

WebAccess/CNC

The Siemens logo, consisting of the word "SIEMENS" in white, uppercase, sans-serif font, centered within a teal-colored rounded rectangle.

SIEMENS

SIEMENS 828D/840D
OPC UA Connection

Notice

The OPC UA components can be installed on PCU, NCU and PPU target systems.

The following steps are necessary to do this:

1. Setting the license
 2. Executing the OPC UA configuration dialog
 3. Checking the HMI time
 4. Performing a restart
- In SIEMENS **V4.05**, there is no user account /password and does not need to select signature & encryption. The access right of OPC UA application program (Client) is rights of local machine operator.
 - In SIEMENS **V4.07**, the user needs to use the user account /password and there is no signature & encryption selection in the user interface.

The access right of OPC UA application program (Client) is rights of login account.

The user account/password is not allowed to remodify after setting the login user account/password. Users can adopt the 3rd party OPC UA client software program to modify the user account/password again.

STEP 0: Confirm the right as Manufacturer



Machine configuration interface showing a table of machine axes and a sidebar with control buttons.

Top status bar: REF.POINT 700152 ↓ Spindle not enabled? (MCP)

Machine axis Index	Name	Type	Drive No.	Identifier	Motor Type	Channel
1	MX1	Linear	2	SERVO 1	SRM	CHAN1
2	MY1	Linear	3	SERVO 2	SRM	CHAN1
3	MZ1	Linear	4	SERVO 3	SRM	CHAN1
4	MSP1	Spindle	1	SPINDLE	ARM	CHAN1

Current access level: Manufacturer

Bottom navigation bar: MD Mach. data, NC, Drive system, PLC, PLC, HMI, System data, Optim./test

Right sidebar buttons: Change language, Reset (po), Pass-word, Details, Save data

The operation right is displayed at the bottom left of interface menu.

STEP 1: Check SIEMENS CNC Version

The diagram shows a sequence of three icons connected by arrows: a 'MENU SELECT' button, a 'Diagnostics' button, and a 'Version' button. Below this, a screenshot of the Siemens CNC control interface is shown. The interface includes a status bar at the top with 'JOG' mode and a message 'Tool not clamped, Tool spindle stop'. The main display area shows 'Version data' for 'SINUMERIK 840D sl - 840DSL-72'. A table lists various components and their versions, with 'CNC software' highlighted in orange. The bottom of the screen features a navigation bar with icons for Alarm list, Messages, Alarm log, NC/PLC variab., Remote diag., and Version.

Name	Actual version	Nominal version
CNC software	V04.07 + SP 03 + HF 03	✓
Basic PLC program	04.07.23	✓
PLC user program		
System extensions		
OEM applications		
User		
Hardware		

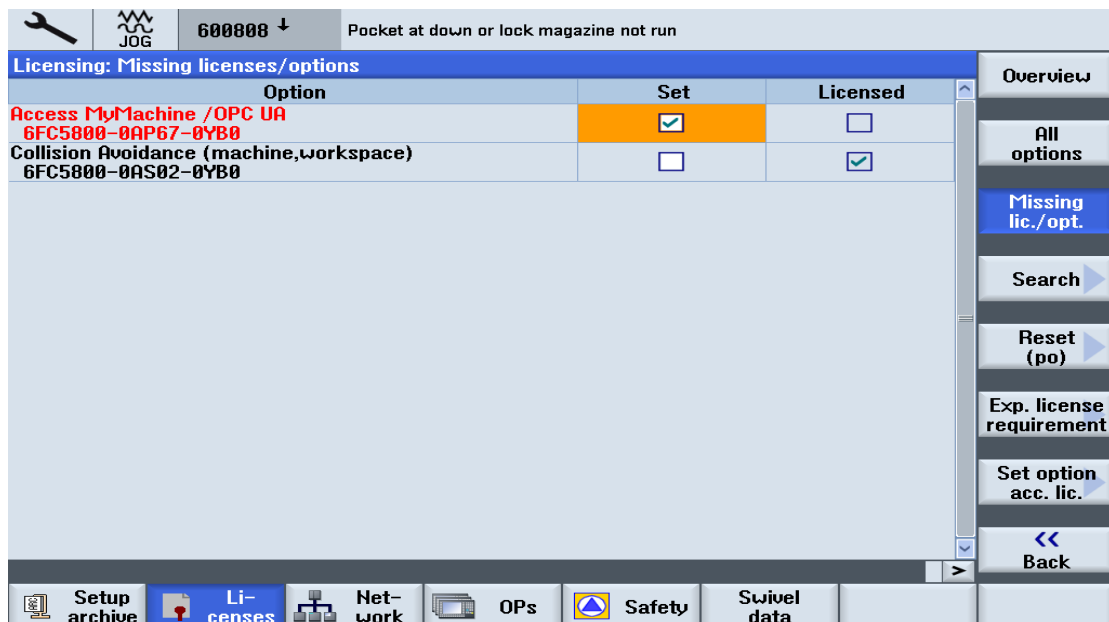
The CNC V4.05 SP03 (or higher) version is needed when using the OPC UA services.

