

SIEMENS



Training manual

Sinumerik 808D ADVANCED Commissioning Guide

Version 2013-09

Notes



Product identification / SINUMERIK 808D ADVANCED

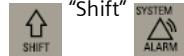
The warranty is connected to the product serial number of the 808D ADVANCED.

You can find the product serial number:
On the back of PPU system hardware.



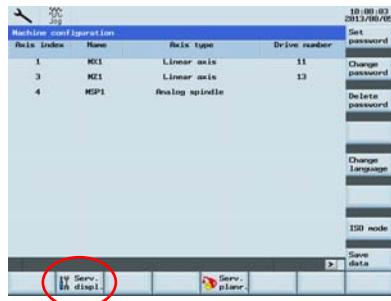
Or on the display.

After switch-on, press the "Shift" "SYSTEM" and "Alarm" keys together.



Then press the "Extension" button .

This will enter into the system area. (see picture 1)



Picture 1

Press softkey



to enter the screen of service axes (see picture 2).

Press softkey



to enter the screen of version data (see picture 3).

Picture 2

	Axis:	MX1	Axis +
Following error	0.000	mm	
System deviation	0.000	mm	
Contour deviation (axial)	0.000	mm	
Servo gain factor (calc.)	1.000	1000/nin	
Active measuring system	1		
Position act. val. meas. system 1	0.000	mm	
Position setpoint	0.000	mm	
Abs. compens. value meas. system 1	0.000	mm	
Compensation sag + temperature	0.000	mm	
Speed actual value (to max. speed)	0.000	%	
Speed setpoint (to max. speed)	0.000	%	
Spindle speed setpoint prog.	0.000	rpm	
Spindle speed setpoint actual	0.000	rpm	
Pos. offset to Lx/Ls act. value	0.000		
Pos. offset to Lx/Ls setpoint	0.000		

Service axes	Service drives	Service control	Servo trace	Version

Service axes	Service drives	Service control	Servo trace	Version

Service axes	Service drives	Service control	Servo trace	Version

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Service axes	Service drives	Service control	Servo trace	Version

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Service axes	Service drives	Service control	Servo trace	Version

Service axes	Service drives	Service control	Servo trace	Version

Service axes	Service drives	Service control	Servo trace	Version

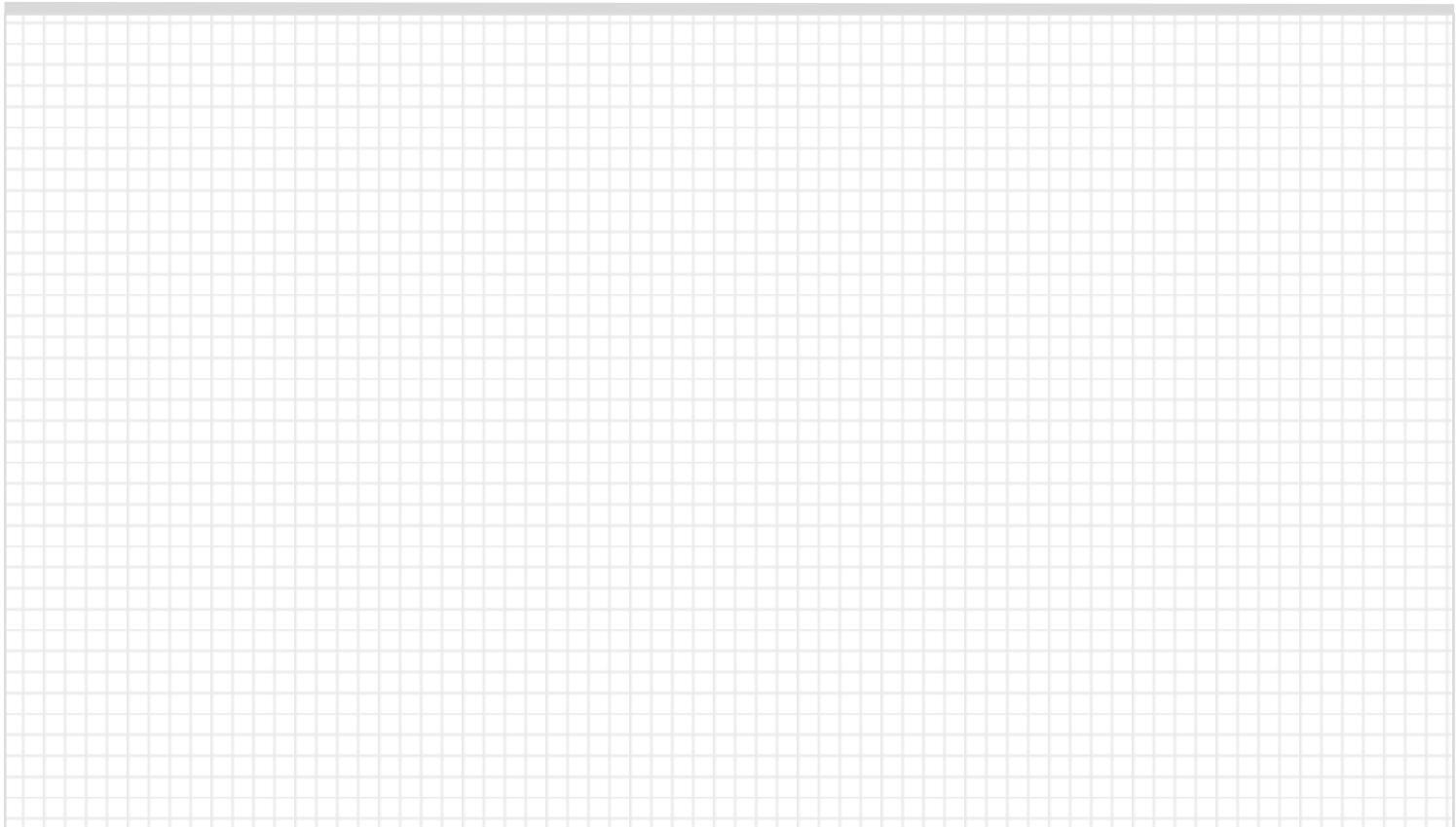
Service axes	Service drives	Service control	Servo trace	Version

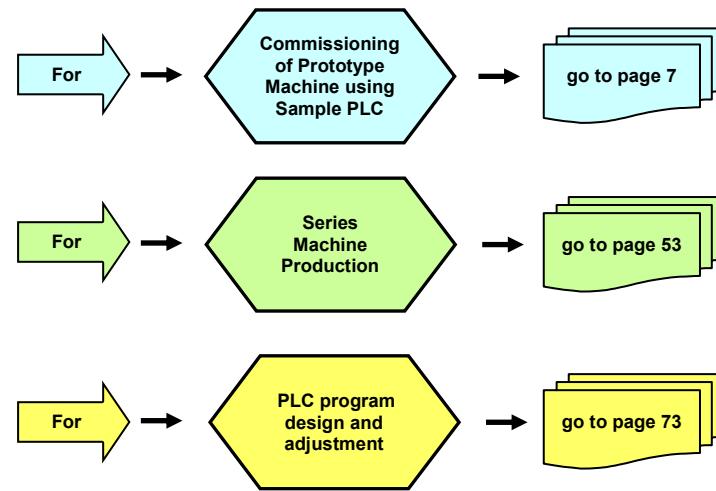
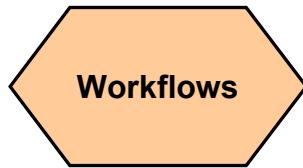
Service axes	Service drives	Service control	Servo trace	Version

Service axes	Service drives	Service control	Servo trace	Version

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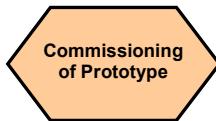
Notes



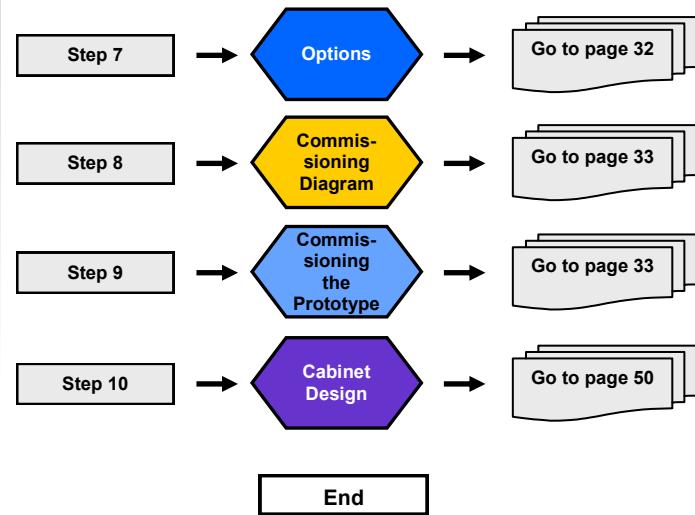
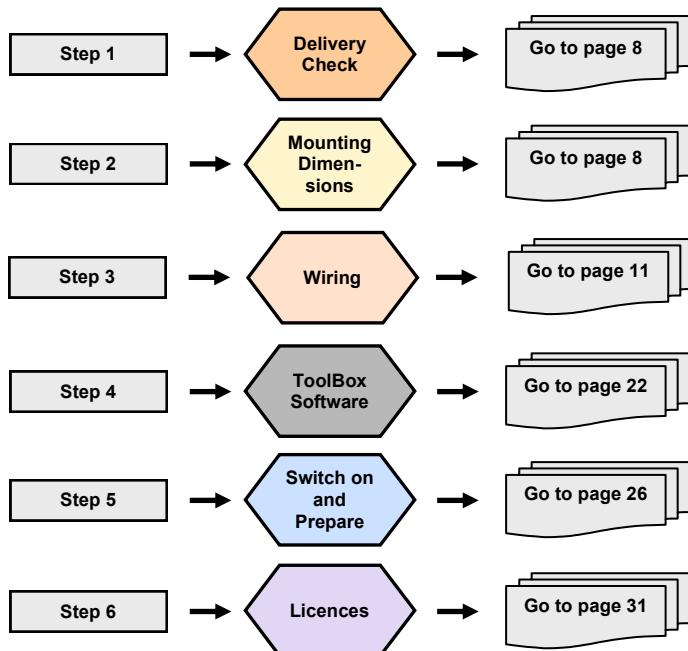


Notes

A large rectangular area filled with a light gray square grid, intended for handwritten notes.



