

User Guide

edgePlug SINUMERIK CNC





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1 About this guide

1.1 Read me first

Please read this guide carefully before using the device to ensure safe and proper use. Softing does not assume any liability for damages due to improper installation or operation of this product.

This document is not warranted to be error-free. The information contained in this document is subject to change without prior notice. To obtain the most current version of this guide, visit the <u>product website</u>.

1.2 Target audience

This guide is intended for experienced operation personnel and network specialists configuring and maintaining field devices in a Siemens network environment. Before installing and operating the edgePlug SINUMERIK CNC make sure that you have read and fully understood the safety requirements and working instructions in this guide.

1.3 Typographic conventions

The following typographic conventions are used throughout Softing customer documentation:

Keys, buttons, menu items, commands and other elements involving user interaction are set in bold font and menu sequences are separated by an	Open Start → Control Panel → Programs
arrow	
Buttons from the user interface are enclosed in brackets and set to bold typeface	Press [Start] to start the application
Coding samples, file extracts and screen output is set in Courier font type	MaxDlsapAddressSupported=23
Filenames and directories are written in italic	Device description files are located in C: \ <application name>\delivery\software\Device Description files</application



CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



Note

This symbol is used to call attention to notable information that should be followed during installation, use, or servicing of this device.

1.4 Document history

Document version	Changes since last version
1.00	 first version
1.10	 support to define own NC and PLC variables in the IIH configurator

1.5 Related documentation

The following links direct you to additional product information.

You will find the user manuals and release notes of the Siemens Industrial Edge system in the Documents section of the Siemens Industrial Edge Hub.

1.6 Document feedback

We would like to encourage you to provide feedback and comments to help us improve the documentation. You can write your comments and suggestions to the PDF file using the editing tool in Adobe Reader and email your feedback to support.automation@softing.com.

If you prefer to write your feedback directly as an email, please include the following information with your comments:

- document name
- document version (as shown on cover page)
- page number

2 About edgePlug SINUMERIK CNC

The Softing edgePlug SINUMERIK CNC is a Linux-based containerized software application running on a Docker engine. It has been designed to stream SINUMERIK 840D CNC data to the Siemens Industrial Edge applications.

2.1 Intended use

The edgePlug SINUMERIK CNC integrates smoothly into the Siemens Industrial Edge connectivity and are designed to utilize all services and features of the Siemens connectivity suite.

2.2 Features and benefits

- Access to SINUMERIK 840D CNC machine tool data for the Siemens Industrial Edge
- No change of CNC program needed
- No data point configuration needed with pre-defined standard namespace
- Tight integration into Siemens Industrial Edge
- Use the IIH configurator to configure the edgePlug connectivity
- CS Databus Gateway makes the controller data available at the IE Databus
- Existing applications which use the IE Databus can consume the data provided by the edgePlug without changes

2.3 Technical data

Supported CNCs	Siemens SINUMERIK 840D Solution Line, Software Version >= V2.7 Siemens SINUMERIK 840D Power Line, Software Version >= V5.3
Tested with	Siemens Industrial Edge V1.10.3 Siemens Industrial Information Hub V1.4 Siemens IPC227E
Minimal Hardware Requirements	256 MB free disk space, 32 MB RAM
Licensing	Over Siemens Industrial Marketplace
Software	Siemens Industrial Edge Application

2.4 System requirements

The edgePlug SINUMERIK CNC is a connector for the Siemens Industrial Information Hub. You must have the Siemens Industrial Infomation Hub (IIH) installed on a Siemens Industrial Edge Device to use the edgePlug SINUMERIK CNC.

3 Installation

The edgePlug SINUMERIK CNC can be purchased and installed over the Siemens Industrial Edge marketplace.

3.1 Prerequisites

To be able to work with edgePlug SINUMERIK CNC you need a Siemens Industrial Edge Hub Account, a Siemens Industrial Edge Management installation and at least one Siemens Industrial Edge device. Please have a look at the "Industrial Edge Management - Getting Started" manual from Siemens which explains the installation of the Siemens Industrial Edge environment.

3.2 Copying edgePlug to IEM

After you have purchased edgePlug SINUMERIK CNC in the Siemens marketplace check the user manual of the IE Hub for further details on how to copy your edgePlug SINUMERIK CNC to IEM.



- 1. Select the edgePlug SINUMERIK CNC app icon.
- 2. Select the **IEM instances** in the displayed dialog to where the app should be copied.
- Click Copy latest version to IEM(s).
 The edgePlug SINUMERIK CNC will be installed to the catalog of the IEM.