Recommend using V4.07 SP03

STEP 2: Check OPC UA Licenses



Search "OPC UA" , check "6FC5800-0AP67-0YB0" option and select it. If settings are all done, **RESTART** is necessary to activate the new settings.



STEP 3: Setting Network & Firewall option



- Setting Address type(Manual-off)

IP address assigned

Subnet mask assigned

510311 ↓ Push button [SP1] & [+], turn around one circle

PROFIBUS diagnostics DP integrated (Bus 3)

Status

Bus status: **OPERATE (4)**
Bus running, Slaves working with the PLC/NCK output data

Bus configuration

S7 subnet ID: 0046-0010
Baudrate: 12 MBd
Cycle time: 2 msec
Sync. share (TDX): 0.125 msec

PROFIBUS diagnostics/slaves

Slave addr.	Assignment	Comm. status	Sync. with NC	No. of slots
3	NC	✓	✓	30
15	NC	✓	✓	18

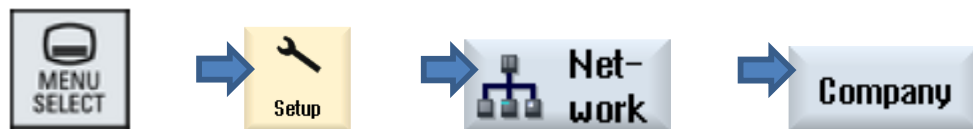
TCP/IP configuration

	NCU system network X120	NCU company network X130
Availability	✓ 100.00%	✓ 100.00%
Crpt. name:	ncu1	-
DNS name	ncu1.local	-
MAC address	00:1f:f8:27:4c:ed	00:1f:f8:27:4c:ee
Address type	DHCP - Synchronized server (Default)	Manually - off
IP address assigned	192.168.214.1	192.168.100.2
Subnet mask assigned	255.255.255.0	255.255.255.0
DHCP server	-	-
Status	Active	-
DHCP server Mode	High	-
DHCP synchron.	127.0.0.1 (localhost)	-
DNS server 1	-	-
DNS server 2	-	-
Gateway	0.0.0.0	-

Emergency stop 3000 ↓

Bus TCP/IP Axis diag. Safety Trace System utiliz. Drive system

Display new Change << Back



Company network change:

- Select S7 communication(TCP/102)
- Select VNC access(TCP/5900)
- Select SSH(TCP/22)
- Select TCP/4840 (Additional ports)

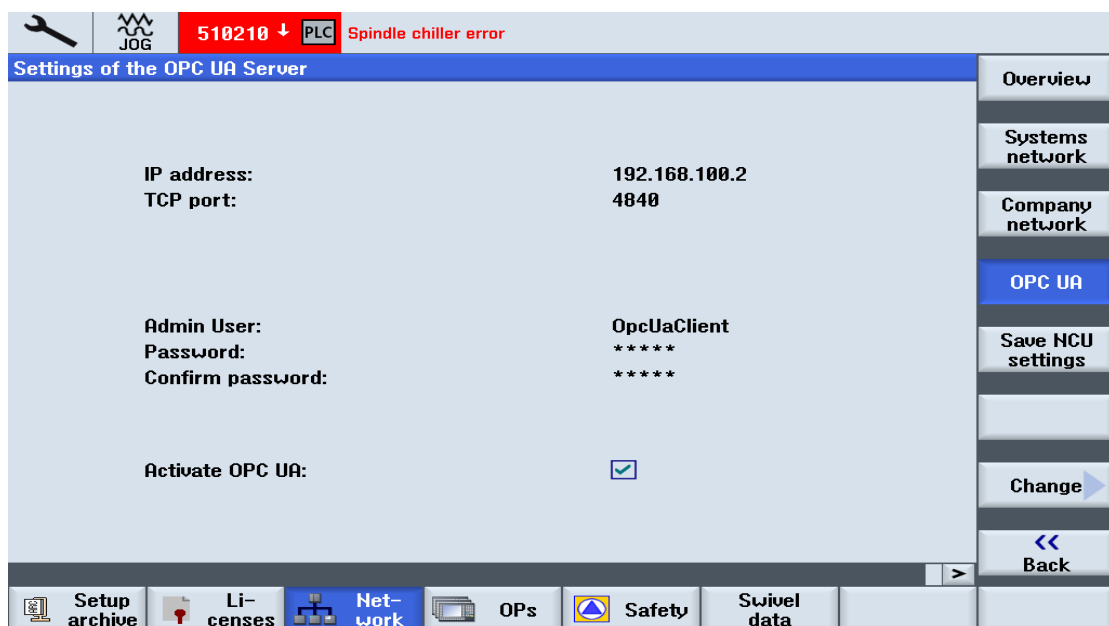
If settings are all done, **RESTART** is necessary to activate the new settings.



