SIEMENS

SINUMERIK

Industrial Edge for Machine Tools Analyze MyMachine /Condition

Installation Manual

Valid for control system:
SINUMERIK 840D sl/ 840DE sl
SINUMERIK ONE

Software
Analyze MyMachine /Condition, Version 2.3

10/2023
A5E45212196B AG

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

1.1 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

Overview

This document describes how you commission Analyze MyMachine /Condition.

Target group

This document addresses commissioning engineers and machine tool manufacturers. The document provides the detailed information required to commission the Analyze MyMachine / Condition software.

Standard scope

The software installation manual instructs the target group on how to install and uninstall the software correctly.

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.

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

1.3.1 Documentation overview SINUMERIK ONE

Comprehensive documentation about the functions provided in SINUMERIK ONE Version 6.13 and higher is provided in the Documentation overview SINUMERIK ONE (https://support.industry.siemens.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

1.3.2 Documentation overview SINUMERIK 840D sl

You will find extensive documentation on the functions of SINUMERIK 840D sl from version 4.8 SP4 at 840D sl documentation overview (https://support.industry.siemens.com/cs/ww/en/view/109766213).

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
- Manufacturer/Service: SINUMERIK Integrate/MindApp
- 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 "Send feedback" link which appears at the end of the entry.
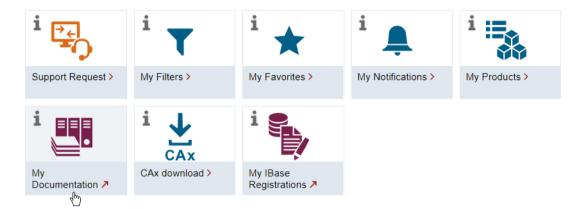
1.5 mySupport documentation

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 links and tools" (https://support.industry.siemens.com/cs/ww/en/my) portal page:

mySupport Links and Tools

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 (frequently asked questions)
- 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

With the award-winning "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 "Industry Online Support" app is available for Apple iOS and Android.

1.7 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)

1.8 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.

Fundamental safety instructions

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2.1   General safety instructions

> ⚠ **WARNING**
>
> **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.

> ⚠ **WARNING**
>
> **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.

2.2   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.

2.3   Cybersecurity information

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

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 cybersecurity 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 cybersecurity measures that may be implemented, please visit
https://www.siemens.com/global/en/products/automation/topic-areas/industrial-cybersecurity.html.

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 Cybersecurity RSS Feed under
https://new.siemens.com/global/en/products/services/cert.html.

Further information is provided on the Internet:

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

⚠ **WARNING**

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 state-of-the-art, integrated industrial cybersecurity concept for the installation or machine.
- Make sure that you include all installed products in the integrated industrial cybersecurity concept.
- Protect files stored on exchangeable storage media from malicious software by with suitable protection measures, e.g. virus scanners.
- Carefully check all cybersecurity-related settings once commissioning has been completed.

Preconditions

<div align="right">

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</div>

3.1 System requirements

Analyze MyMachine /Condition is a hybrid Industrial Edge for Machine Tools application comprising an Industrial Edge for Machine Tools application and an Insights Hub application. The Insights Hub application can only be used in conjunction with the Industrial Edge for Machine Tools application.

Industrial Edge for Machine Tools must be commissioned in order to be able to use Analyze MyMachine /Condition.

Further information about commissioning is provided in:

- Industrial Edge User Documentation

- Insights Hub (https://plm.sw.siemens.com/en-US/insights-hub/)

No additional installation steps are required for the Insights Hub application of Analyze MyMachine /Condition. The application is directly visible in the tenant after publication.

Observe the following system preconditions.

Note

Memory requirements

In the Insights Hub application, Analyze MyMachine /Condition generates files for data transfer. These files are not automatically deleted in Insights Hub.

To free up memory space, manually delete the files that are no longer required.

Note

Analyze MyMachine /Condition sends the content of the file to the SIEMENS operator tenant for the Insights Hub application.