3.3 Installing edgePlug to IED

1. Double-click the edgePlug SINUMERIK CNC icon in the catalog of the IEM.



- 2. Click [Install].
- 3. Open the to Install App dialog.
- 4. Click **[Next]** on the Configurations page and select the IED to which you want to install the App.

Install App	×
edgePlug SINUMERIK CNC 20	
1 Configurations 2 Devices	
Search Edge Devices Q Labels V 2 Selected Tx V Online First 1 V C Refresh	1 of 1
Filters My Edge Devices X Authorized Edge Devices X Clear All	
Z Edge Devices List	
ipc1 industrial Edge - SIMATIC IPC227E Install	

5. Click **[Install Now]** to install the App on the device.

3.4 Updating edgePlug to IED

If an application is installed and you want to update to a new version of the product, do the following:

1. Double-click the edgePlug SINUMERIK CNC icon in the catalog of the IEM.



- 2. Click [Install].
- 3. Click [Update] on the Configurations page.

×				
Search Edge Devices Q Labels I v 2 Selected T v Online First 41 v C Refresh				

1 Edge Device selected for installation

Back Install Delayed Install Later Install Now

4. Click **[Install]** on the popup page.

Install App	Install edgePlug SINUMERIK CNC 20	×		×
edgePlug trees	 Installation is allowed. Bocker Compose version of the application is supported on the IEM. Rumtime privilege and capabilities are not used. Rumtine application is signed. Rumtine therwork is used. No host system commands are executed. No publicity exposed TGPUOP ports are used. Rup 2 antwork access is not used. No host file paths are mounted. 	ancel		une* 1 of 1
Edge Devices List				
Image: 10.20.238.1 192.168.10. Industrial Ed Update	43 7 9 - SIMATIC IPC227E			
1 Edge Device selected for installa	tion Back if	istall Delayed	Install Later	Install Now

3.5 Physical connection to SINUMERIK 840D controller

The SINUMERIK 840D variants offer two types of physical connection. SINUMERIK 840D SL variant has 3 Ethernet interfaces while SINUMERIK 840D PL variant only provides MPI access.

3.5.1 SINUMERIK 840D SL

- Ethernet interface X120 for the device connection to HMIs and keyboards
- Ethernet interface X130 for the company network
- Ethernet interface X127 for service purposes

£			192.168	.214.1		- • ×
1	¢,	- 6 0	. * 🚔 🎽	K 🌬 🛨		
1	192.168	.214.1 🖸				
- 808	36 ↓ 	Fest– und Vorführma	schine		re c	K AUTO
Übersi	cht der Ne	tzeinstelllungen				Übersicht
NCU						
Adapt	ter		IP-Adresse	Subnetzmaske	MAC-Adresse	Anlagen-
X120	Anlagen-	angefordert			00:1F:F8:39:79:BA	netz
	IIGUZ	zunewiesen	192.168.214.1	255.255.255.A		Firmen-
	Alias-Adr	esse		LUULUULUUU		netz
X1£3	Firmen- netz	🗹 DHCP-Client	192.168.25.145	255.255.255.0	00:1F:F8:39:79:BB	OPC UA
X127	Service- netz		192.168.215.1	255.255.255.224	00:1F:F8:39:79:BC	NCU-Einstell. speichern
						Ändern
					>	Zurück
1	IBN rchive	Lizen-	etz- Jerk 🗖 OPs	Safety		

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🛅 192.168.214.1 💟		
8886 🗸 🥃 Test- und Vorführmaschine	R.	▲ AUTO
Einstellungen des Anlagennnetzes		DHCP-Ser.
✓ DHCP aktiviert DHCP-Server-Synchr DHCP-Adressbereich Start 192.168.21	onisationsmodus Hohe Priorität 💌	zurücksetzen DHCP-Daten verteilen
Timeout hei Warten auf Master 129	Sekunden	Verteilen
Heat Mama	Bouting	
nust-name	Trodding	
DNS Domain 🛛 🖂 local	Routing X120 -> X130	
PN-Stationsname>	■ Routing X127 -> X130	
Stationsname	Routing X127 -> X120	
Platz not specified	Routing X128 -> X127	
Ansprechpartner not specified	Aktive Protokolle	
Funktion not specified		
Feste Domäne	✓ LLDP	Abbruch
Feste DNS-Server		
		V
	>	UK
Archive 2 Zen Metz-	OPs 🙆 Safety	