STEP 4: OPC UA Setting

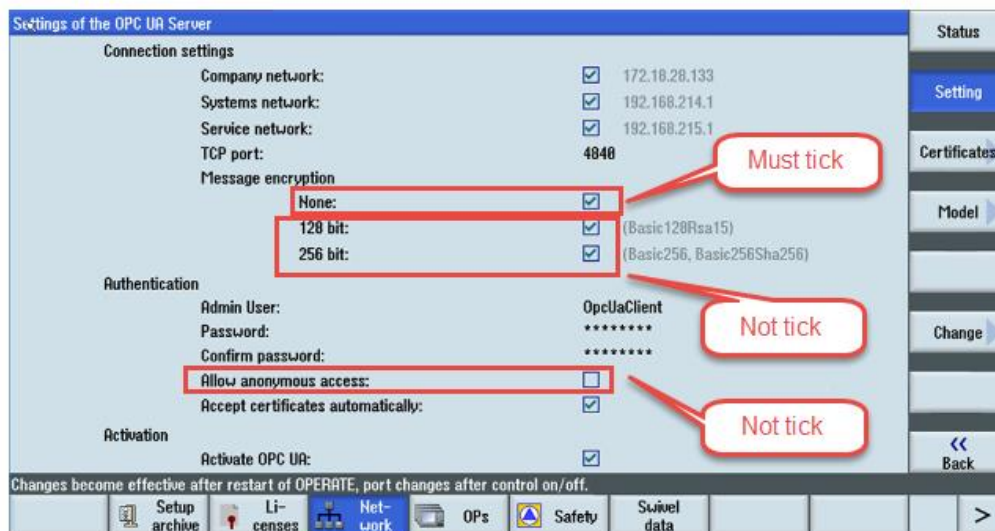


- Setting Port 4840 (binary protocol)
- Setting Admin User, default setting is "OpcUaClient"
Hint: Admin User can administrate all OPC UA account access right.
- Setting & confirm Password(Setting Password is necessary)
- Select Active OPC UA option.



Setting	Description
IP address	The IPv4 address of the target system. This is determined automatically. Check these:
	for the NCU and PPU -X130
	for the PCU 50 Local Area Connection 2
Port	TCP port, communicates via the OPC UA. This is added to the firewall exceptions for NCU and PPU. (The standard for the OPC UA communication is the TCP port 4840)
Admin User	Name of the administrator; with it you can add or delete other users and assign or delete user authorizations.
Password	Password of the administrator.
Activate OPC UA	Place the checkmark to activate OPC UA and remove the checkmark to deactivate it.

If Siemens CNC OPC UA server is the new version that can support the message encryption function, please click the **None** option and **don't allow anonymous access** option.