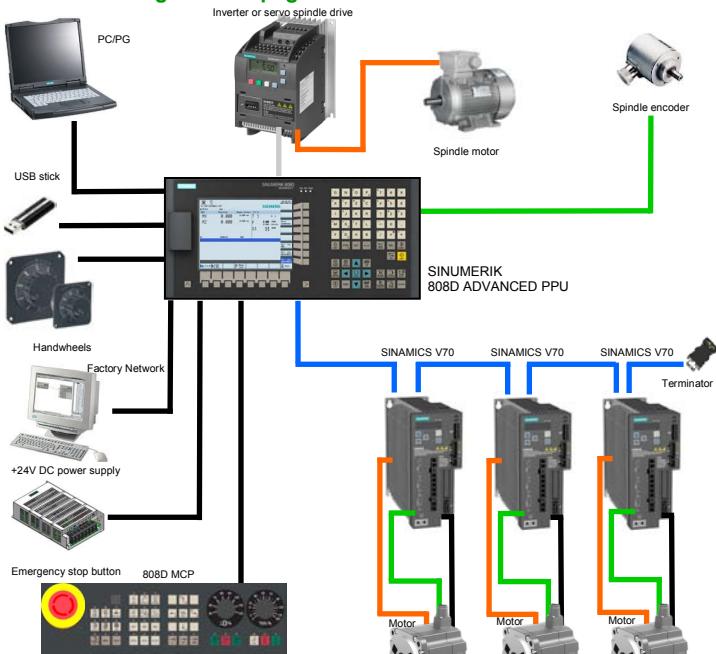
Basic Commissioning procedure for prototype machines using the Sample PLC



Delivery check

In the following diagram the most common Siemens components are shown. For detailed information refer to :-

Commissioning manual page 13



Notes:

1. PC and memory stick is not included in scope of delivery.
2. "USB", "Handwheel", "+24V DC power supply", "Emergency stop button", "Inverter or servo spindle drive", "Spindle encoder" are also not included in scope of delivery.

Step 1

Mounting dimensions

In order to mount the PPU and MCP use the clamps provided as shown below :-



In total 14 clamps are provided together with the delivery of PPU :

1. 8 clamps for mounting PPU.
2. 6 clamps for mounting MCP.

In the following technical drawing the mounting dimensions for the PPU and the MCP are shown.

You must provide sufficient space (recommended distance: 80 mm) between the maintenance door and the cabinet wall for replacing the CF card:

For further components refer to :-

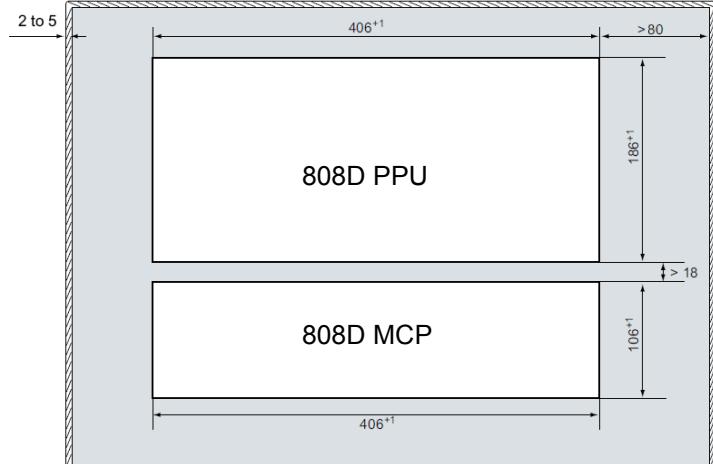
Commissioning manual page 21

Mounting dimensions

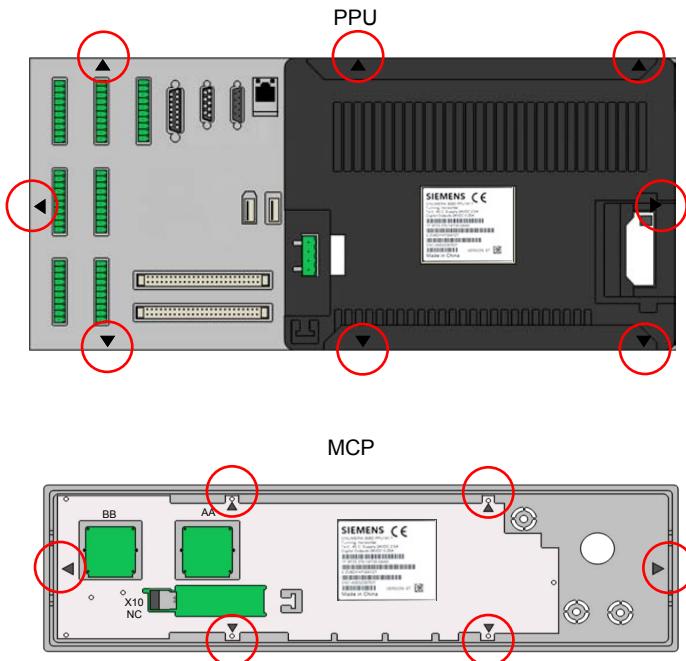
Step 2

The cut-out dimensions for the 808D ADVANCED horizontal PPU and MCP.

Cut-out dimensions



PPU = Panel Processing Unit
MCP = Machine Control Panel



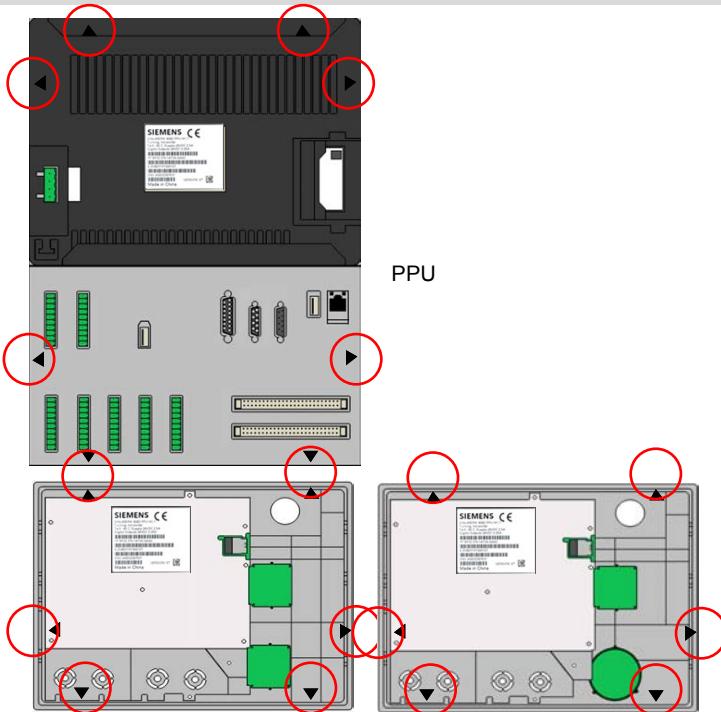
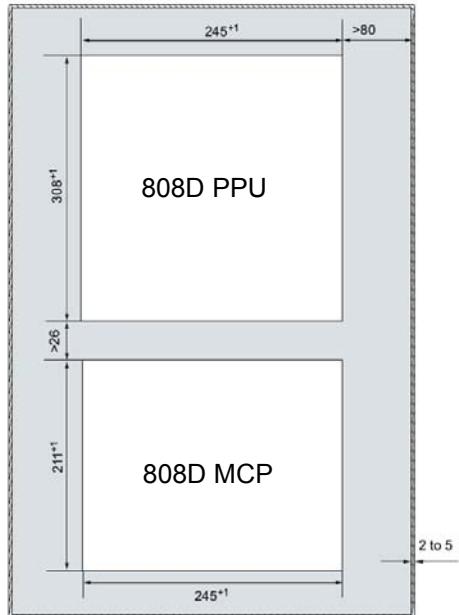
The clamps are located at the positions indicated with the black triangles. The black triangles can be seen in the above picture highlighted with red circles.

Mounting dimensions

Step 2

The cut-out dimensions for the 808D ADVANCED vertical PPU and MCP.

Cut-out dimensions



The clamps are located at the positions indicated with the black triangles. The black triangles can be seen in the following picture with red circles.



Commissioning of Prototype Machine using Sample PLC

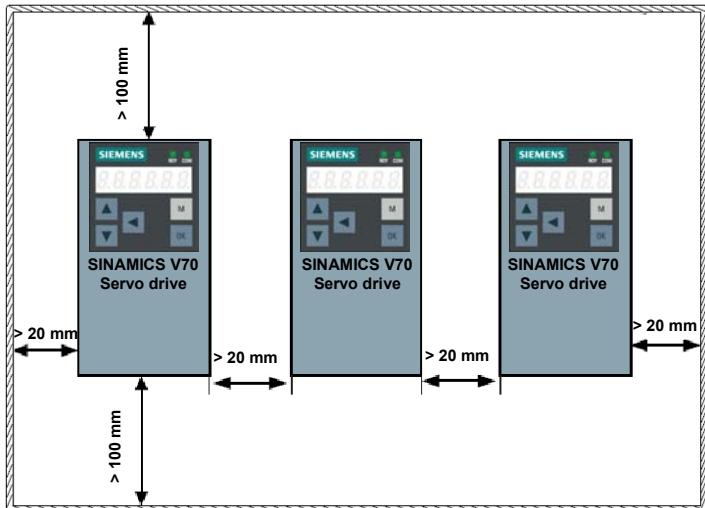
SIEMENS

Mounting dimensions

In the following diagram, the mounting dimensions for the V70 drives are shown.