Ethernet interface	Description
X120	This interface is used for connecting the automation network (operator panel interface). The interface is not isolated by a firewall. Ideally, the Softing dataFEED edgeConnector 840D should therefore be operated using this interface.
	This interface uses the fixed IP address 192.168.214.1. For connecting to the machine network the gateway then should be configured using a fixed IP address as well(e.g. an IP address higher than 192.168.214.250).
X127	This interface serves exclusively as a service socket (service interface). It cannot be used for connection purposes.
X130	This interface connects the controller to the factory network (company Ethernet).
	This interface can be used as an alternative interface for connecting the dataFEED edgeConnector 840D. Here, however, the NCU firewall (port TCP/102) has to be enabled to allow for SIMATIC S7 communication.

The Softing dataFEED edgeConnector 840D uses the SIMATIC S7 communication protocol (TCP/102) of SINUMERIK 840D SL. By default, this protocol is available at the X120 interface. Alternatively, it can be enabled for the X130 interface.

The host PC running the dataFEED edgeConnector 840D therefore needs either a physical connection to the X120 interface and a unique IPv4 address within the corresponding network or a physical connection to the X130 interface, a unique IPv4 address within the corresponding network as well as the SIMATIC S7 communication protocol explicitly enabled for this interface.

3.5.2 SINUMERIK 840D PL

As the SINUMERIK 840D PL does not have an Ethernet interface, a D-Sub 9 connector is required for connectivity purposes to map the SINUMERIK 840D PL-specific communication to Ethernet communication.

The Softing product echolink S7-compact supports the PG/MPI to Ethernet conversion. The Ethernetto-MPI converter translates the RFC-1006 TSAP addresses to MPI addresses. As a result the default SINUMERIK 840D PL MPI addresses are translated into the following TSAP settings:

- TSAP NCK (powerline): 03 03
- TSAP PLC (powerline): 03 02

It must be ensured that the SINUMERIK 840D PL has been switched on and its communication settings are correct. Ensure that a valid MPI address is assigned and that it is not assigned twice in the configuration. Individually configured addresses can be determined by checking the hardware configuration of the SIMATIC STEP 7 project. As MPI address 30 is typically not used it can be assigned toecholink S7-compact.



Ethernet interface	Description
X122	This interface is used for connecting a programming or remote maintenance device (PG interface) and is recommended for the echolink S7-compact. It requires its own 24 V power supply, since the connector X122 does not provide any voltage. If a connector is connected echolink S7-compact can be plugged on top
	or in between.
X101	It is used for connecting the control panel/operating panel (control panel interface) and is not recommended for communication via echolink S7-compact .

Configure echolink S7-compact

The echolink S7-compact configuration is performed in the appropriate configuration page (see the figure below).

The important echolink S7-compact settings include:

Variable	Description
IP Address	Address for reaching echolink S7-compact. The IP address is freely selectable (e.g. 192.168.214.XXX), but has to be
	located in the same network as the MACHINE network of dataFEED edgeConnector 840D.
Baudrate	The transmission speed has to be set to 187.5 kBit/s.
Own Station Address	MPI address of echolink S7-compact.
	Important: This address must not be used by another station.
Set Default Bus Parameter	Select MPI and use the default parameters.

Home Configura	tion Change Password
Firmware version	NL50MPI V02 153 18 12 12 V1 52_release-5-gea1ed1e
Serial number / MAC Address	75281 00:02:A2:5C:0E:B2
Network name	nl50mpi_75281
IBHNet port (port 1099 is always active)	0
Configuration with NetPro	
DHCP	0
IP address	192.168.214.1
Subnet mask	255 255 255.0
Default gateway	0.0.0.0
Baudrate	187,5 kBit/s 🗸
Own station address	30
Highest station address	31 👻
Set default bus parameters	MPI PROFIBUS
Tslot_Init	415
Max. Tsdr	60
Min. Tsdr	20
Tset	12
Tqui	0
Gap factor	5
Retry limit	2
Ttr	16776960
Activate Time-of-Day Synchronization	0
NTP update interval (10 - 86400 seconds)	60
NTP Server 1 (IP address)	0.0.00
NTP Server 2 (IP address)	0.0.0
NTP Server 3 (IP address)	0.0.0
NTP Server 4 (IP address)	0.0.0.0
MPI/DP update interval	×

Save configuration

4 Configuration

4.1 Prerequisites

 The IED along with the installed edgePlug SINUMERIK CNC is connected over Ethernet to a SINUMERIK 840D CNC controller.