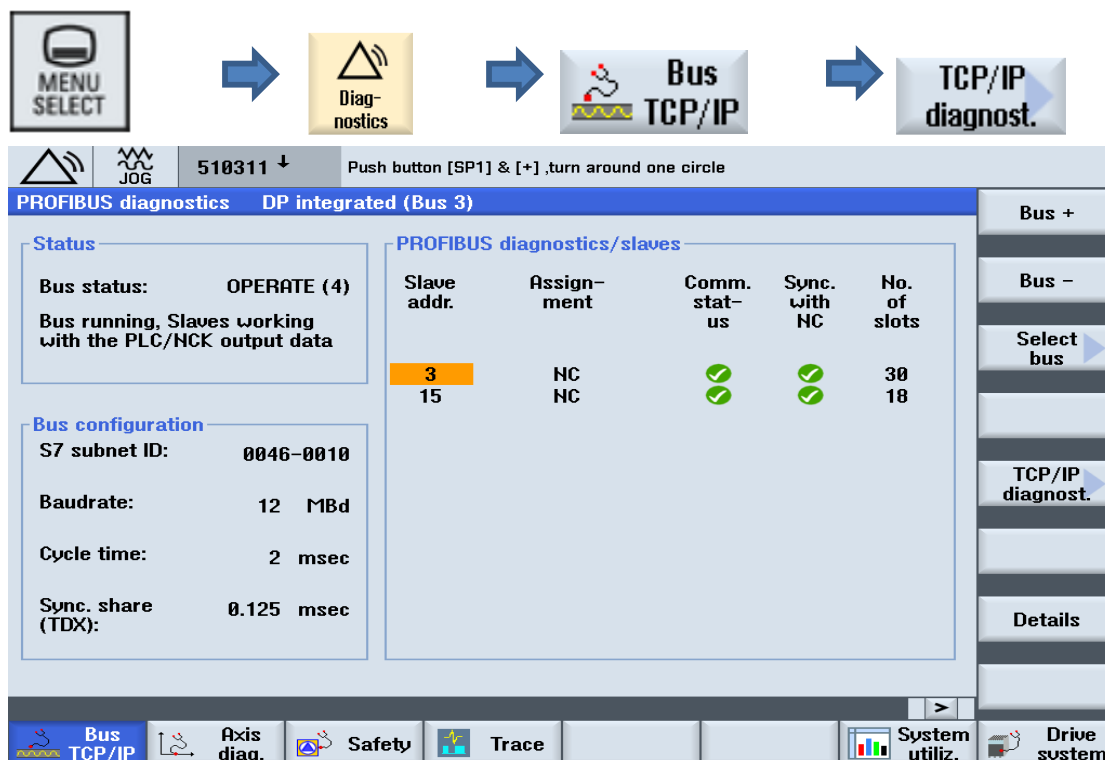


STEP 5: Check HMI Date & Time



- The date & time of OPC UA must calibration as current date & time
- If settings are all done, **RESTART** is necessary to activate the new settings.

STEP 6: Confirm Network setting



3000 ↓
Emergency stop

TCP/IP configuration		Display new
	NCU system network X120	NCU company network X130
Availability	✓ 100.00%	✓ 100.00%
Cmpt. name:	ncu1	
DNS name	ncu1.local	-
MAC address	00:1f:f8:27:4c:ed	00:1f:f8:27:4c:ee
Address type	DHCP - Synchronized server (Default)	Manually - off
IP address assigned	192.168.214.1	192.168.100.2
Subnet mask assigned	255.255.255.0	255.255.255.0
DHCP server	-	-
Status	Active	-
DHCP server Mode	High	-
DHCP synchron.	127.0.0.1 (localhost)	-
DNS server 1	-	-
DNS server 2	-	-
Gateway	0.0.0.0	

Change

Back

Bus TCP/IP
Axis diag.
Safety
Trace
System utiliz.
Drive system

- Must using X130 Ethernet port as connecting with OPC UA

STEP 7: OPC UA Connection Testing

- Verify OPC UA port work or not by using telnet tool.

telnet IP address port number

EX: telnet 192.167.100.2 4840

- Using 3rd party OPC UA software program connect with SIEMENS CNC controller. (Ex. UaExpert software)
- WebAccess/CNC connection test.

DeviceSetting --> Add

Name: 840D

CNC Type: SIEMENS-OPC

Controller: 828D

CNC IP: 192.167.100.2

CNC Port: 4840

OPC User Name: OpcUaClient

OPC Password:

SSH User Name: manufact

SSH Password: SUNRISE

NC Files Path: /nckfs/_N_MPF_DIR

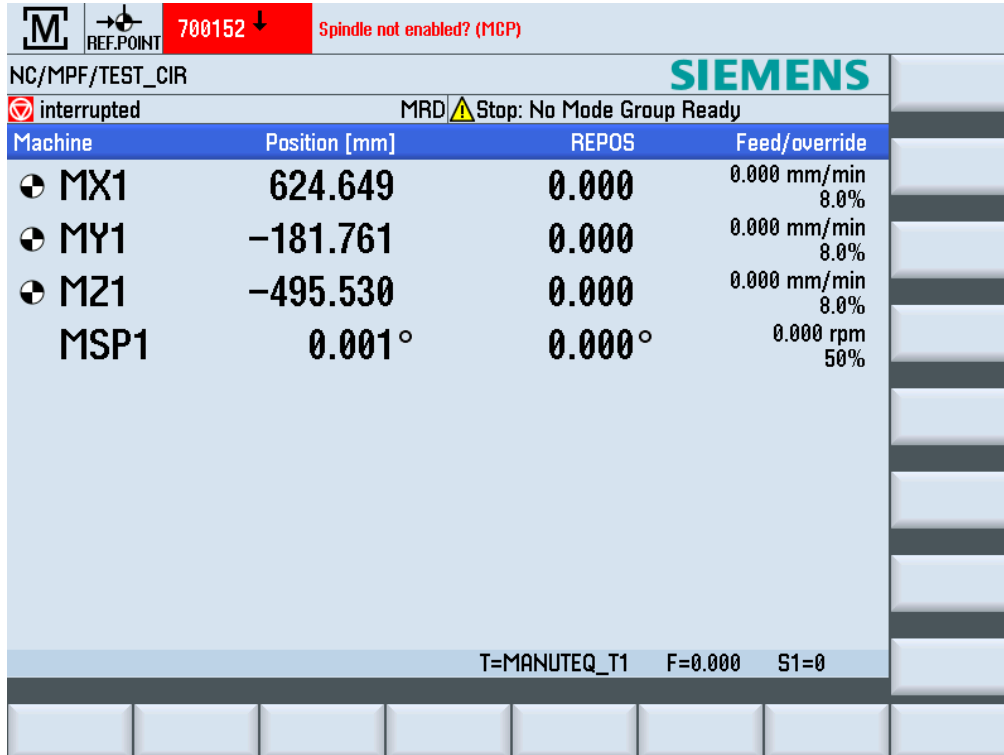
CF Files Path: /media

Alarm Log Path: /user/sinumerik/hmi/log/alarm_log/ala

Save Cancel

STEP 8: SIEMENS CNC Function Pages

Position Information

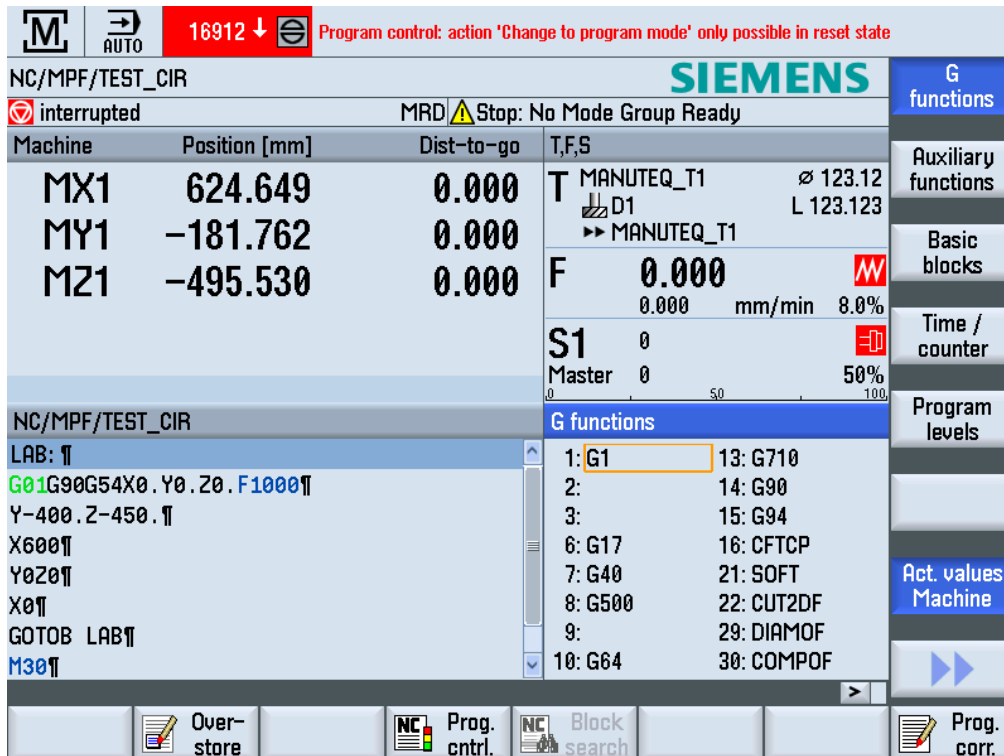


The screen displays the current position of the machine axes. At the top, there is a status bar with a red box indicating '700152' and a warning 'Spindle not enabled? (MCP)'. Below this, the 'SIEMENS' logo is visible. The main area shows a table with columns: Machine, Position [mm], REPOS, and Feed/override. The table lists the following data:

Machine	Position [mm]	REPOS	Feed/override
MX1	624.649	0.000	0.000 mm/min 8.0%
MY1	-181.761	0.000	0.000 mm/min 8.0%
MZ1	-495.530	0.000	0.000 mm/min 8.0%
MSP1	0.001°	0.000°	0.000 rpm 50%

At the bottom, there is a status bar showing 'T=MANUTEQ_T1 F=0.000 S1=0'.