You must provide sufficient space (recommended distances are shown) around the cabinet wall for air circulation:

For further components refer to :-
Commissioning manual page 25

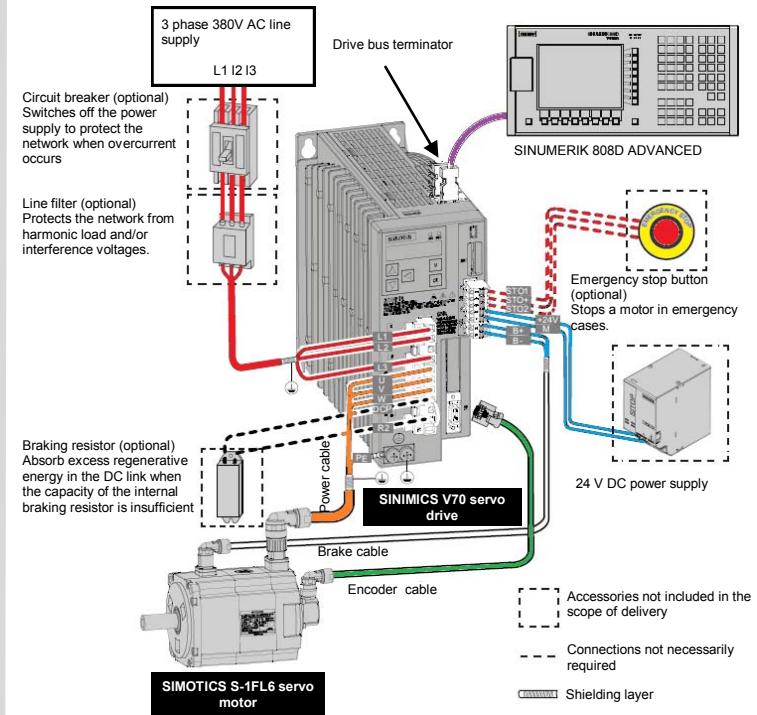


Electrical cabinet

Step 2

Wiring

The connections for the SINAMICS V70 drives to the PPU are shown.



For further information refer to :-



Wiring

Step 3

When connecting the components in the electrical cabinet, the wiring should comply with the relevant safety standards.

For further information refer to :-

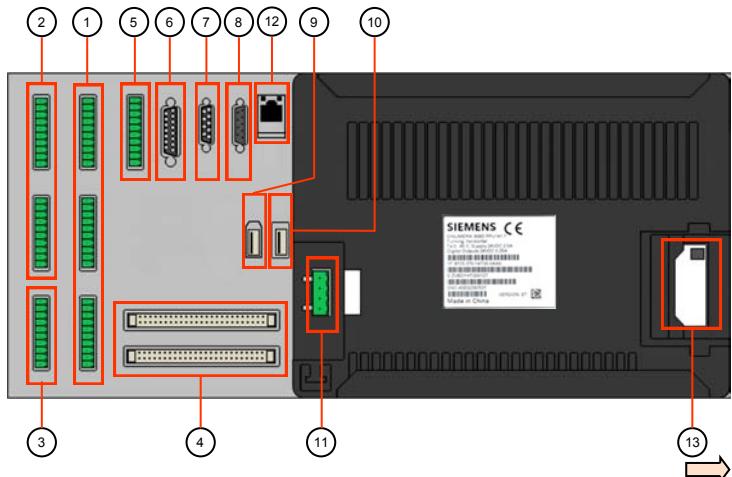
Commissioning manual page 35

V70 Operating Instructions manual

In order to connect cables and wires, the location of all connectors and terminal blocks need to be known.

Connector overview of the horizontal and vertical PPU is shown:

PPU back



Legend	Interface	Comment
PPU Back		
1	X100, X101, X102	Digital inputs
2	X200, X201	Digital outputs
3	X21	FAST I/O
4	X301, X302	Distributed I/O
5	X10	Hand-wheel inputs
6	X60	Spindle encoder interface
7	X54	Analog spindle interface
8	X2	RS232 interface
9	X126	M3 Drive Bus
10	X30	USB interface, for connection with the MCP
11	X1	Power supply interface, +24V DC power supply
12	X130	Ethernet
13	-	Slot for the System Compact Flash Card (CF card)
PPU Front		
14	-	USB interface

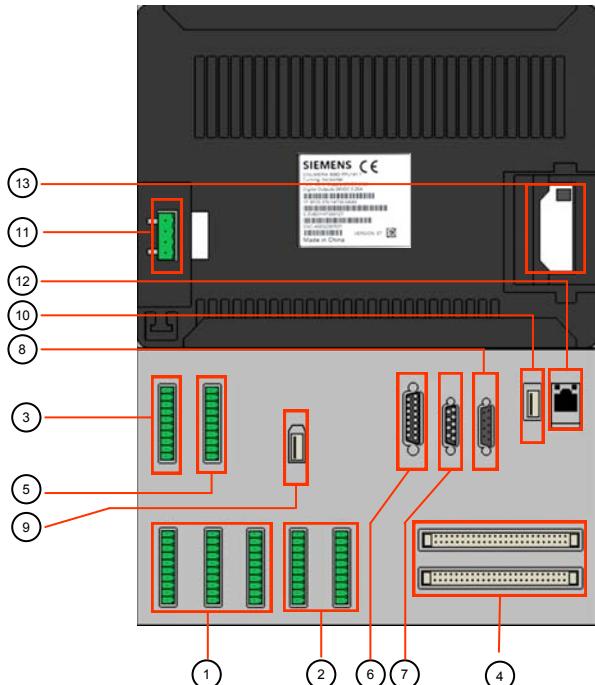


PPU front

Wiring

Step 3

PPU back

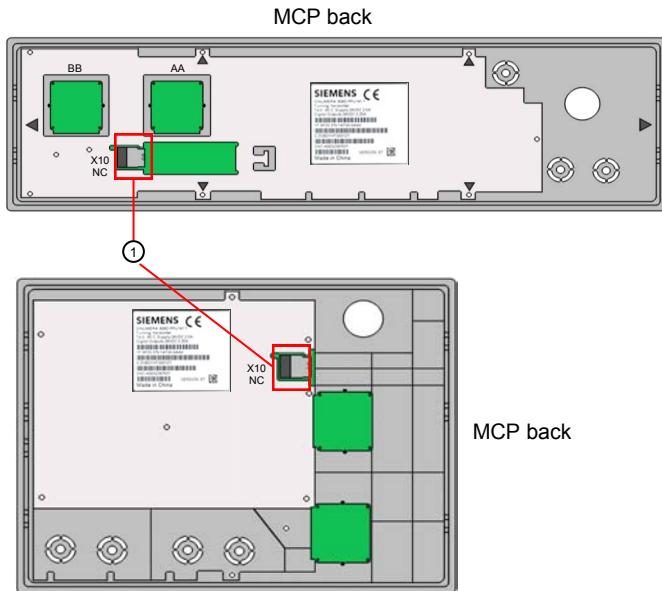


Legend	Interface	Comment
PPU Back		
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11	X1	Power supply interface, +24V DC power supply
12	X130	Ethernet
13	-	Slot for the System Compact Flash Card (CF card)
PPU Front		
14	-	USB interface



Wiring

Step 3

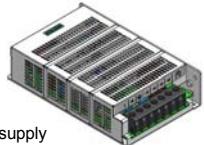


Legend	Interface	Comment
MCP Back		
1	X10	USB interface, for connection with the PPU

Note

Connect USB cable between X30 on PPU and X10 on MCP.

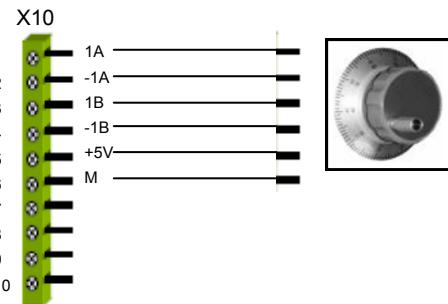
Selection of 24V DC supply



These 4 aspects should be considered during selection of 24V DC supply

1. 24V DC consumed on 808D :
 - ◆ Starting current: 5 A (momentary)
 - ◆ Basic consumption : 1. 5A
2. 24V DC consumed on Sinamics V70 drive:
 - ◆ V70+1FL6 (w/o brake): 0. 8A/axes
 - ◆ V70+1FL6 (w. brake): 1. 2A/axes
3. Max. current of digital output: 0.25A/Digital output
4. Other devices (e.g. fan, hydraulic/pneumatic valve) : calculation base on name plate.
Consideration of redundancy coefficient base on regulation of OEM

The connections on PPU for the handwheel are shown.



Commissioning of Prototype Machine using Sample PLC

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Wiring

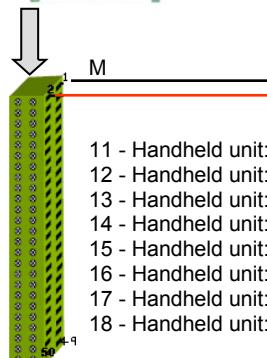
The connections of the distributed I/O are shown for the default PLC.

Milling

Illustration shows the connection diagram of PPU X301



X301 Distributed I/O



Distribution I/O board

For the connection of distribution I/O on X301, X302 distribution I/O board must be configured. MLFB for distribution I/O: 6EP5 406-5AA00

Step 3

Pin assignment of X301,X302

Pin	Signal	Comment	Pin	Signal	Comment
X301 DISTRIBUTED I/O 1					

1	MEXT	External ground	26	IB.7	Digital input
2	+24V	+24V output %	27	-	-
3	DI.0	Digital input	28	-	-
4	DI.1	Digital input	29	-	-
5	DI.2	Digital input	30	-	-
6	DI.3	Digital input	31	Q2.0	Digital output
7	DI.4	Digital input	32	Q2.1	Digital output
8	DI.5	Digital input	33	Q2.2	Digital output
9	DI.6	Digital input	34	Q2.3	Digital output
10	DI.7	Digital input	35	Q2.4	Digital output
11	DI.8	Digital input	36	Q2.5	Digital output
12	DI.9	Digital input	37	Q2.6	Digital output
13	DI.10	Digital input	38	Q2.7	Digital output
14	DI.11	Digital input	39	Q2.8	Digital output
15	DI.12	Digital input	40	Q3.1	Digital output
16	DI.13	Digital input	41	Q3.2	Digital output
17	DI.14	Digital input	42	Q3.3	Digital output
18	DI.15	Digital input	43	Q3.4	Digital output
19	DI.16	Digital input	44	Q3.5	Digital output
20	DI.17	Digital input	45	Q3.6	Digital output
21	DI.18	Digital input	46	Q3.7	Digital output
22	DI.19	Digital input	47	+24V	+24V Input
23	DI.20	Digital input	48	+24V	+24V Input
24	DI.21	Digital input	49	+24V	+24V Input
25	DI.22	Digital input	50	+24V	+24V Input

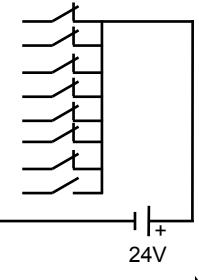
Pin	Signal	Comment	Pin	Signal	Comment
X302 DISTRIBUTED I/O 2					