4.2 IIH Configurator

- 1. Click the **Apps page in** the user interface of the IED to run the **IIH configurator**. The browser will open a new tab displaying the configurator.
- 2. See the **Connector Configuration** page for a list of installed and running connectors.

SIEMENS	COMMON CONFIGURATOR					
1 Home	Get Data					
🛞 Get Data	Availab	le connectors		\pm Export $\overline{\wedge}$ Import		
Connector Configuration						
🧭 Organize data		edgePlug SINUMERIK CNC				
👺 Provide Information	<u>(رہ</u>	Configured devices 0 of 0	Tags configured 0			
5tore Data		 Connected Disconnected 				
🔅 Settings						

3. Select the edgePlug SINUMERIC CNC.

4.2.1 Data source configuration

- 1. Open the **Tags** tab of the edgePlug SINUMERIK CNC.
- 2. Click Add Data Source.

SIEMENS	COMMON CONFIGURATOR					
1 Start page	Get Data / edgePlug S	SINUMERIK CNC				
 Aggregate data 	Available Connectors	Comprime Terre ↑ Import ◆ Add data source Telete selecte	d 🕨 Deploy			
Connector configuration	edgePlug					
🧭 Organize data		Image Image Image Image Image Address Image Access Mode Acquisition cycle Publish to IE D. Image CNC1 Image Image	Actions /			
y Deploy information						
Store data						
Settings						

- 3. See the **Connector Configuration** page for a list of installed and running connectors.
- 4. Enter the data source connection parameters into the Add Data Source dialog fields.
- 5. Click [Save].

SIEMENS		COMMON CONFIGURATOR	() ()
Start page	Get Data / edgePlug	SINUMERIK CNC / Add Datasource	
 Aggregate data 	Available Connectors	Add Data course	
Connector configuration	edgePlug	CPU type *	
🧭 Organize data	SINUMERIK CNC	840D SL V	
👺 Deploy information		Name*	
5tore data		CNC1	
🔅 Settings		IP Address or Hostname*	
		Enable NCU Alarm	
		NCK Tooling Access	
		Log Level*	
		1	
		Save	

Field	Description
PLC Type	840D SL for SINUMERIK 840D Solution Line controllers
	840D PL for SINUMERIK 840D Power Line controllers
Name	Name of the connection used within the IE applications
IP Address or hostname	The IP address or hostname of the SINUMERIK CNC
Enable NCU Alarm	Enable the monitoring of NCU alarms.
	This creates an additional communication load on the CNC.
NCK Tooling Access	Enable the monitoring of NCU tooling data.
	This creates an additional communication load on the CNC.
Log Level	The level of generated logs
	0 = Only Error logs
	1 = Error and Warning logs
	2 = Error, Warning and Information logs
	3 = Error, Warning, Information and Debug logs

6. Select the data source and press [**Deploy**] to write the configuration to the edgePlug SINUMERIK CNC.

SIEMENS		COMMON CONFIGURATOR	(1
Home	Get Data / edgePlug SINUN	ERIK CNC	
🛞 Get Data	Available Connectors	edgePlug SINUMERIK CNC	
Connector Configuration	edgePlug SINUMERIK	Overview Taos	
🧭 Organize data	CNC		
🔆 Provide Information		Z Search T Delete Selected	Deploy
ප්රු Store Data			
🐼 Settings		NAME DATA TYPE ACCESS MODE DEPLOY TO DATABUS	
		Filter Y	
		CNC1 (01ag)	iiit

4.2.2 Data point configuration

SIEMENS	COMMON CONFIGURATOR					0
Start page	Get Data / edgePlug SINUME	MERIK CNC				
 Aggregate data 	Available Connectors	Overview Tags		不 Import 🛛 🔂 Ad	d data source 🍵 Delete select	ed 🛛 🖌 Deploy
Connector configuration	edgePlug SINUMERIK	Name T	Data Type Y	Address Y Access Mode Y	Acquisition cycle Publish to IE Data	Actions 🧪
🧭 Organize data	CNC	□ ^ CNC1			63 Tags	
Sk. Deploy information		Channel1.Ch1_ProgP	fadName String	Read	+	Ů ^
- Deploy mormation		Channel1.Ch1_LineN	umber Dint	Read		Û
5tore data		Channel1.Ch1_LineC	ontent String	Read		Û
		Channel1.Ch1_Toolld	lent String	Read	÷	Û
Settings		Channel1.Ch1_actSp	eed_S1 LReal	Read		Û
		Channel1.BAG1_opM	ode Uint	Read	÷	Û
		Channel1.Ch1_actOv	erride LReal	Read	· ·	Û
		Drive1.V1_Drv_op_di	splay_r0002 Int	Read	÷	Û
		Drive1.V1_n_act_smo	ooth_r0021 Real	Read		Û
		Drive1.V1_Vdc_smoo	th_r0026 Real	Read	+	ΰ