Status Display



The screen displays the current status of the machine. At the top, there is a status bar with a red box indicating '16912' and a warning 'Program control: action 'Change to program mode' only possible in reset state'. Below this, the 'SIEMENS' logo is visible. The main area shows a table with columns: Machine, Position [mm], Dist-to-go, and T,F,S. The table lists the following data:

Machine	Position [mm]	Dist-to-go	T,F,S
MX1	624.649	0.000	T MANUTEQ_T1 D1 MANUTEQ_T1
MY1	-181.762	0.000	F 0.000 0.000 mm/min 8.0%
MZ1	-495.530	0.000	S1 0 Master 0 50%

Below the table, there is a section for 'G functions' with a list of functions and their values:

G functions	Value
1: G1	13: G710
2:	14: G90
3:	15: G94
6: G17	16: CFTCP
7: G40	21: SOFT
8: G500	22: CUT2DF
9:	29: DIAMOF
10: G64	30: COMPOF

At the bottom, there is a status bar showing 'LAB: 11' and 'G01G90G54X0.Y0.Z0.F1000'.

Tool List

700152 ↓ Spindle not enabled? (MCP)

Tool list											Spindle
Loc.	Type	Tool name	D	H	Length	Ø		N			
		MANUTEQ_T1	1	123	123.123	123.123		0			
2		PMC2	1	2	-117.000	17.000		0			
3		PMC3	1	3	-116.000	16.000	118.0	0			
4		PMC4	1	5	-115.000	7.500	0.0	0			
5		PMC5	1	4	-114.000	14.000		0			
		PMC5	2	511	-113.000	13.000		0			
6		PMC6	1	6	-112.000	12.000		0			
7		PMC7	1	7	-111.000	11.000		0			
8		PMC8	1	8	-110.000	10.000		0			
		PMC8	2	811	-109.000	9.000		0			
		PMC8	3	812	-108.000	8.000		0			
		PMC8	4	0	-110.000	10.000		0			
9		PMC9	1	9	-107.000	7.000	90.0	0			
10		PMC10	1	10	-106.000	6.000		0			
11		PMC1	1	1	100.000	20.000		4			

Tool list

Tool wear

Magazine

Work offset

R User variable

SD Setting data

Unload

Magazine selection

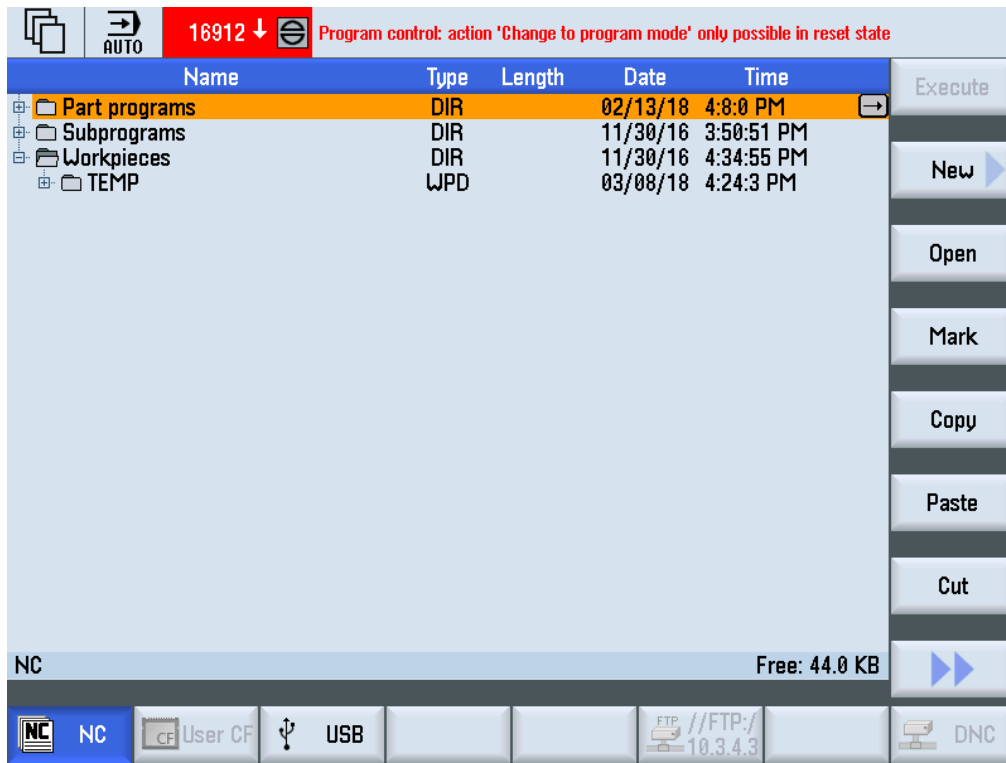
Work Offset

700152 ↓ Spindle not enabled? (MCP)