1	MEXT	External ground	26	IB.7	Digital input
2	+24V	+24V output %	27	-	-
3	IB.1	Digital input	28	-	-
4	IB.1	Digital input	29	-	-
5	IB.2	Digital input	30	-	-
6	IB.3	Digital input	31	Q4.0	Digital output
7	IB.4	Digital input	32	Q4.1	Digital output
8	IB.5	Digital input	33	Q4.2	Digital output
9	IB.6	Digital input	34	Q4.3	Digital output
10	IB.7	Digital input	35	Q4.4	Digital output
11	IB.8	Digital input	36	Q4.5	Digital output
12	IB.9	Digital input	37	Q4.6	Digital output
13	IB.10	Digital input	38	Q4.7	Digital output
14	IB.11	Digital input	39	Q5.0	Digital output
15	IB.12	Digital input	40	Q5.1	Digital output
16	IB.13	Digital input	41	Q5.2	Digital output
17	IB.14	Digital input	42	Q5.3	Digital output
18	IB.15	Digital input	43	Q5.4	Digital output
19	IB.0	Digital input	44	Q5.5	Digital output
20	IB.1	Digital input	45	Q5.6	Digital output
21	IB.2	Digital input	46	Q5.7	Digital output
22	IB.3	Digital input	47	+24V	+24V Input
23	IB.4	Digital input	48	+24V	+24V Input
24	IB.5	Digital input	49	+24V	+24V Input
25	IB.6	Digital input	50	+24V	+24V Input

Milling

Digital inputs

1	E-stop
2	Limit X+
3	Limit X-
4	Limit Y+
5	Limit Y-
6	Limit Z+
7	Limit Z-
8	Ref X
9	M



Wiring

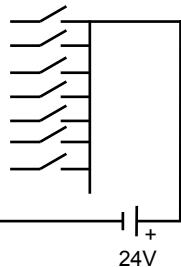
Step 3

Milling

Digital inputs

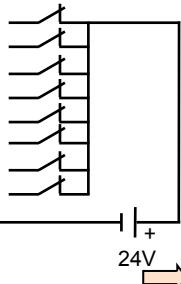
X101

- 1
- 2 Ref Y
- 3 Ref Z
- 4 Magazine count
- 5 Magazine at spindle position
- 6 Magazine at original position
- 7 Magazine at release position
- 8 Magazine at clamp position
- 9
- 10 M



X102

- 1
- 2
- 3
- 4
- 5
- 6 Coolant level low
- 7 Cooling motor overload
- 8 Lubrication level low
- 9 Lubrication motor overload
- 10 M

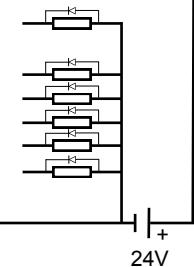


Milling

Digital outputs

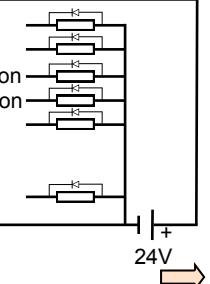
X200

- 1 +24V
- 2 Working lamp
- 3
- 4 Chip remover forward
- 5 Chip remover reverse
- 6 Cooling pump
- 7 Lubrication pump
- 8 Safety door open
- 9
- 10 M



X201

- 1 +24V
- 2 Disk magazine: magazine rotating CW
- 3 Disk magazine: magazine rotating CCW
- 4 Disk magazine: magazine in spindle position
- 5 Disk magazine: magazine in original position
- 6 Disk magazine: spindle tool release
- 7
- 8 Handheld unit active
- 9
- 10 M



Wiring

Step 3

The connections of the distributed I/O are shown for the default PLC.

Turning

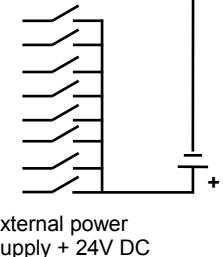
Illustration shows the connection diagram of PPU X301



X301 Distributed I/O



- 11 - Handheld unit: axis X selected
- 13 - Handheld unit: axis Z selected
- 14 - Handheld unit: axis 4th selected
- 15 - Handheld unit: INC X1
- 16 - Handheld unit: INC X10
- 17 - Handheld unit: INC X100
- 18 - Handheld unit: enabled



For the connection of distribution I/O on X301, X302 distribution I/O board must be configured. MLFB for distribution I/O: 6EP5 406-5AA00

Pin assignment of X301,X302

Pin	Signal	Comment	Pin	Signal	Comment
1	MEXT	External ground	26	IB.7	Digital input

Pin	Signal	Comment	Pin	Signal	Comment
2	+24V	+24V output %	27	-	-

Pin	Signal	Comment	Pin	Signal	Comment
3	DI.0	Digital input	28	-	-

Pin	Signal	Comment	Pin	Signal	Comment
4	DI.1	Digital input	29	-	-

Pin	Signal	Comment	Pin	Signal	Comment
5	DI.2	Digital input	30	-	-

Pin	Signal	Comment	Pin	Signal	Comment
6	DI.3	Digital input	31	Q2.0	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
7	DI.4	Digital input	32	Q2.1	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
8	DI.5	Digital input	33	Q2.2	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
9	DI.6	Digital input	34	Q2.3	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
10	DI.7	Digital input	35	Q2.4	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
11	DI.8	Digital input	36	Q2.5	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
12	DI.9	Digital input	37	Q2.6	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
13	DI.10	Digital input	38	Q2.7	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
14	DI.11	Digital input	39	Q2.8	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
15	DI.12	Digital input	40	Q3.1	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
16	DI.13	Digital input	41	Q3.2	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
17	DI.14	Digital input	42	Q3.3	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
18	DI.15	Digital input	43	Q3.4	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
19	DI.16	Digital input	44	Q3.5	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
20	DI.17	Digital input	45	Q3.6	Digital output

Pin	Signal	Comment	Pin	Signal	Comment
21	DI.18	Digital input	46	Q3.7	Digital output

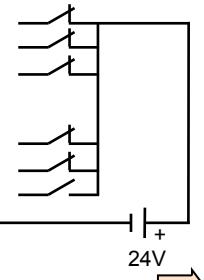
Pin	Signal	Comment	Pin	Signal	Comment
22	DI.19	Digital input	47	+24V	+24V Input

Pin	Signal	Comment	Pin	Signal	Comment
23	DI.20	Digital input	48	+24V	+24V Input

Pin	Signal	Comment	Pin	Signal	Comment
24	DI.21	Digital input	49	+24V	+24V Input

Pin	Signal	Comment	Pin	Signal	Comment
25	DI.22	Digital input	50	+24V	+24V Input

Pin	Signal	Comment
1	E-stop	
2	Limit X+	
3	Limit X-	
4	Limit Z+	
5	Limit Z-	
6	Ref X	
7	M	



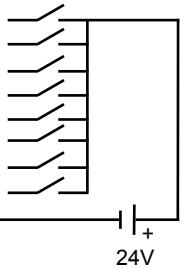
Wiring

Step 3

Turning

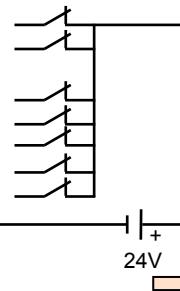
Digital inputs

X101
1
2
3 Ref. Z
4 T1
5 T2
6 T3
7 T4
8 T5
9 T6
10 M



X102

1	Turret motor overload
2	Reserved for other turret
3	Chuck open
4	Coolant level low
5	Cooling motor overload
6	Lubrication level low
7	Lubricating motor overload
8	
9	
10	M

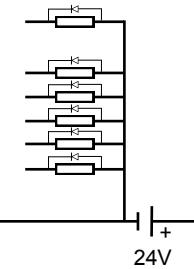


Turning

Digital Outputs

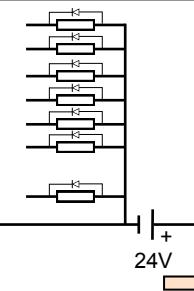
X200

1	+24V
2	Work lamp
3	
4	Tailstock advancing
5	Tailstock retracting
6	Coolant pump
7	Lubrication pump
8	Chuck output 1
9	Chuck output 2
10	M



X201

1	+24V
2	Turret motor CW
3	Turret motor CCW
4	Reserved for other turret
5	Reserved for other turret
6	Gear change: low
7	Gear change: high
8	
9	Handheld unit active
10	M

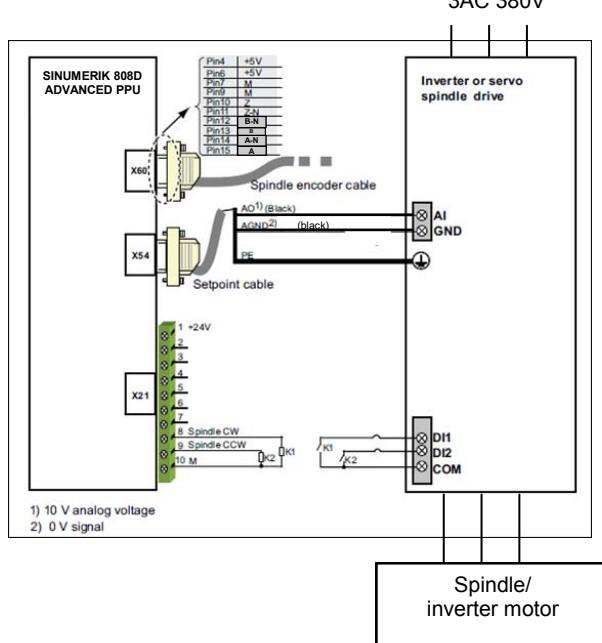


Wiring

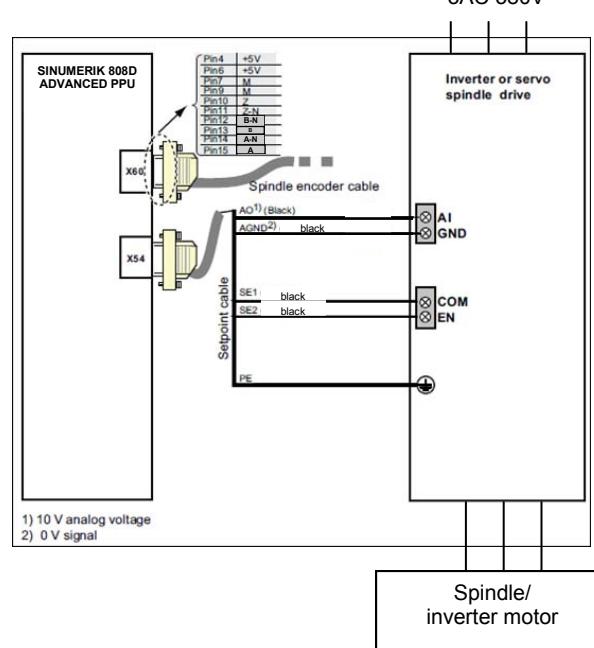
Step 3

The connections for the inverter or the spindle drive to the PPU are shown.

