3	DOUBLE	°C	DOUBLE	°C			
		3	AX03_Impul- seEnable_PLC	/Channel/MachineAx- is/impulseEna- ble[u1,3]	/Channel/Machi- neAxis/impul- seEnable[u1,3]	DOUBLE	On e	DOUBLE	ONE			
		4	AX03_Control- ConfirmAc- tive_NC	/Channel/MachineAx- is/contrConfirmAc- tive[u1,3]	/Channel/Machi- neAxis/contrCon- firmActive[u1,3]	DOUBLE	On e	DOUBLE	ONE			
					5	AX03_Varia- ble_Group 3)	/Plc/DataBlock/ Byte[c33,93]	/Plc/DataBlock/ Byte[c3902,4001	DOUBLE	On e	DOUBLE	ONE
		6]	DOUBLE	On e	DOUBLE	ONE			

CSM_AX04	30 sec.	1	AX04_Drives_Sta tus	2,3,4	2,3,4	DOUBLE	On e	DOUBLE	ONE	
		2	AX04_Mo- tor_Temp	35,3,4	35,3,4	DOUBLE	°C	DOUBLE	°C	
		3	AX04_Impul- seEnable_PLC	/Channel/MachineAx- is/impulseEna- ble[u1,4]	/Channel/Machi- neAxis/impul- seEnable[u1,4]	DOUBLE	On e	DOUBLE	ONE	
		4	AX04_Control- ConfirmAc- tive_NC	/Channel/MachineAx- is/contrConfirmAc- tive[u1,4]	/Channel/Machi- neAxis/contrCon- firmActive[u1,4]	DOUBLE	On e	DOUBLE	ONE	
		5	AX04_Varia- ble_Group 3)	/Plc/DataBlock/ Byte[c34,93]	/Plc/DataBlock/ Byte[c3903,4001	DOUBLE	On e	DOUBLE	ONE	
		6]	DOUBLE	On e	DOUBLE	ONE	
CSM_AX05	30 sec.	1	AX05_Drives_Sta tus	2,3,5	2,3,5	DOUBLE	On e	DOUBLE	ONE	
		2	AX05_Mo- tor_Temp	35,3,5	35,3,5	DOUBLE	°C	DOUBLE	°C	
		3	AX05_Impul- seEnable_PLC	/Channel/MachineAx- is/impulseEna- ble[u1,5]	/Channel/Machi- neAxis/impul- seEnable[u1,5]	DOUBLE	On e	DOUBLE	ONE	
		4	AX05_Control- ConfirmAc- tive_NC	/Channel/MachineAx- is/contrConfirmAc- tive[u1,5]	/Channel/Machi- neAxis/contrCon- firmActive[u1,5]	DOUBLE	On e	DOUBLE	ONE	
		5	AX05_Varia- ble_Group 3)	/Plc/DataBlock/ Byte[c35,93]	/Plc/DataBlock/ Byte[c3904,4001	DOUBLE	On e	DOUBLE	ONE	
		6]	DOUBLE	On e	DOUBLE	ONE	
CSM_SP01	30 sec.	1	SP01_Drives_Sta tus	2,3,6	2,3,6	DOUBLE	On e	DOUBLE	ONE	
		2	SP01_Mo- tor_Temp	35,3,6	35,3,6	DOUBLE	°C	DOUBLE	°C	
		3	SP01_Impul- seEnable_PLC	/Channel/MachineAx- is/impulseEna- ble[u1,6]	/Channel/Machi- neAxis/impul- seEnable[u1,6]	DOUBLE	On e	DOUBLE	ONE	
		4	SP01_Control- ConfirmAc- tive_NC	/Channel/MachineAx- is/contrConfirmAc- tive[u1,6]	/Channel/Machi- neAxis/contrCon- firmActive[u1,6]	DOUBLE	On e	DOUBLE	ONE	
			5	SP01_Varia- ble_Group 4)	/Plc/DataBlock/ Byte[c36,93]	/Plc/DataBlock/ Byte[c3905,4001	DOUBLE	On e	DOUBLE	ONE
		6]	DOUBLE	On e	DOUBLE	ONE	

¹⁾ Variable_Group1 contains these three variables: "NC_Ready", "Drives_Cyclic" and "Panel_BTSS_Ready" variables.

²⁾ Variable_Group2 contains these five variables: "NC_Battery_Alarm", "AirTemp_Alarm", "Cooling_Temp_Alarm_NCU", "PC_System_Error" "and NC_Alarm_Pending".

³⁾ AX*_Variable_Group contains these two variables: "AX*_Enable_Impulse" and "AX*_Drive_Ready".

⁴⁾ SP*_Variable_Group contains these two variables: "SP*_Enable_Impulse" and "SP*_Drive_Ready".