Work offset - G54 ... G599 [mm]						
		X	Y	Z	SP1	
G54		24.777	101.506	-300.000	0.000	Active
G55	Fine	0.000	0.000	0.000	0.000	Overview
G56	Fine	0.000	0.000	0.000	0.000	
G57	Fine	0.000	0.000	0.000	0.000	
G58	Fine	0.000	0.000	0.000	0.000	
G59	Fine	0.000	0.000	0.000	0.000	G54 ... G599
G507	Fine	0.000	0.000	0.000	0.000	
G508	Fine	0.000	0.000	0.000	0.000	
G509	Fine	0.000	0.000	0.000	0.000	Details
G510	Fine	0.000	0.000	0.000	0.000	

Tool list | Tool wear | Magazine | Work offset | User variable | Setting data

NC program List

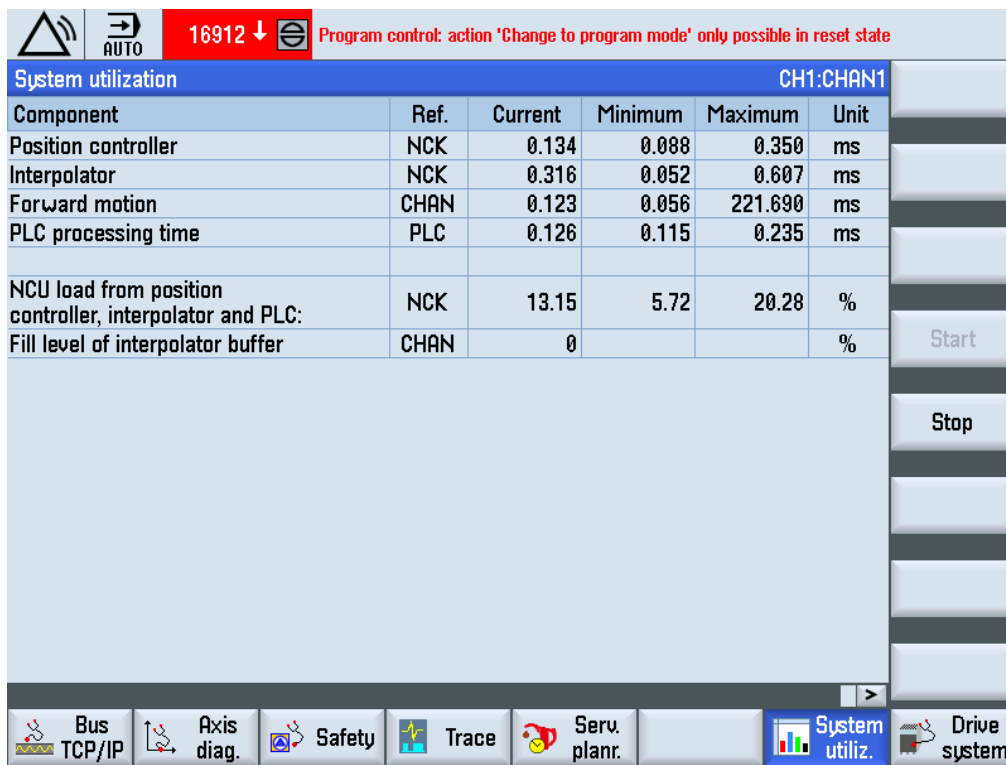


The screenshot shows the 'NC program List' interface. At the top, there's a status bar with '16912' and a red error message: 'Program control: action 'Change to program mode' only possible in reset state'. Below this is a table with columns: Name, Type, Length, Date, Time. The table lists four items: 'Part programs' (DIR, 02/13/18, 4:8:0 PM), 'Subprograms' (DIR, 11/30/16, 3:50:51 PM), 'Workpieces' (DIR, 11/30/16, 4:34:55 PM), and 'TEMP' (WPD, 03/08/18, 4:24:3 PM). To the right of the table are buttons: 'Execute', 'New', 'Open', 'Mark', 'Copy', 'Paste', 'Cut', and a double arrow button. At the bottom, there's a status bar with 'NC' and 'Free: 44.0 KB'. Below that is a navigation bar with icons for 'NC', 'User CF', 'USB', 'FTP', and 'DNC'.