Hardware

The following hardware components must be installed:

- SINUMERIK control
  The following control systems are supported:

  – SINUMERIK 840D sl NCU 7x0.3 [B]
    Current information is provided here (https://support.industry.siemens.com/cs/us/en/view/109767936).

  – SINUMERIK ONE 1750, 1760

- Industrial Edge for Machine Tools:

  – SIMATIC IPC227E (Nanobox PC) or IPC427E (Microbox PC) with TPM (Trusted Platform Module) support and with Internet access

- Optional PCU from 50.5 or IPC from SIMATIC IPC427E with SINUMERIK Operate if functionality "Integrating Analyze MyMachine /Condition in a SINUMERIK control system (Page 32)" is used.

- Operating PC
  The following screen resolutions are supported:

  – 1366x768

  – 1600x900

  – 1920x1080

Industrial Edge for Machine Tools and Insights Hub

- An Insights Hub Account exists.

- Industrial Edge for Machine Tools was commissioned.

Components	Version
Industrial Edge for Machine Tools	from V3.3.4

"From" refers to the specified and all subsequent versions in the line.

- Industrial Edge for Machine Tools was onboarded on an Insights Hub tenant.

- All components for establishing communications between the SINUMERIK control system and Industrial Edge for Machine Tools have been installed and are active.

  – Adapter Framework

  – SINUMERIK Adapter

  – Samba Server

  – Industrial Edge for Machine Tools MQTT-Client

  – The Insights Hub application Analyze MyMachine /Condition is visible in the tenant.

SINUMERIK control

The following SINUMERIK Operate versions are supported:

Components	Version
SINUMERIK 840D sl	from 4.5 SP4
	from 4.7 SP2 HF1
	from 4.8 SP2
	from 4.92
	from 4.93
	from 4.94
	from 4.95
	from 6.13
	from 6.14
	from 6.15
	from 6.20

"From" refers to the specified and all subsequent versions in the line.

Software option

To measure quadrant errors, you require option
"Polynomial interpolation" (6FC5800-0AM18-0YB0)

Software option

To determine the frequency response using measuring function "Auto Servo Tuning" (AST) on the SINUMERIK control, you require option
"AST CALL BY PART PROG" (6FC5800-0AS10-0YB0)

Activate option "AST CALL BY PART PROG" and configure function "Auto Servo Tuning" using SINUMERIK-Operate.
Additional information is provided in Chapter: Configuring Auto Servo Tuning using SINUMERIK Operate (Page 36)

Installing Google Chrome

Google Chrome must be installed on the PCU/IPC if the "Integrating Analyze MyMachine / Condition in a SINUMERIK control system (Page 32)" functionality is to be used.

• Load the Google Chrome offline installer and transfer it to a USB flash drive.

• Open the installation file in the SINUMERIK control, and follow the installation instructions.

Additional information on processing files in the SINUMERIK control is provided in the Commissioning Manual Base Software and Operating Software.

Operating PC

An Internet browser has been installed. The use of Google Chrome from V102.x or higher is recommended.

3.2   Constraints

Invalid measurement results

Description

If measurements are performed on a SINUMERIK control using SINUMERIK Operate Version 4.5.x, invalid measurement results for measurement groups will sporadically occur.

Remedy

No remedy possible.

Loss of input data

Description

If you click on "Back" while setting up a measurement in the browser, the data already entered is lost.

Remedy

No remedy possible.

Changing the machine model

Description

The machine model was changed in SINUMERIK with reference to axis settings or other axis-relevant machine configurations on the SINUMERIK.

Remedy

Restart Analyze MyMachine /Condition.

Several NC programs on the SINUMERIK control

Description

2 NC programs were simultaneously generated on the network drive of Industrial Edge for Machine Tools. The same measurement is available twice on the SINUMERIK control.

Remedy

Do not allow the NC program to run with a content of 0 byte.

No additional remedy is possible.

Buttons not visible

Description

In rare cases, the buttons in the "Basic Configuration" tab of the "Configure Measurement" window are not visible because they are covered by the footer.