Unipolar connection



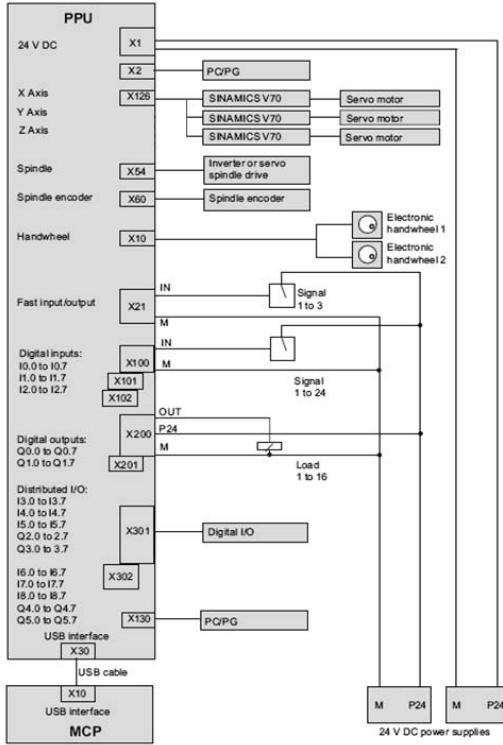
Bipolar connection



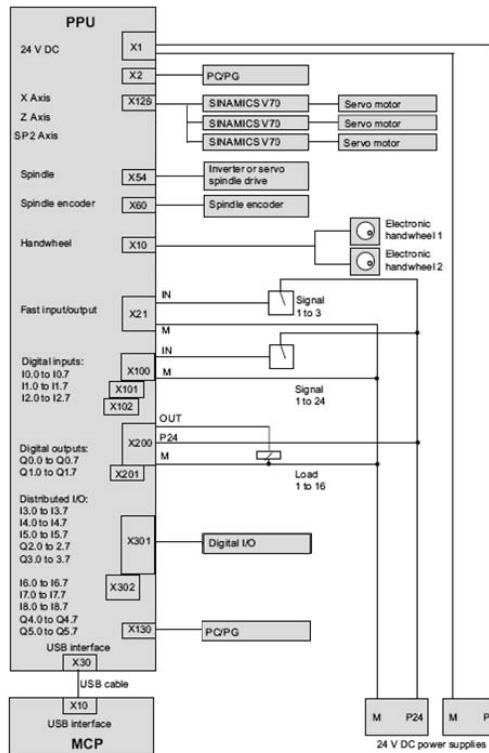
Wiring

Step 3

The connection overview for milling is shown.



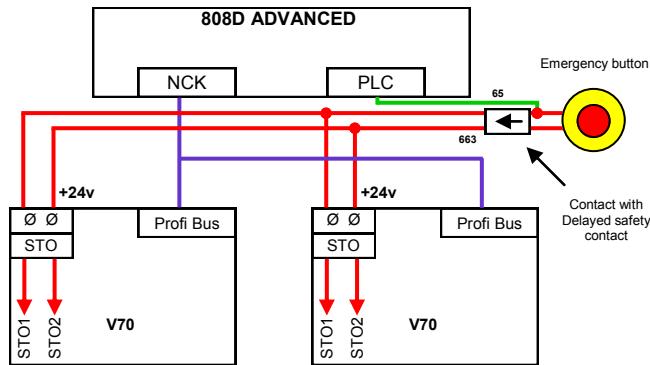
The connection overview for turning is shown.



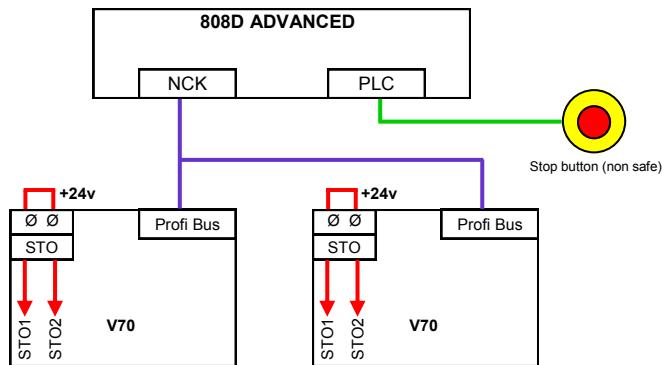
Wiring

Step 3

Recommended safety wiring of emergency stop with OFF3 and delayed STO (OFF2)



Recommended safety wiring of emergency stop (simple)



Toolbox software

Step 4

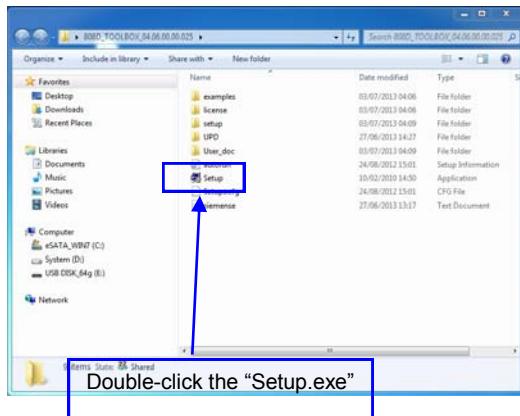
The 808D ADVANCED toolbox

In order to integrate the 808D ADVANCED to a machine tool, software tools are required. The tools enable the machine tool builder to create the PLC program for the machine.

These tools, including service tools are supplied on a CD, the CD is called the Toolbox CD and is included in the scope of delivery.

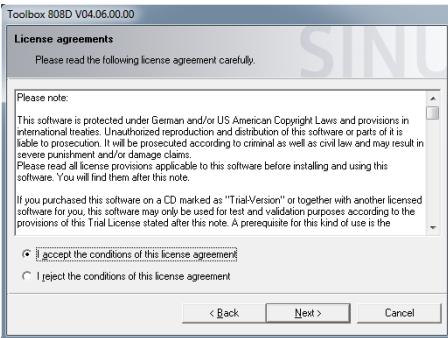
Software included in the toolbox:

- AMM (Data transfer, commissioning tool)
- Programming tool PLC (Creating & loading PLC projects)
- PLC Library (PLC example files)
- SinucomPCIN (Data transfer)



Use the “setup.exe” file to install software on to PC/PG.
For further information refer to :-
Commissioning manual page 20

The software licence agreement has to be “accepted” and continued with “Next”.



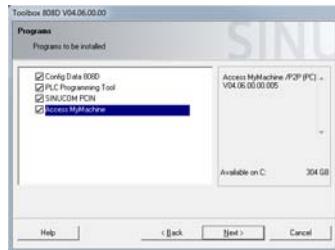
In some cases, an extra language has to be selected.



Toolbox software

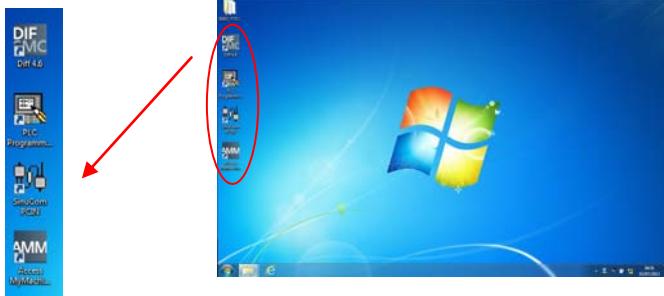
Step 4

In some cases, an earlier version of a program may already be installed, in this case the software must be un-installed first, then start the installation again and select the required software from the list.



During the installation various dialogue boxes will appear. The dialogue boxes should be acknowledged and where necessary installation data should be entered and confirmed.

Installing all the software packages will take approximately 30 minutes. When the installation has finished icons will be placed on the desk top.



Basic Information

The AMM software program is a multifunctional tool which is used for data transfer, service, and commissioning tasks.

The program is part of the toolbox supplied with each controller and is installed as per instructed previous. Data resident on the controller can be saved to an external computer for backup purposes. This data can be transferred back to the controller as and when required.

Alternatively, data created off-line, such as NC part programs can be transferred to the controller in the same way.

The software includes a feature called "Remote control", this allows the screen of the controller to be remotely viewed and changed, it is also possible to make changes to data using this feature.

For further information refer to :-
Commissioning manual page 224

Toolbox software

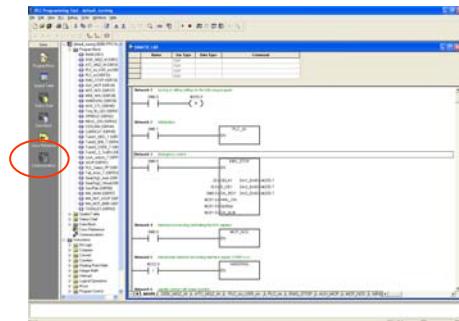
Step 4

Testing the connection to PLC Programming Tool.

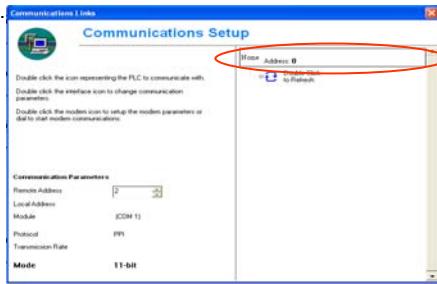
A connection must be made so that the PLC programming tool can communicate with PPU, first startup the PLC programming tool software.

For further information refer to :-
Commissioning manual
page 210

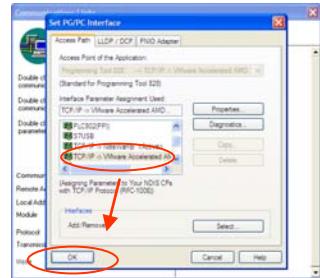
Click the Communications Icon.



Double click highlighted area.



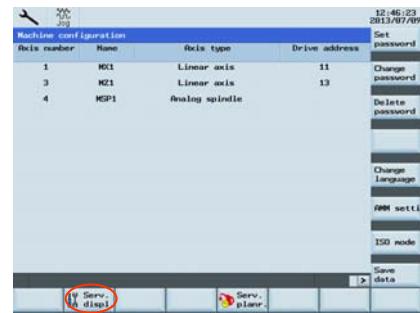
Select the active ethernet adaptor.