840D SL

All accessible data points of the default configuration are listed below the connection on the "Tags" page. You can add your own data points. However, by adding your own data points all default data points will be removed.

840D PL

All accessible data points of the default configuration are listed below the connection on the "Tags" page. You can add your own data points. However, by adding your own data points all default data points will be removed.



Note

To see the data points after the configuration of the data source, close the IIH Configurator and reopen it after 30 seconds.

_	

Note

With the V1.2 of the IIH Configurator the configuration of the Databus Gateway is only possible for one connector.



Note

If you wish to see that the default data points have been removed after adding your own data points, close the IIH Configurator and reopen it.

4.2.3 NC data points

4.2.3.1 Default NC data points

- Ch1_ProgPfadName: Workpiece and program name
- Ch1_LineNumber: Line number of current NC instruction (start:1)
- Ch1_LineContent: Part program blocks from the current operation
- Ch1_ToolIdent: Identifier of active tool
- Ch1_actSpeed_S1: Spindle speed, actual value
- BAG1_opMode: Active mode
- Ch1_actOverride: Interpolation feedrate, override
- Axis n
 - Ch1_actFeedRate_AXn: Actual value of axis-specific feedrate
 - Ch1_actPos_MCS_AXn: Act tool base position
 - Ch1_actPos_WCS_AXn: Act tool base position
 - Ch1_lag_AXn: Following error
- Drive n
 - Vn_Drv_op_display_r0002: Drive operating display / Drv op_display
 - Vn_n_act_smooth_r0021: CO: Actual speed smoothed / n_act smooth
 - Vn_Vdc_smooth_r0026: CO: DC link voltage smoothed / Vdc smooth
 - Vn_Mod_depth_smth_r0028: Modulation depth smoothed / Mod_depth smth
 - Vn_Iq_act_smooth_r0030: Current actual value torque-generating smoothed / Iq_act smooth
 - Vn_M_act_smooth_r0031: Actual torque smoothed / M_act smooth
 - Vn_Mot_temp_r0035: CO: Motor temperature / Mot temp

4.2.4 PLC data points

4.2.4.1 Own NC data points

If you do not enter any NC data point, the edgePlug SINUMERIK CNC app will automatically provide a default-set of NC data points. But if at least one user defined data point is configured, then the default-set of NC data points is disabled.

To use none-default NC data points, an .awl file needs to be created with the desired data points. The .awl file is created by the Siemens NC-VAR-Selektor software, which is part of SINUMERIK Toolbox (6FC5851-1XC45-4YA8). The content of a generated .awl file has the following structure:

```
========
DATA BLOCK DB 120
VERSION : 0.0
STRUCT
Ch1 ProgPfadName:
  STRUCT
   SYNTAX ID : BYTE := B#16#82;
  bereich u einheit : BYTE := B#16#41;
   spalte : WORD := W#16#10;
   zeile : WORD := W#16#1;
  bausteintyp : BYTE := B#16#7D;
   ZEILENANZAHL : BYTE := B#16#1;
   typ : BYTE := B#16#13;
   laenge : BYTE := B#16#A0;
  END STRUCT ;
 Ch1 LineNumber:
   STRUCT
   SYNTAX ID : BYTE := B#16#82;
  bereich u einheit : BYTE := B#16#41;
   spalte : WORD := W#16#9;
   zeile : WORD := W#16#1;
  bausteintyp : BYTE := B#16#7D;
   ZEILENANZAHL : BYTE := B#16#1;
   typ : BYTE := B#16#7;
   laenge : BYTE := B#16#4;
  END STRUCT ;
 Ch1 LineContent:
   STRUCT
   SYNTAX ID : BYTE := B#16#82;
  bereich u einheit : BYTE := B#16#41;
   spalte : WORD := W#16#4;
   zeile : WORD := W#16#2;
  bausteintyp : BYTE := B#16#7D;
   ZEILENANZAHL : BYTE := B#16#1;
   typ : BYTE := B#16#13;
   laenge : BYTE := B#16#42;
   END STRUCT ;
END STRUCT ;
BEGIN
END DATA BLOCK
==========
```