Remedy

Press the <CTRL> + <F5> keys. The window is reloaded.

Notice: All changes have to be entered again.

Automatic update of the "Traffic light view"

Description

After installing or restarting the system, the automatic update of the "Traffic light view" does not function.

Remedy

Delete the data from your browser cache.

The user interface does not respond

Description

The user interface of Analyze MyMachine /Condition does not respond as the application has crashed.

Remedy

1. Open the Insights Hub application Manage MySINUMERIK Edge App Management.

2. Restart Analyze MyMachine /Condition.

Installation

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4.1   Installing components

Procedure

Install the following applications for Analyze MyMachine /Condition from Insights Hub on Industrial Edge for Machine Tools:
Application name: analyzemymachinecondition
Version: 2.2.0

Note

License fees

If you reinstall the Edge application of Analyze MyMachine /Condition on a re-onboarded asset for which you have already paid for a single license, please contact your local Siemens sales office to ensure that the fees are not charged twice.

More information about Industrial Edge for Machine Tools is provided in:

- Industrial Edge for Machine Tools user documentation

- Insights Hub (https://plm.sw.siemens.com/en-US/insights-hub/)

Software update

If you perform a software update for the Edge application of Analyze MyMachine /Condition from Version 1.1. to Version 2.0 or higher, the following configuration steps are necessary:

- Update the SGUD variable.
  Channel-specific variable SGUD (Page 30)

- Update the application configuration.
  Configuring Industrial Edge for Machine Tools application (Page 21)

- Update the SINUMERIK Adapter HF data configuration from Insights Hub Manage MySINUMERIK Edge /App Management application to the Analyze MyMachine /Condition application-specific configuration.

- After the software has been updated there are two directories on Samba-Share:

  – analyzemymachine

  – analyzemymachinecondition

  Directory "analyzemymachine" is no longer used from Version 2.0.

- Clear your browser cache to update the software user interfaces.

Configuration

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5.1   Configuring Industrial Edge for Machine Tools application

If you load the Analyze MyMachine /Condition application to the asset via Insights Hub, the Industrial Edge for Machine Tools application must be configured before you use the application.

Procedure

1. Log on to Insights Hub and select "App Management".

2. Click on the desired asset.
   A list opens with the installed services of this asset.

3. Click on the small arrow to view the details for "analyzemymachinecondition".

4. Under "Operations", click on the "Edit App Instance Configuration" button.
   "Config Edit" opens.

5. The standard configuration for "axisid=1" can be found under "datasourceConfig →
requiredDatasource → 0 → services → subscription-service/v1 → subscriptions → 0 →
datapoints".
Enter the following values for each axis used by Analyze MyMachine /Condition:

– DES_POS|[axisId]

– ENC1_POS|[axisId]

– ENC2_POS|[axisId]

– TORQUE|[axisId]

Example: DES_POS|1
Enter the following parameters for "messageName":

– ammc_trigger_param_changed
Configure this parameter for every channel.

– _ammc_oem_state_param_changed
Configure this parameter for every channel.

– feedrate_changed
This parameter does not have to be configured for every channel or every axis.

6. For frequency response tests, enter the name of the network drive under "specificConfig". As the default "Field : Value" pair of values, "SambaDrive":"//DEV_5" is stored. Replace value "//DEV_5" with the value of field "Symbolic" of the network drive, which is connected with the Samba Share of Industrial Edge for Machine Tools.

   – For SINUMERIK Version 4.5, use value "Path" of the network drive without the Edge name/IP address. For example, path = "//192.168.214.249/Share" > //Share".

   – For SINUMERIK Version 4.7 and higher, use network drive "Share name". For example, Share name = "Share" > "//Share

   You will find more information on configuration of the network drive in SINUMERIK Operate in Chapter Configuring file sharing between Industrial Edge for Machine Tools and SINUMERIK control system (Page 24).