Activate the PLC connection setting in 808D (password set to "sunrise")

Press key: +

Press key:

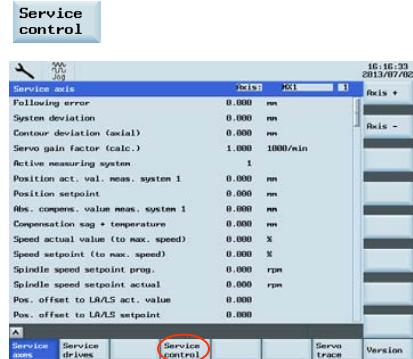


Commissioning of Prototype Machine using Sample PLC

SIEMENS

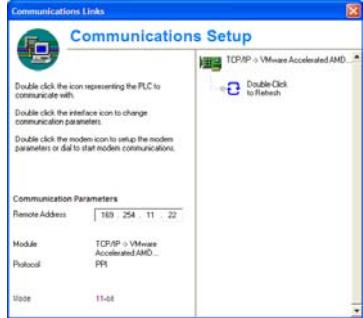
Toolbox software

Press “Service control” SK

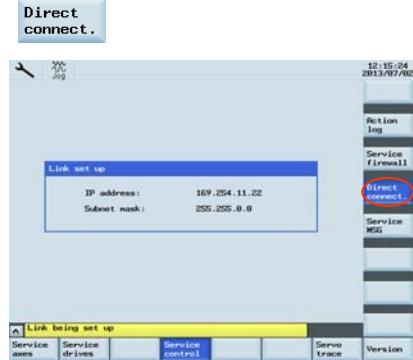


Step 4

Enter the “direct connect” IP address in the remote address field of the programming tool.
Double click the “Double click to refresh” field to activate the connection.



Press “Direct connect.” SK



The connection is now established, this is shown by a green box.



Switching on and prepare for commissioning

Step 5

Before powering on the controller, you should familiarise yourself with the operation of the PPU and MCP.

For detailed information refer to :-

Commissioning manual page 77

1. Apply 24V DC to the PPU (X1).
2. Apply 3P 220VAC to V70 drives (L1 L2 L3).
3. Check that the status LED's on the front face of the PPU are in the ready state.

For detailed information refer to :-

Commissioning manual page 84



Status description on front LED's of PPU

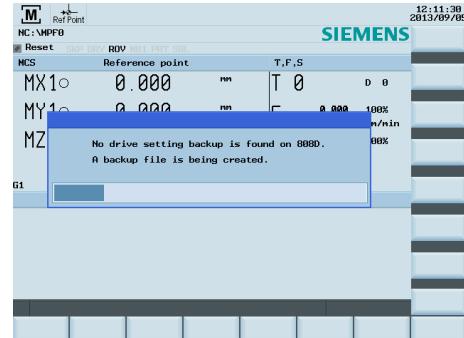
LED	Colour	Description
POK	Green	The power supply for the CNC is switched on.
RDY	Green	The CNC is ready and the PLC is run mode.
	Yellow	The PLC is in stop mode.
TEMP	Red	The CNC is in stop mode.
	Green	The CNC temperature is out of range
	Unlit	The CNC temperature is within the specified range.



Every time a new connection is established between the NC and the drive, the NC automatically compares the drive data with the data backup on the NC.

If no data backup files can be found, the NC creates a new backup file automatically with the following dialog displaying on the screen:

For detailed information refer to :-
Commissioning manual page 89



If the drive data is different from the 808D backup data, a data synchronization is required for synchronizing the drive data files between the NC and the drives.



Switching on and prepare for commissioning

Step 5

4. Check that the status LED's on the front face of the V70 drives are in a ready state.

V70 digital drive display at this stage, the status should be S - off.

For detailed information refer to :-

Commissioning manual page 81



Status on power up with absolute encoder



Status on power up with incremental encoder

Status description on SINAMICS V70	
Item	Description
8.8.8.8.8.8	Initializing the drive, will take 20 –30 sec during the process
- - - - -	Drive is busy
S - Off	Operating display: servo off
r - 0	Drive is running properly
A 01...A 45	Alarm code
F 01...F 45	Fault code

LED status indicators

Two LED status indicators (RDY and COM) are available to indicate drive readiness status and communication status respectively.



Status LED's indicator	colour	Status	description
RDY	-	Off	24v control board power supply is missing
	Green	Continuously lit	Drive is ready
	Red	Continuously lit	Enable signal is missing or drive is in start-up states
		Flash at 1Hz	Alarms or faults occur
	Orange	Flash at 2Hz	Servo drive is located
COM	-	Off	Communication with CNC is not active
	Green	Flash at 0.5Hz	Communication with CNC is active
		Flash at 2Hz	SD card operating (read or write)
	Red	Continuously lit	Communication with CNC is in error

Switching on and prepare for commissioning

Step 5

V70 Drive:

Loading of “Default data”

Remove drive bus cable from terminal X10

Press M repeatedly (until “FUnC” is displayed)

Press OK

Press ▼(until “dEFAUL” is displayed)

Press OK for more than 2 sec

Screen will go blank (wait about 20sec)

(Screen will display “S OFF” or a fault code)



Saving data.

Press M repeatedly (until “FUnC” is displayed)

Press OK

Press ▼(until “SAvE” is displayed)

Press OK for more than 2 sec

Screen will go blank (wait about 20sec)

(Screen will display “S OFF” or a fault code)

Replace drive bus cable to terminal X10

Before the control can be commissioned, loading of standard NC data has to be carried out, the password has to be set to manufacturer, and the time and the date have to be set.

Setting of the password.

For detailed information refer to :-
Commissioning manual page 92

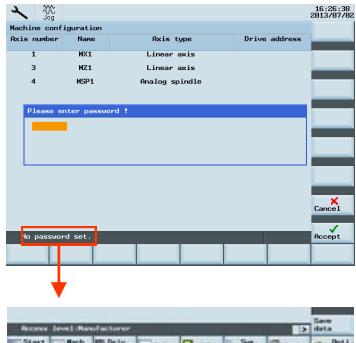
To set the password :-

Press button +

Press SK

Type in “SUNRISE”

Press SK



Setting of the time and date.

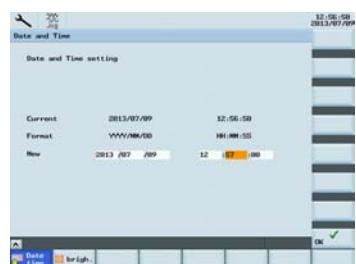
For detailed information refer to :-
Commissioning manual page 93

To set the time and date :-

Press SK

Press SK

Type in time and date using the keyboard and the and button



Switching on and prepare for commissioning

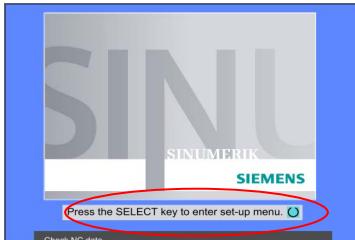
Step 5

Load standard data :-

The control must be powered off → on.

When the PPU shows the following screen:-

Press



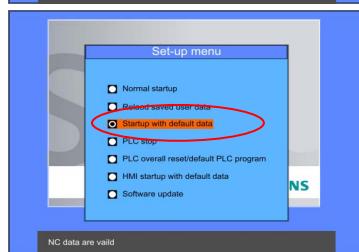
In the following screen select "start-up with default data" using button



Press



To accept the selection.



On power up of the control the current alarms 4060 and 400006 can be acknowledged with the "Reset" and "Alarm cancel" buttons

Reset the password as the default PLC will set to "NO PASSWORD"

Press button +

Type in SUNRISE

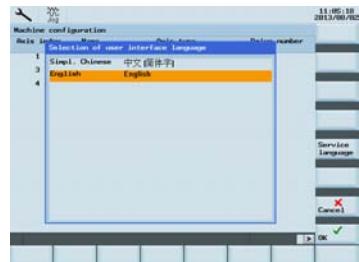
Press SK

To set the language:-

Press button +

Select the language with

Press SK



Loading system languages:-

You can load a new system language or update an existing language on the controller.

Siemens will provide each language in the form of an archive file.

For detailed information refer to :-
Commissioning manual page 96

Commissioning of Prototype Machine using Sample PLC

SIEMENS

licences

In order to active an "Option", a new licence key must be obtained and entered as a numerical key.

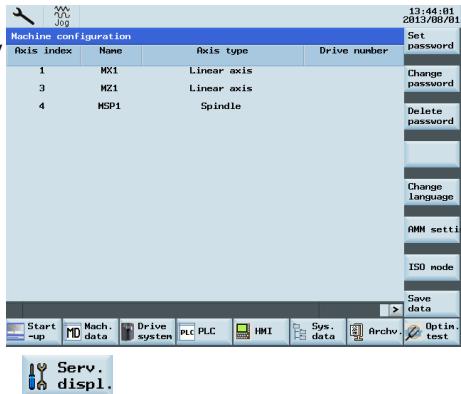
For further information refer to :-

Commissioning manual page 94

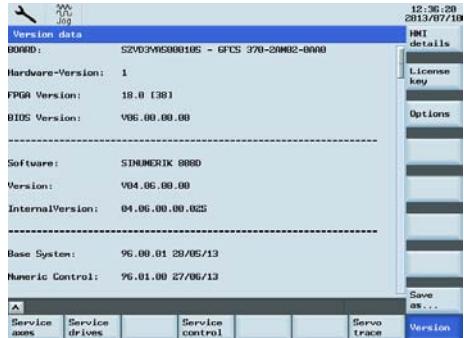
Press button +

Press button

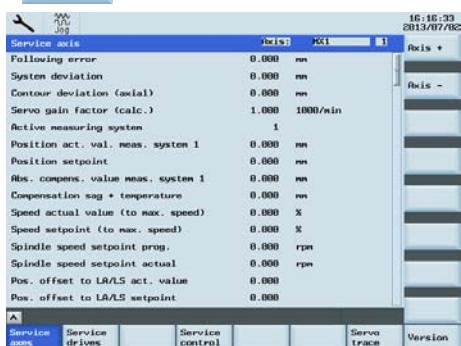
Press the SK



Step 6



Press the SK



Press the SK



To activate press the SK



Commissioning of Prototype Machine using Sample PLC

SIEMENS

Options

To active an “Option”, enter the screen and select the required “Options”.