Where:

- The NC address definition starts with the name of the data point followed by the double colon (:)
- followed by the keyword STRUCT
- followed by the address definition itself
- ending with the keyword END_STRUCT

How to insert an NCK data point

1. Click [Add tag] in the data point overview of a connection.

SIEMENS			COMMON	CONFIGURATO	R		() (i
分 Start page	Get Data / edgePlug SINUM	ERIK CNC					
 Aggregate data 	Available Connectors	Overview	ans		→ Import	+ Add data source	👕 Delete selected 🛛 ✔ Deploy
Connector configuration	edgePlug SINUMERIK	Name T	Data Type Y	Address T	Access Mode Y	Acquisition cycle	Publish to IE Databus Actions
🧭 Organize data	CNC						63 Tags
Ste Depley information		Channel1.Ch.	. String		Read	-	Add tag
2 Deploy information		Channel1.Ch.	. Dint		Read		
🔄 Store data		Channel1.Ch.	. String		Read	-	Edit data source
		Channel1.Ch.	. LReal		Read		Delete data source
🔅 Settings		DB_NCK.E_N.	. Bool		Read	-	
		DB_KANAL1.E	Bool		Read		Û
		DB_KANAL1.E	Bool		Read	-	Û
		DB_KANAL1.E	Bool		Read		Û
		DB_KANAL1.E	Bool		Read		Û
		DB_KANAL1.E	Bool		Read	-	Û -

2. Enter the name of the data point in the name field of the IIH-configurator. For example insert Ch1_ProgPfadName from the .awl example above.

SIEMENS		COMMON CONFIGURATOR	() ()
Start page	Get Data / edgePlug SINUME	RIK CNC / Add Tag	
 Aggregate data 	Available Connectors	Add too	
Connector configuration	edgePlug SINUMERIK	Name*	×
🧭 Organize data	CNC	Ch1_ProgPfadName	
🔆 Deploy information		Data Type	
5tore data		Select a value \checkmark	
Settings		Address STRUCT SYNTAX_ID : BYTE := B#16#82; bereich_u_einheit : BYTE := B#16#41; spalte : WC	
		Access Mode*	
		Acquisition cycle 1 second ~ Save Cancel	

3. Copy the NCK address beginning with the keyword STRUCT and ending with the END_STRUCT into the text editor.

4. Enter the NCK address into the address field of the IIH-configurator. Any new line should be automatically removed by this copy&paste operation.

So with the example Ch1_ProgPfadName the content of the address field should look like this: STRUCT SYNTAX_ID : BYTE := B#16#82; bereich_u_einheit : BYTE := B#16#41; spalte : WORD := W#16#10; zeile : WORD := W#16#1; bausteintyp : BYTE := B#16#7D; ZEILENANZAHL : BYTE := B#16#1; typ : BYTE := B#16#13; laenge : BYTE := B#16#A0; END STRUCT ;

SIEMENS		COMMON CONFIGURATOR	0
分 Start page	Get Data / edgePlug SINUME	RIK CNC / Add Tag	
 Aggregate data 	Available Connectors	Add tag	
Connector configuration	edgePlug SINUMERIK	Name*	^
🧭 Organize data	CNC	Ch1_ProgPfadName	
🐉 Deploy information		Data Type	
Store data		Select a value v	
🔅 Settings		Address STRUCT SYNTAX_ID : BYTE := B#16#82; bereich_u_einheit : BYTE := B#16#41; spalte : WC	
		Access Mode*	
		Read	
		Acquisition cycle	
		1 second V	
		Save	

- 5. Click [Save].
- Select all data points and deploy the connection configuration. See Chapter <u>Databus gateway</u>^{D24} on how to do this.

4.2.4.2 Default PLC data points

Data point	Description
E_NCKalarm	NCK alarm is active
E_ProgRunn	The Sinumerik program is running
E_ProgWait	The Sinumerik program is waiting
E_ProgStop	TheSinumerik program is stopped
E_ProgInterrupt	The Sinumerik program is interrupted
E_ProgrAborted	The Sinumerik program is aborted

4.2.4.3 Own PLC data points

If you do not enter any PLC data point, then the edgePlug Sinumerik CNC app will automatically provide a default-set of PLC data points. But if at least one user defined data point is configured, then the default-set of PLC data points is disabled.