7. Press the "Save" button to save the changes.

5.2 Configuring the SINUMERIK Adapter Service

If you load the Analyze MyMachine /Condition application to the asset via Insights Hub, then the SINUMERIK Adapter Service must be configured before you use the application.

Procedure

1. Log on to Insights Hub and select "App Management".

2. Click on the desired asset.
   A list opens with the installed services of this asset.

3. Click on the small arrow to view the details for "sinumerikadapter".

4. Under "Operations", click on the "Edit App Instance Configuration" button.
   "Config Edit" opens.

5. Enter the NCU serial number under "specificConfig → serialNumber".

6. Press the "Save" button to save the changes.

Locating the NCU serial number

1. In SINUMERIK Operate, press key <MENU SELECT> or <F10>.

2. Select the "Setup" operating area.

3. Press softkey "Mach. data".

4. Press softkey "General MD".

5. Check MD18030[0] $MN_HW_SERIAL_NUMBER in the list of parameters.

5.3 Configuring file sharing between Industrial Edge for Machine Tools and SINUMERIK control system

Analyze MyMachine/Condition uses NC program code to perform measurements. As soon as a measurement is saved, Analyze MyMachine/Condition generates an NC program and saves it to the file system of Industrial Edge for Machine Tools. To perform this measurement, the NC program must be transferred to the file system of the SINUMERIK control.

To do this, configure file sharing between Industrial Edge for Machine Tools and the SINUMERIK control system as follows:

1. Install and configure the "sambaserver" file sharing application on Industrial Edge for Machine Tools.

2. Configure a network drive for the SINUMERIK control system and connect the drive with the Industrial Edge for Machine Tools file sharing system.

Configuring the file sharing application on Industrial Edge for Machine Tools

1. Log on to Insights Hub and select "App Management".

2. Click on the desired asset.
   A list opens with the installed services of this asset.

3. If the "sambaserver" application is not installed, install this application.
   You will find more information on installing Edge applications in the Industrial Edge for Machine Tools User Manual.

4. Click the small arrow to view the details for "sambaserver".

5. Under "Operations", click on the "Edit App Instance Configuration" button.
   "Config Edit" opens.

6. The user name and password are stored under the entry "specificConfig →
   sambaCredentials".
   Use this logon data to configure the logical drive in SINUMERIK Operate.

Config Edit

7. Click the "Save" button to save your changes.

Configuring the network drive in SINUMERIK Operate

The following parameters are used for the network drive:

Entry	Description
Type	NW Windows
User name and password	The logon data for the file system of Industrial Edge for Machine Tools are defined in the "sambaserver" application.
SINUMERIK 4.5	
Path	The path comprises the IP address of Industrial Edge for Machine Tools and the share name of the directory.
	The following entry is used as default:
	//192.168.214.249/share
	The IP address can deviate from this depending on the settings in the Insights Hub Asset Manager.
SINUMERIK 4.7 and higher	
Computer name	The default setting of the IP address of Industrial Edge for Machine Tools is as follows: 192.168.214.249
	The IP address can deviate from this depending on the settings in the Insights Hub Asset Manager.
Share name	share
Softkey	
Access level	Select the axis level so that the machine operator can access the drive.
	The following entry is used as default:
	"Key switch 0"
Softkey text	Softkey labeling, e.g. "AMM/C"

Procedure

1. Start SINUMERIK Operate.

2. Press the "Setup" softkey.

3. Press the "HMI" and "Log. drive" softkeys.
   The "Set Up Drives" window opens.

4. Select a free softkey.

5. Complete the entries.

SINUMERIK 4.5

SINUMERIK 4.7 and higher

Further information

Additional information on configuring the softkeys and the logical drives is provided in the Universal Operating Manual.

5.4 Configuring Industrial Edge for Machine Tools MQTT client

Precondition

To be able to send MQTT messages, the Industrial Edge for Machine Tools MQTT client must be configured before you use the Analyze MyMachine /Condition application.