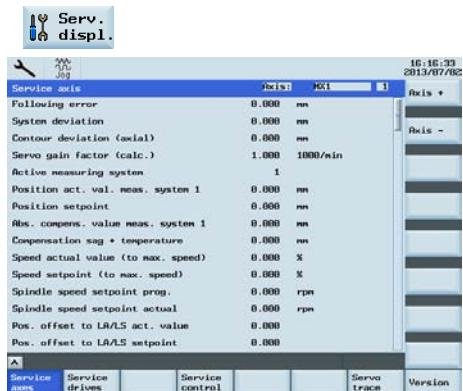
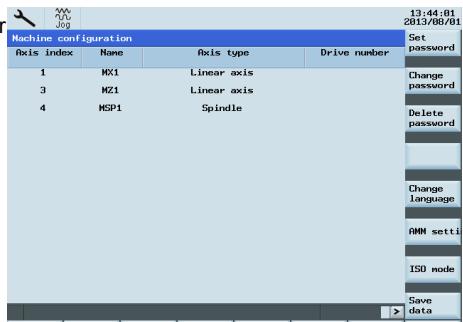
For further components refer to :-

**Commissioning manual
page 95**

Press button +

Press button

Press the SK

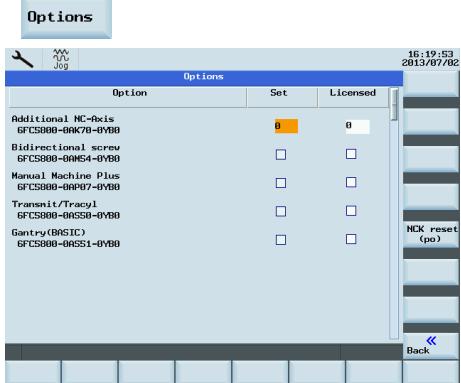
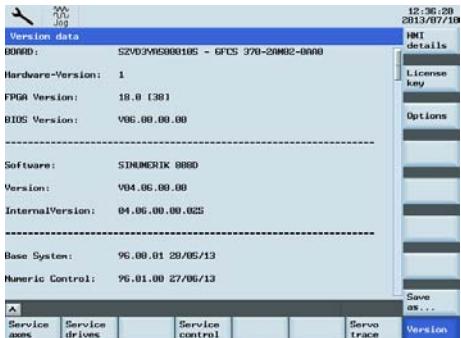


Press the SK

Step 7

Press the SK

Enter the number of additional axis or “select” the required option using the button.



To activate press the SK

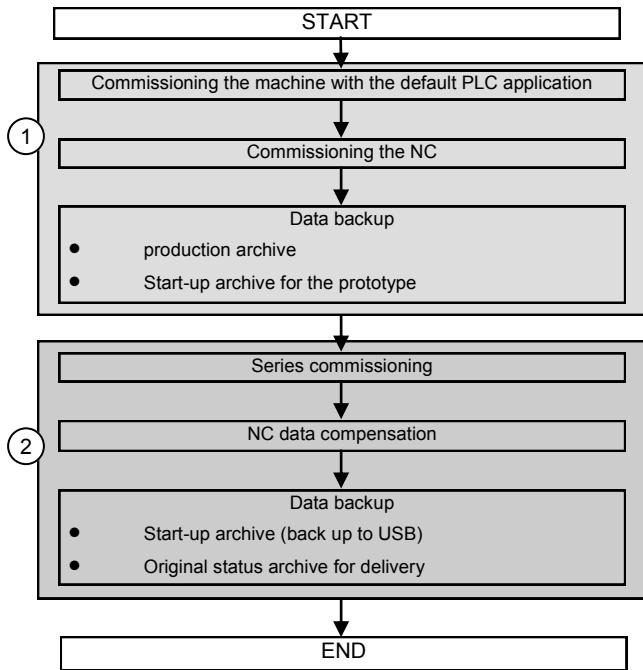


Commissioning of Prototype Machine using Sample PLC

Commissioning diagram

Commissioning diagram

- 1 Commissioning the prototype.
- 2 Series production



Step 8

Commissioning the prototype

Commissioning the prototype.
For detailed information refer to :-
Commissioning manual page 99

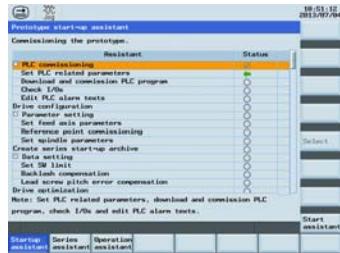
The startup assistant is used to commissioning the prototype

To start the assistant

Press



The PPU shows the following screen.

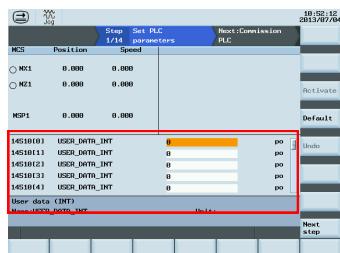


Press



The PPU shows the following screen.

In the box shown you can enter the PLC MD values, required for the standard PLC program.



Step 9

**Commissioning
of Prototype
Machine using
Sample PLC**

SIEMENS

Commissioning the prototype

Step 9

**Set PLC
parameters**

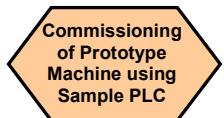
For detailed information refer to :-
Commissioning manual page 100



MD14510	PLC interface	Unit	Range	Function
14510[12]	DB4500.DBW24	*	0 or 1	vertical =0 - horizontal=1
MD14510[13] SBR 42	DB4500.DBW26	0.1sec	5~200	Spindle braking time
MD14510[20] SBR 51 - 52	DB4500.DBW40		2~64	Max Tool number in magazine
MD14510[24] SBR 45	DB4500.DBW48	1min	5~300	Lubrication interval
MD14510[25] SBR 45	DB4500.DBW50	0.01s	100~2000	Lubrication duration
MD14514	PLC interface			Function
MD14514[0]	DB4500.DBD2000			Tool magazine : spindle poisoning angle
MD14514[1]	DB4500.DBD2004			Tool magazine: Preparation position of Z axes for tool change
MD14514[2]	DB4500.DBD2008			Tool magazine: Tool changing posion of Z axes
MD14514[3]	DB4500.DBD2012			Tool magazine: velocity of Z axis, Go to tool change preparation position
MD14514[4]	DB4500.DBD2016			Tool magazinevelocity of Z axis, back to tool change preparation position

MILLING continued

MD14512	Functionality							
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
14512[16] DB4500.D BB1016	Selection of axis to be controlled by hand wheel via MCP	Z axis: rotary monitoring	Y axis: rotary monitoring	X axis: rotary monitoring	Safety door open when M1/ M2 programmed	Safety door activate	Chip remover activate	
	SBR 39				SBR 22	SBR 22	SBR 23	
14512[17] DB4500.D BB1017					Selection of hand-wheel controlled axis via HHU			Tool magazine activate
								SBR 52 - 53
14512[18] DB4500.D BB1018	One hardware limit triggered per axis	Hardware limit is independent of the PLC application	Fixed direction of spindle	External stop signal of the spindle		Automatic lubrication after first power-on		
	SBR 40	SBR 40		SBR 33				
14512[19] DB4500.D BB1019						Delete system password when power on	Spindle brake activate	
							SBR 42	
14512[20] DB4500.D BB1020							Spindle enable cancel	
							SBR 40	



Commissioning the prototype

Set PLC parameters

For detailed information refer to :-
Commissioning manual page 100



Step 9

TURNING continued

Functionality								
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
MD14512[16] DB4500.DB B1016	Selection of axis to be controlled by hand wheel via MCP	Z axis: rotary monitoring		X axis: rotary monitoring	Safety door open when M1/M2 programmed	Safety door activate		
					SBR 22	SBR 22		
14512[17] DB4500.DB B1017				Selection of hand-wheel controlled axis via HHU	Tail-stock function activate	Chuck function activate	HED turret activate	
								SBR 51 - 52
14512[18] DB4500.DB B1018	One hardware limit is independent of the PLC application	Hardware limit triggered per axis	Fixed direction of spindle	External stop signal of the spindle		Automatic lubrication after first power-on		
					SBR 33			
14512[19] DB4500.DB B1019	MM+ (option) activate				Delete system password when power on	Spindle brake activate		
								SBR 42
14512[20] DB4500.DB B1020						Spindle enable cancel		
								SBR 40

Commissioning the prototype

Set PLC parameters

Step 1/14 Set PLC parameters				Next:Commission PLC
MCS	Position	Speed		
<input type="radio"/> NX1	0.000	0.000		
<input type="radio"/> NZ1	0.000	0.000		Activate
MSP1	0.000	0.000		Default
145101(0)	USER_DATA_INT	0	po	Undo
145101(1)	USER_DATA_INT	0	po	
145101(2)	USER_DATA_INT	0	po	
145101(3)	USER_DATA_INT	0	po	
145101(4)	USER_DATA_INT	0	po	
User data (INT)				Unit:
Name:USER_DATA_INT				Next step

Step 9

Commissioning PLC

Last Set PLC parameters				Step 2/14 Commission PLC	Next:Check I/Os
MCS	Position	Speed	T,F,S		
<input type="radio"/> NX1	0.000	0.000	T 0	D 0	
<input type="radio"/> NZ1	0.000	0.000	F 0,000 100%	0,000 mm/min	
MSP1	0.000	0.000	S1 0,0 100%	0,0	
Direct connection status				disconnec.	
					Direct connect.
					Last step
Note: Press softkey 'Direct connect.' to activate direct connection				Input IP address to 'view>communications'	
				in PLC programming tool	Next step

PLC MD is to be adapted to suit the machine

It may be that the machine tool builder requires further PLC functionality, if this is required the PLC has to be modified.

To install PLC programming tool, follow the information in :-

PLC Subroutines manual page 8
(install PLC programming tool)

- Activate** } Changes will be activated
- Default** } MD set to default value
- Undo** } MD set to previous value

To continue press the SK

Next Step



To make a connection to the PPU, press SK
Then follow the information in:-

PLC Subroutines manual page 18

Direct connect.

To continue press the SK

Next Step



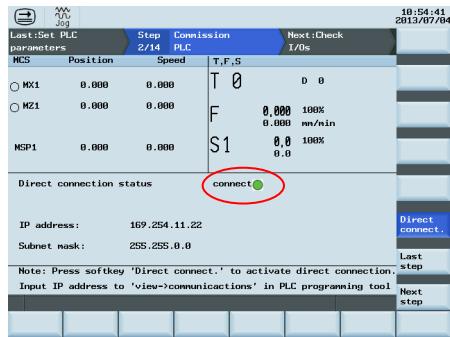
Commissioning of Prototype Machine using Sample PLC

SIEMENS

Commissioning the prototype

Commissioning PLC

The “connect status” should now be green.