Name	Type	Length	Date	Time
Part programs	DIR		02/13/18	4:8:0 PM
Subprograms	DIR		11/30/16	3:50:51 PM
Workpieces	DIR		11/30/16	4:34:55 PM
TEMP	WPD		03/08/18	4:24:3 PM

NC Free: 44.0 KB

System Utilization



The screenshot shows the 'System utilization' interface. At the top, there's a status bar with '16912' and a red error message: 'Program control: action 'Change to program mode' only possible in reset state'. Below this is a table with columns: Component, Ref., Current, Minimum, Maximum, Unit. The table lists six items: 'Position controller' (NCK, 0.134, 0.088, 0.350, ms), 'Interpolator' (NCK, 0.316, 0.052, 0.607, ms), 'Forward motion' (CHAN, 0.123, 0.056, 221.690, ms), 'PLC processing time' (PLC, 0.126, 0.115, 0.235, ms), 'NCU load from position controller, interpolator and PLC:' (NCK, 13.15, 5.72, 20.28, %), and 'Fill level of interpolator buffer' (CHAN, 0, %, %). To the right of the table are buttons: 'Start', 'Stop', and a double arrow button. At the bottom, there's a navigation bar with icons for 'Bus TCP/IP', 'Axis diag.', 'Safety', 'Trace', 'Serv. planr.', 'System utiliz.', and 'Drive system'.

Component	Ref.	Current	Minimum	Maximum	Unit
Position controller	NCK	0.134	0.088	0.350	ms
Interpolator	NCK	0.316	0.052	0.607	ms
Forward motion	CHAN	0.123	0.056	221.690	ms
PLC processing time	PLC	0.126	0.115	0.235	ms
NCU load from position controller, interpolator and PLC:	NCK	13.15	5.72	20.28	%
Fill level of interpolator buffer	CHAN	0			%

R Variables

700000 ↓

Emergency stop button pressed, release it and press reset on MCP

R variables

R 0	0.5	R 20	10	R 40	0
R 1	0.2	R 21	2202	R 41	0
R 2	0.3	R 22	2303	R 42	0
R 3	1.234567	R 23	1	R 43	0
R 4	1	R 24	1	R 44	0
R 5	1	R 25	1	R 45	0
R 6	1	R 26	1	R 46	0
R 7	1	R 27	1	R 47	0
R 8	1	R 28	1	R 48	0
R 9	1	R 29	1	R 49	0
R 10	1101	R 30	3101	R 50	0
R 11	1	R 31	3202	R 51	0
R 12	2	R 32	3303	R 52	0
R 13	3	R 33	1	R 53	0
R 14	4	R 34	1	R 54	0
R 15	5	R 35	1	R 55	0
R 16	6	R 36	1	R 56	0
R 17	7	R 37	1	R 57	0
R 18	8	R 38	1	R 58	0
R 19	9	R 39	1	R 59	0

Tool list
 Tool wear
 Magazine
 Work offset
 R User variable
 SD Setting data

R variables

Global GUD

Channel GUD

Local LUD

Search

Alarm Log

700152 ↓

Spindle not enabled? (MCP)

Alarm log

Raised ▼	Cleared	Number	Text
08/23/18 15:30:7.568 PM		16912	Program control: action 'Change to program mode' only possible in reset state
08/23/18 14:44:53.114 PM		3000	Emergency stop
---		3000	Emergency stop
08/23/18 14:44:17.456 PM	08/23/18 14:44:57.026 PM	150202	Waiting for a connection to /PLC/828D
08/23/18 14:44:17.224 PM	08/23/18 14:44:53.098 PM	150202	Waiting for a connection to /NCK
08/23/18 14:44:16.325 PM	08/23/18 14:44:16.325 PM	150204	----- Start alarm acquisition -----
08/16/18 15:40:59.111 PM		3000	Emergency stop
08/16/18 15:38:54.396 PM	08/16/18 15:38:57.830 PM	16912	Program control: action 'Change to program mode' only possible in reset state
08/16/18 15:38:53.567 PM	08/16/18 15:38:57.830 PM	3000	Emergency stop
08/16/18 15:38:51.364 PM	08/16/18 15:38:53.562 PM	16912	Program control: action 'Change to program mode' only possible in reset state
08/16/18 15:25:41.433 PM	08/16/18 15:38:53.562 PM	3000	Emergency stop

Refresh

Delete
Cancel alarm

Sort

Settings

Save log

Alarm list

Mes-sages

Alarm log

V NC/PLC variab.

Remote diag.

Version