To use none-default PLC data points, the addresses of the data points need to be provided in DB syntax as shown below:

Alphabetical code of the areas

Data point	Area
AO	Analog Output
Р	Peripheral Addressing
l or E	Inputs
Q, A, or O	Outputs
M or F	Marker or Flags
DB	Data Blocks (must be followed by the DB number and an optional dot).
DI	Instance Data Blocks (must be followed by the DB number and an optional dot).

Specifier of the data type

Data type	Specifier
Х	Boolean
В	Byte
С	Char
W	Word
I	Integer
R	Real
S	String
D	Double
DW	Double Word
DI	Double Integer

Start address

The numerical start address of the data point within the given area.

Bit-number in case of Boolean type

A dot . followed by bit number (0 to 7) in case of Boolean type

4.2.5 Databus gateway

- 1. Select the data points you want to make available on the IE Databus.
- Double-click each data point you want to make available.
 The selected data point will appear with framed dropdown list followed by a checkbox
 and the icons
 and
 .

SIEMENS			COMI	MON CONFIGURATO	R				() ()
Start page	Get Data / edgePlug SINUI	IMERIK CNC							
 Aggregate data 	Available Connectors	Overview	Taos		→ Import	Add data source	👕 Delete selected	~ 1	Deploy
Connector configuration	edgePlug SINUMERIK	Name V	Data Tune		Arran Moda 🔻	Annuisition curle	Publish to IS Databus	Actions	
🧭 Organize data	CNC		Data type	(, , , , , , , , , , , , , , , , , , ,	Accessinger (Action of the later	63 Tags		=
🔆 Deploy information		Channel1.0	h1_ProgR String	Address Address	Read	✓ 1 second ✓		×	* ^
5tore data		Channe	II.Ch String		Read			Ů	
🔅 Settings		Channel1.0	h1_Toolle String	Address Address	Read	✓ 1 second ✓ ✓ 1 second ✓	 ✓ 	×	<u>*</u>
		Channe	:I1.BA UInt		Read	•		Û	
		Channe	II.Ch LReal		Read			Û	
		Drive1	V1_Dr Int V1_n Real		Read			Ū n	
		Drive1.	V1_Vd Real		Read			Ū	

- 3. Tick the checkbox **V** Publish to IE Databus.
- 4. Choose an **Acquisition cycle** from the list.
- Click the green apply icon ✓ at the end of the line.
 The data point configuration is confirmed. The icons × and ✓ will disappear and instead of the blue checkbox the

SIEMENS			COMMON CONFIGURAT	FOR				O	1
分 Start page	Get Data / edgePlug SINUM	ERIK CNC							
 Aggregate data 	Available Connectors	Overview Tag	s	⊼ Import	Add data source	👕 Delete selecter		Deploy	
Connector configuration	edgePlug SINUMERIK	Name T	Data Type 🝸 Address 🍸	Access Mode 🝸	Acquisition cycle Y	Publish to IE Databus	Actions	1	
🧭 Organize data						63 Tags		=	
W Doplay information		Channel1.Ch	String	Read	1 second	0	Û		*
Deploy mormation		Channel1.Ch	Dint	Read	1 second	0	Û		1
5tore data		Channel1.Ch	String	Read			Û		
-		Channel1.Ch	String	Read	1 second	0	Û		
Settings		Channel1.Ch1_actSp	LReal V Address	Read	✓ 1 second ✓		×	 Image: A second s	
		Channel1.8A	UInt	Read			Ü		
		Channel1.Ch	LReal	Read	1.1		Û		
		Drive1.V1_Dr	Int	Read	-		Û		
		Drive1.V1_n	Real	Read			Û		
		Drive1.V1_Vd	Real	Read			Û		

6. Select the variables that are to be deployed.

7. Press [Deploy].

This will reconfigure and restart the **Databus Gateway** and will make the data points available on the IE Databus.