See also

Clarification of machine variable parameters (Page 129)

A.3 Data Acquisition in MMM - "Variable value-based trigger"

Data Acquisition in MMM - "Variable value-based trigger"

WHEN the variable	THEN									
Name of Data Acquisitíon	Variable Address	Data type MMM	U nit M M M	Oper- ator	Vari abl e Val- ue	De- boun ce Time	Hys- tere- sis	Variable Address	Re- cord- ing for	With- in cy- cle time
SINUMERIK_CSA- LARMREACTION	/Channel/State/ acAlarmStat[u1,1]	DOU- BLE	O ne	Not equal s	0	1 sec	-	/Channel/State/ acAlarmStat[u1,1]	30 sec	30 se

A.4 Aspect configuration with MMM - minimum aspect requirements

Note

Precondition

Please keep in mind that at least one aspect should be configured which starts with "CSM_AX".

Aspects	Asset Selec- tion	Machine Transparency	Machine Condition	Machine Er- ror Analysis
AgentOnlineStatus	Mandatory	-	Mandatory	Mandatory
Alarms	-	-	-	Mandatory
CH1_BasicConfig	Mandatory	-	Mandatory	
CH1_MachineStatus	Mandatory	-	Mandatory	Mandatory
CSM_AX01	-	-	Optional	-
CSM_AX02	-	-	Optional	-
CSM_AX03	-	-	Optional	-
CSM_AX04	-	-	Optional	-
CSM_AX05	-	-	Optional	-
CSM_General_Info	-	-	Mandatory	
CSM_SP01	-	-	Mandatory	-
MachineModel	-	-	Mandatory	-
SINUMERIK_CSALARMREACTION	-	-	-	Mandatory
SINUMERIK_CSMACHINESTATUS	-	-	Mandatory	Mandatory
SINUMERIK_CSPROTECTIONLEVEL	Mandatory	-	Mandatory	-
SINUMERIK_CSRAW	-	-	Mandatory	Mandatory
SINUMERIK_CSRESULTS	-	-	Mandatory	-
Startup	-	-	Mandatory	Mandatory

A.4 Aspect configuration with MMM - minimum aspect requirements

Naming of aspects

The naming of these aspects do not have to be named as stated above. The naming might still be different, i.e. for optional axes. Here is an example of the axes defined in another tenant. As shown, the naming "CSM_AX_W_Achse" differs from the ones stated above.

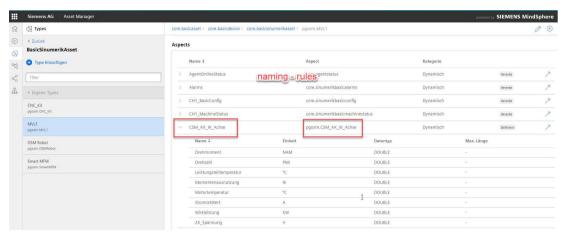


Figure A-1 Example for different spindle name

A.5 Clarification of machine variable parameters

In chapter Data Acquisition in MMM - "Time-based / cyclic trigger" (Page 122) the variables for the aspect configuration are listed. There are specific variables assigned to the controller like "param", "slave number", "drive number", "io system nr". These variables are coded in parameter numbers, i.e. "35,3,4". This example describes how these variables are observed and determined.

Variable and parameter numbers

The following screen in SINUMERIK Operate shows the connection between variables and parameter numbers:

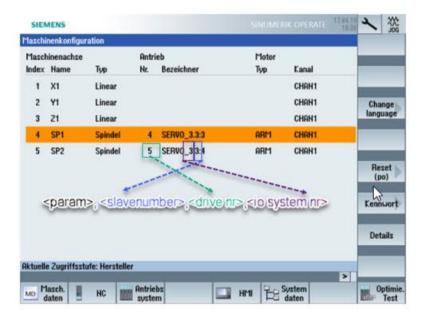


Figure A-2 Variables and parameter numbers

A.6 Supplementary documentation

This manual describes only the advanced administration tasks for using **SINUMERIK Service Assistance Mindsphere Application**. The instructions for the machine connection to MindSphere via **Manage MyMachines** are not part of this manual.

If you need support to connect your machine via Manage MyMachines to MindSphere, use the links below:

- Function Manual Manage MyMachines (https://documentation.mindsphere.io/resources/ https://
- Readme Manage MyMachines (https://documentation.mindsphere.io/resources/html/manage-my-machine-readme/en-US/index.html)

For further information on installation of Brownfield Connectivity Services (BFC) please refer to Function Manual. (https://support.industry.siemens.com/cs/at/en/sc/5392)

Glossary

Asset

For MindSphere, an asset is each connected element that provides data. This can be a machine or an individual component. In conjunction with this documentation, an "asset" is a connected controller.

Manage MyMachines

MindApp that displays the operational and plant-specific data of machine tools configured in MindSphere.

MindSphere

MindSphere – the open cloud platform from Siemens – is the core component of a high-performance IoT operating system. It offers data analysis, comprehensive connectivity, tools for developers, applications and services. MindSphere supports you in the analysis and utilization of your data in order to obtain new insights. In this way, you can optimize your resources for maximum availability

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