Procedure

1. Log on to Insights Hub and select "App Management".

2. Click on the desired asset.
   A list opens with the installed services of this asset.

3. Click the small arrow to view the details for "sinumerikedgemqttclient"

4. Under "Operations", click on the "Edit App Instance Configuration" button.
   "Config Edit" opens.

5. Under "specificConfig → brokers", enter the following data:

Parameter	Meaning
host: 172.31.4.1	IP address or host name of the MQTT broker that receives the MQTT messages.
port: 0	Port of the MQTT broker.
label: ammcMqttLabel	Label to identify the MQTT broker. Several brokers can be configured using the same label. Published data are then sent to each individual broker.
logLevel: debug	Log level of the application: • trace • debug • info • warning • error • Critical "info" is set as default.
statisticsInterval: 99999	Interval, in which statistical messages can be recorded.

Config Edit

6. Press the "Save" button to save the changes.

5.5 Configuring Analyze MyMachine /Condition for MQTT support and data transfer to Insights Hub

As soon as the measurement was performed, all of the configuration-relevant data are sent using a MQTT message.

Procedure

1. Log on to Insights Hub and select "App Management".

2. Click on the desired asset.
   A list opens with the installed services of this asset.

3. Click the small arrow to view the details for "sinumerikedgemqttclient"

4. Under "Operations", click on the "Edit App Instance Configuration" button.
   "Config Edit" opens.

5. Enter the following data under "specificConfig":

Parameter	Meaning
sendDataToMDSP: true	Using Analyze MyMachine /Condition application, data are sent from the Industrial Edge for Machine Tools application to the Insights Hub.
	"true" is set as default.
	Information is provided in the diagnostics of Industrial Edge for Machine Tools application if invalid parameters are transferred.
mqttPublishEnabled: false	MQTT messages can be sent if "true" is set.
	"false" is set as default.
mqttTopicPrefix: prefix	A prefix can be specified using this value.
	No value is defined as default.
	Restrictions:
	• The value may contain a maximum of 4 topic levels and 32 alphanumeric characters.
	• It is not permissible that the value starts with "/".
	• If a value is not specified, then the topic starts with "ammc".
	• This entry is case-sensitive.
	Example: "companyX/factoryY/floor1/roomA"
machineName: machineName	A machine name can be specified using this value to uniquely identify which message is sent to which SINUMERIK machine or Edge Box.
	"machineName" is set as default.
	Restrictions:
	• The value may only contain one topic level, a minimum of 1 and a maximum of 32 alphanumeric characters.
	• This entry is case-sensitive.
	• If the default value is deleted and a value is not entered, then an error is logged, and MQTT messages cannot be sent.

6. Press the "Save" button to save the changes.

5.6 Channel-specific variable SGUD

The Analyze MyMachine /Condition application requires a channel-specific SGUD variable. It is created in the control system in SINUMERIK Operate.

Procedure

1. Press <MENU SELECT>.

2. Select the "Setup" operating area.

3. Press the "System data" softkey.

4. In the data tree, select the "NC data" folder and then open the "Definitions" folder.

5. Select file "SGUD" file
   - OR -
   press the "New" softkey.

   – The "Any New Program" window opens.

   – Select the entry "Definition DEF" from the "Type" drop-down list:

   – Select the entry "SGUD" from the "Name" drop-down list:

   – Press the "OK" softkey.

6. Select the file.

7. Double-click the file.
   - OR -
   Press the "Open" softkey.

8. Enter the following line:
   ```
   DEF CHAN INT _AMMC_TRIGGER_PARAM=8
   DEF CHAN INT _AMMC_OEM_STATE_PARAM=0
   M30
   ```

9. Press the "Exit" softkey to close the editor.

10. Press the "Activate" softkey to activate the user variable.

5.7 Configuring the SINUMERIK control system for the execution of external measurement programs

An automatically generated NC parts program cannot be executed on the SINUMERIK control system if the size of the program exceeds the size of the reserved program memory. In particular, NC part programs created for measuring groups with inputs for secure positions often exceed the maximum size.