SIEMENS			COMMON C	ONFIGURATOR				Ø) (1
Start page	Get Data / edgePlug SINU	MERIK CNC							
 Aggregate data 	Available Connectors	Overview Tao	s		→ Import	Add data source	👕 Delete selected	i 🗸 Deploy	y
Connector configuration	edgePlug SINUMERIK	Name V	Data Type		Access Mode	econisition cycle	Premish to IF Databus	Actions	
🧭 Organize data	CNC						63 Tags	=	
Sk. Depley information		Channel1 Ch	string	_	Read	1 second	0	Û	-
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🔩 Store data		Channel1.Ch	String		Read			Û	
-		Channeli ch	String		Read	1 second	0	Û	
Settings		Channel1.Ch	LReal		Read	1 second	0	Ŭ	
		Channel1.8A	UInt		Read	÷		Û	
		Channel1.Ch	LReal		Read			Ŭ	
		Drive1.V1_Dr	Int		Read			Ū	
		Drive1.V1_n	Real		Read			Ŭ	
		Drive1.V1_Vd	Real		Read			Û	-

4.3 Diagnosis

The Softing Support Team will assist you in troubleshooting your edgePlug SINUMERIK CNC.

1. Open the **IIH Configurator** and set the Log Level of one of the configured data sources to 3 and deploy it.

This will give you a complete set of diagnostic data.

- 2. Contact Softing support and email our team the diagnostics of your edgePlug SINUMERIK CNC.
- 3. Open the **Apps** page.
- 4. Click the 3 dots of the edgePlug SINUMERIK CNC and select the **Download Logs** menu. The Log file is downloaded to the Downloads folder of your PC.



5 Connecting with External Databus

The easiest way to access the data points on the IE Databus is by using External Databus.

5.1 How to configure the External Databus

1. Download the User Manual of the External Bus by pressing the icon **Show Support Documentation**.



The User Manual describes how to configure the External Databus.

2. Select a user.



3.

4.

lect a topic.							
External Databus Configurator for ipc1 🥑				- > `	È,		
Jser View Topic View Ce	ertificate Bridge Co	nfigure Settings	Deploy				
Topics			▲	Permission	≜	Action	
	-	03613	-		-	Action	
Search Topic	Y	Search Username	•	Search Permission	•		
ie/#		softing		Publish and Subscribe			
lect the require	d security m s Configura	echanism. tor for ipc1 🧿			Ê	-\$	¢,
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Ser View Topic View Certificate *	d security mo s Configura rtificate Bridge Con	echanism. tor for ipc1 	Deploy		Ê	-\$	₽ ⇒

5. Define the direction on each topic for communicating between External Databus and IE Databus.

Exte	ernal Databus Configurator for ipc	1 🤮			-		`
User V	iew Topic View Certificate Bridge Configure Settings		Deploy				
An common com	ny changes to this configuration will trigger a restart nunication with External Databus.	of th	e server. All clients must reconne	ct in order to	mainta	in	
O No	ne						
💿 Ena	able custom bridge						
U	Isername *	Pass	sword *				
s	ofting	• • •					
	Add Row						
	Topics		Direction	QoS	Action	IS	
i	e/#		External Databus 🔁 Databus	0	Ľ		

6. Select the preferred **Data Persistency** option for your project.

External Databus Configurator for ipc1 🥝	Ê	- →	È,
User View Topic View Certificate Bridge Configure Settings Deploy			
Data Persistency 🚯			
 Disable and delete data storage 1 			
⊙ Enable 🚯			
Schedule the data backup by selecting the time intervals (in every)*			
1 hour (Recommended)			

5.2 How to connect an MQTT client

You can use a standard MQTT client like MQTTX as shown in the screenshot to connect to the IE MQTT Connector. The URL for the connection is: *mqtt://<IP Address of the IED>:9883*

- 1. Use the configured user credentials (softing user an password) in the configuration mask.
- 2. Subscribe to the "ie/#" topic tree.



You will receive MQTT messages on the following topics:

- ie/s/j/simatic/v1/edgeplug-sinumerik-cnc-20/status
 Status messages of the Databus Gateway regarding the edgePlug connector
- ie/m/j/simatic/v1/edgeplug-sinumerik-cnc-20/dp Metadata of the Databus Gateway for the edgePlug connector. This includes information about subscribed data points
- ie/d/j/simatic/v1/edgeplug-sinumerik-cnc-20/dp/r/<Connection Name> Change notifications for the values of the subscribed data points

6 Glossary

Terms & Abbreviations	Definition
CNC	Computerized Numerical Control
IED	Industrial Edge Device
IEM	Industrial Edge Management
MQTT	Message Queuing Telemetry Transport
OPC UA	OPC Unified Architecture
PL	Power Line
PLC	Programmable Logic Controller
SaaS	Software as a Service
SL	Solution Line

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