Procedure

The following settings should be made to avoid this error:

1. Change the value of machine data MD18360 $MN_MM_EXT_PROG_BUFFER_SIZE, to increase the size of the FIPO buffer.
   The value must be greater than the size of the measurement program.

2. Increase the value of machine data MD18362 $MN_MM_EXT_PROG_NUM to run multi-channel measuring programs.

3. Use the software option "Execution from external storage (EES)".

4. Shift the measurement program into the NC memory.

Finding machine data MD18360

1. In SINUMERIK Operate, press key <MENU SELECT> or <F10>.

2. Select the "Setup" operating area.

3. Press softkey "Mach. data".

4. Press softkey "General MD".

5. Check MD18360 $MN_MM_EXT_PROG_BUFFER_SIZE in the list of machine data.

5.8 Integrating Analyze MyMachine /Condition in a SINUMERIK control system

To display the machine operator view in SINUMERIK Operate ("Traffic light function"), an operating system-specific environment variable must be added to the window system of the PCU/IPC in order to allow Google Chrome to be displayed in SINUMERIK Operate.

Procedure

1. Ensure that environment variable "Path" contains the following path for Google Chrome. If the path for Google Chrome has not been created, insert the path at the end of the "Path" variable:
   `C:\Program Files (x86)\Google\Chrome\Application;`
   Be careful not to delete any paths that have already been created in the "Path" variable.

2. To create a softkey for Analyze MyMachine /Condition in SINUMERIK Operate, you must extend the following files to include the specified lines. If they do not exist, then generate the files.
   Further information on processing files in the SINUMERIK control system is provided in the Commissioning Manual SINUMERIK 840 D sl Base Software and Operating Software.

   Note

   To obtain a better overview, [new line] is specified if a line break should be made in the code.

   – `C:\Program Files (x86)\Siemens\MotionControl\oem\sinumerik\hmi\cfg\systemconfiguration.ini:`
     `[processes]`
     `PROC600= process:=ChromeOEM, cmdline:="chrome.exe http://192.168.214.249:4201", oemframe:=true, deferred:=true, windowname:="AnalyzeMyMachineCondition", classname:="Chrome_WidgetWin_1"` [New line]
     `[areas]` [New line]
     `AREA600= name:=AMM/C, process:=ChromeOEM, panel:=SlHdStdHeaderPanel` [New line]

- ```
  C:\Program Files
  (x86)\Siemens\MotionControl\compat\user\OEMFRAME.ini:
  [chrome]
  nSwitchToTaskAfterTermination = -2
  nSecondsToFindWindow=10
  fForceTaskFocus=1
  ```

3. Restart the SINUMERIK control system.

4. Open SINUMERIK Operate, and check whether softkey "AMM/C" is displayed in the operating area menu.

5. When commissioning the system for the first time, shift the Google Chrome window using the mouse so that the Chrome window does not overlap the vertical and horizontal softkey bars.

6. Press key <F10> to exit Analyze MyMachine /Condition.

Possible error causes

Check the following if Analyze MyMachine /Condition was not successfully integrated in SINUMERIK Operate:

- Carefully ensure that another program is not using the process number and area number. In the example: `PROC600` and `AREA600`

- Check the window name using the "FindWindow" Window tool on the PCU. The name could differ from that of the configuration.

5.9 Defining users and roles (Industrial Edge for Machine Tools application)

To work with the Industrial Edge for Machine Tools application Analyze MyMachine /Condition, create the following user groups in the "miniweb" administration environment.

User groups and authorizations

User group	Authorizations
OEMMachineCommissioningEngineer	Can log on at the operating PC
	Can create, edit and delete a series of measurements
OEMServiceEngineer	Can log on at the operating PC
	Can view a series of measurements
	Is not authorized to edit a series of measurements

Procedure

1. Enter the following address in the browser:
   `https://<ip-address-of-edgebox>:5443`
   Refer to the following manual for the necessary login data: Industrial Edge for Machine Tools System Manual.

2. Navigate to "Security > User manager".

3. Generate the user groups.

4. Create one or more users.

5. Assign the users to the required user group.

5.10 Defining users and roles (Insights Hub application)

The following roles are available in the Insights Hub application Analyze My Machine /Condition:

• Standard users

  – ammcondition

• Administrator

  – ammcondition

You edit users, roles and rights in the Insights Hub application "Insights Hub Settings".

Further information can be found at: Insights Hub documentation (https://plm.sw.siemens.com/en-US/insights-hub/)

Note

For security reasons it is recommended that you use Multi Factor Authentication for your tenant.

Procedure

1. The Insights Hub launch pad is open.

2. Click on the Insights Hub application "Insights Hub Settings".

3. Create or edit the user.

4. Assign the "ammcondition" role.

5.11 Configuring Auto Servo Tuning using SINUMERIK Operate

You have the possibility of testing the "Frequency response" characteristic value Analyze MyMachine /Condition application.

Use the SINUMERIK Operate operating software to configure the Auto Servo Tuning.

Requirement

Software option

To determine the frequency response using measuring function "Auto Servo Tuning" (AST) on the SINUMERIK control, you require option "AST CALL BY PART PROG" (6FC5800-0AS10-0YB0)

Procedure

1. Set the license for AUTO-Servo-Tuning:

   – Select the "Setup" operating area.

   – Press the menu forward key.

   – Press the "Licenses" softkey.

   – Press the "All options" softkey.

   – Activate the checkbox for option "AST CALL BY PART PROG".

2. Set machine data MD 19334 $ON_SYSTEM_FUNCTION_MASK to value "400H".

3. In SINUMERIK Operate, open menu "Auto Servo Tuning options".

   – Select the "Setup" operating area.

   – Press softkey "Optim. Test".

   – Press softkey "Auto Servo Tuning".

4. Configure the Auto Servo Tuning using AST strategy template 109 "109. Measure and validate existing settings" for each axis for which the frequency response test is performed in Analyze MyMachine /Condition.
   Additional information on how to use AST is provided in the AST Operating Manual.

5. Execute the measurement for one axis using strategy template number 109 in the menu "Auto Servo Tuning".

6. Click on "Save to file" to save the strategy file in a directory.

7. Enter the path of this file for the relevant axis in Analyze MyMachine /Condition in window "Axis settings".

8. Repeat the operation for each axis being used. Save each strategy file in a separate directory.

Appendix

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A

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A.1 List of abbreviations

Admin	Administrator (user role)
AMM /C	Analyze MyMachine /Condition
AST	Auto Servo Tuning: Automatic servo tuning
CNC	Computerized Numerical Control:
COM	Communication
DIR	Directory:
FAQ	Frequently Asked Questions
h	Hour
HTTP	Hypertext Transfer Protocol
HTTPS	HyperText Transfer Protocol Secure,
IB	Commissioning engineer (user role)
ID	Identification number
IE	Internet Explorer
IFC	Interface Client
IoT	Internet of Things
IPC	Industrial PC
MB	Megabyte
MFA	Multi Factor Authentication
MLFB	Machine-Readable Product Code
MMM	Manage MyMachines
MMM /R	Manage MyMachines /Remote
MO	Machine operator
MQTT	Message Queuing Telemetry Transport
MSTT	Machine control panel
NC	Numerical Control: Numerical control
NCU	Numerical Control Unit: NC hardware unit
OEM	Original Equipment Manufacturer
OP	Operation Panel: Operating equipment
Open API	Open Application Programming Interface: open programming interface
PB	Package Builder
PC	Personal Computer
PCU	PC Unit: Computing unit
PLC	Programmable Logic Control: Programmable Logic Controller
REST API	Representational State Transfer Application Programming Interface
SE	Service engineer
SI	SINUMERIK Integrate
SK	Softkey

SW	Software
TPM	Trusted Plattform Module: Chips for safety functions
URL	Uniform Resource Locator
UTC	Universal Time Coordinated, coordinated global time
UTS	Usage Transparency Service
VNC	Virtual Network Computing
VPN	Virtual Private Network

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