Step 9

Check I/O's

DI	No.	Address	Value	Digital output
1	2	I0.0	0	Byte-
2	3	I0.1	0	Byte-
3	4	I0.2	0	Byte-
4	5	I0.3	0	Byte-
5	6	I0.4	0	Byte-
6	7	I0.5	0	Byte-
7	8	I0.6	0	Byte-
8	9	I0.7	0	Byte-
X100	0	I0.8	0	Byte+
	1	I0.9	0	Byte+
	2	I0.10	0	Byte+
	3	I0.11	0	Byte+
	4	I0.12	0	Byte+
	5	I0.13	0	Byte+
	6	I0.14	0	Byte+
	7	I0.15	0	Byte+
	8	I0.16	0	Byte+

Note: Check I/O's. It is recommended to only check the relay status to ensure the safety when checking the outputs.

First the “Sample PLC blocks” should be uploaded to the PC, then the modifications can be made to achieve the required functionality. Once this has been completed, the PLC should be put into stop and the modified PLC should be downloaded into the PPU. The PLC must then be “restarted”.

PLC Subroutines manual page 25

All I/O status must be checked with the electrical drawing using the following SK's. The status is shown on the right hand side as shown above.

Vertical SK's allow you to select digital inputs or outputs and selection of the byte required.

Digital input

Choose digital input

Digital output

Choose digital output

Byte -

Choose the digital O/I addresses of Byte -

Byte +

Choose the digital O/I addresses of Byte +

To continue press the SK

Next Step



To continue press the SK

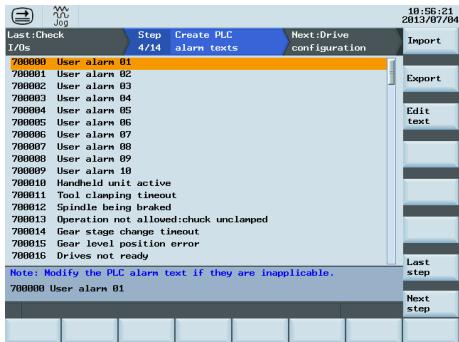
Next Step



Commissioning the prototype

Create PLC alarm texts

For detailed information
refer to :-
Commissioning manual
page 103



You can edit the PLC user alarm text either directly on the HMI, or off line by transferring the file using a USB stick.
Vertical SK's allow you to import and export the text file from the HMI, and SK that that allows the text file to be directly edited on the HMI.

Import

Import the backup alarm text into the PPU

Export

Export the finished alarm text from the PPU

Edit Text

Edit the alarm text

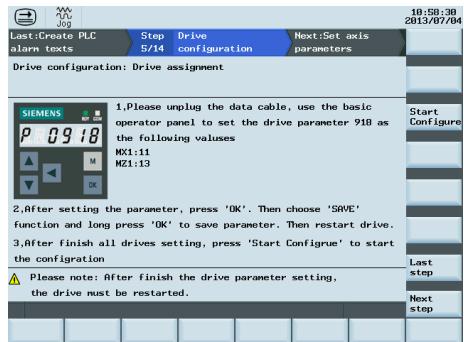
To continue press the SK

Next Step

Step 9

Drive configuration

For detailed information
refer to :-
Commissioning manual
page 104



V70 Drive:

Set "address data" for each axis:

Remove drive bus cable from terminal X10
Press M repeatedly (until "FUnC" is displayed)

Press OK

Press ▼(until "Addr" is displayed)

Press OK

Press ▼(until desired address is displayed)

Press M

Press ▼(until "SAvE" is displayed)

Press OK

Screen will go blank (wait about 20sec)

If "SAvE" is displayed

Press M (2 times)

(Screen will display "S OFF" or a fault code)

Replace drive bus cable to terminal X10

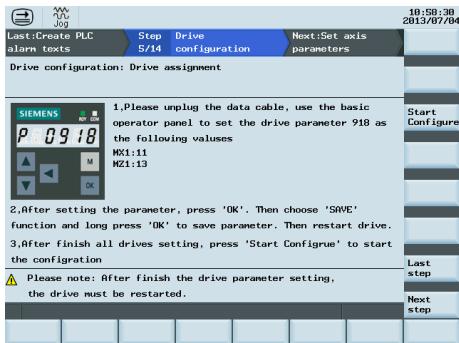
Drives must now be powered off/on

Commissioning the prototype

Step 9

Drive configuration

For detailed information refer to :-
Commissioning manual page 105



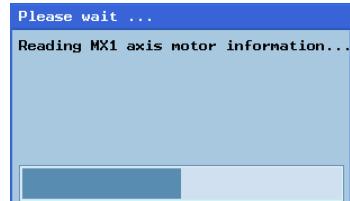
Drive configuration



Start Configure

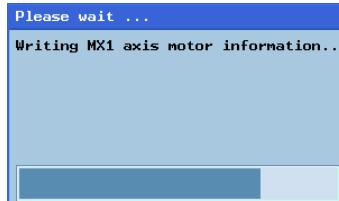
Starts the configuring of the V70 drive.

The control will identify all motors on the M3 Drive Bus



Motor Config.

Starts the configuration of spindle motor



Commissioning the prototype

Step 9

Drive
configuration



Select the motor from the table that matches the motor name plate.

Select

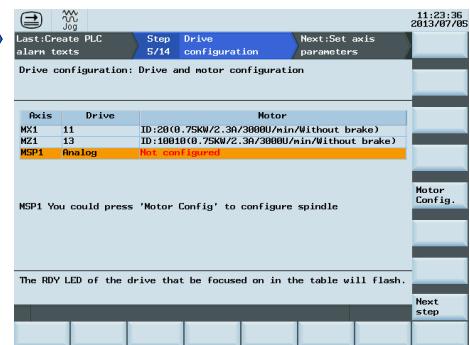
Starts the configuring of the motor data to the drive

The control will write motor information



Drive
configuration

Spindle on analog



All axis motors are identified

Motor
Config.

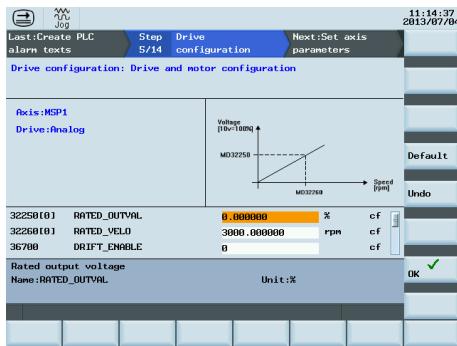
Starts the configuration of each unidentified spindle motor



Commissioning the prototype

Step 9

Drive configuration



You can edit the spindle machine data for the required axis.
Vertical SK's allow you to edit, activate or set as default value.

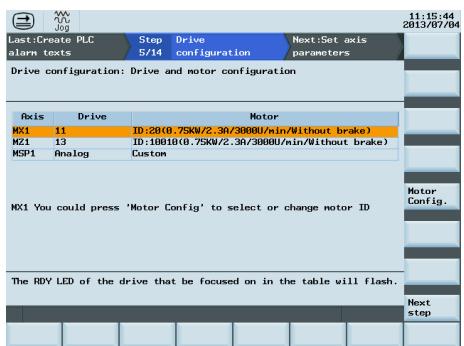
- Default } MD set to default value
- Undo } MD set to previous value

To continue press the SK



Page 40

Drive configuration



All axis and spindle motors are indentified.

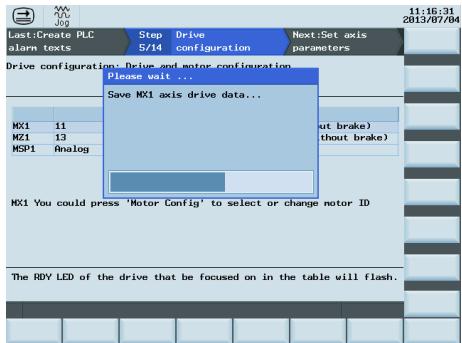
To continue press the SK



Commissioning the prototype

Drive configuration

First drive data for each axis will be save to the drive.



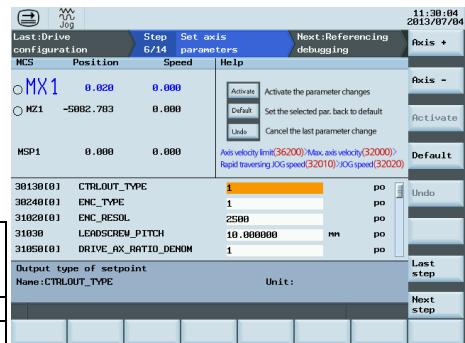
Step 9

Set axis parameters

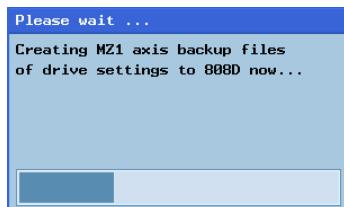
For detailed information refer to :-
Commissioning manual page 106

The data below must be

Machine Data	Setting data; ABS encoder	Setting data; INC encoder
30130	1	1
30240	4	1
34200	0	1
34210	1	0



Followed by creating the drive data backup files for each axis.



You can edit the axis machine data for the required axis. Vertical SK's allow you to edit, activate or set as default value.

- Axis +** } Used to select the axis (X or Z turning or X, Y, or Z milling)
- Axis -** } Changes will be activated
- Activate** } MD set to default value
- Default** } MD set to previous value
- Undo** }

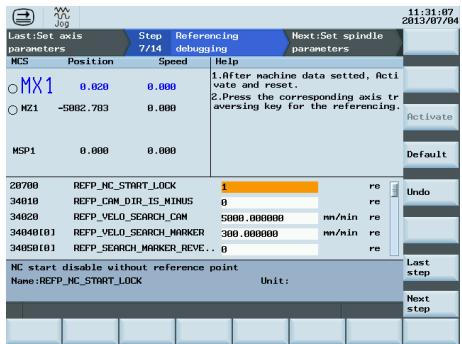
To continue press the SK

Next Step

Commissioning the prototype

Referencing debugging

For detailed information refer to :-
Commissioning manual page 108



You can edit the axis machine data and the for the required axis.
Vertical SK's allow you to edit, activate or set as default

- | | |
|-----------------|--|
| Axis + | Used to select the axis (X or Z turn or X, Y, or Z mill) |
| Axis - | Changes will be activated |
| Activate | MD set to default value |
| Default | MD set to previous value |
| Undo | An axis can be referenced |

To continue press the SK

Next Step

Step 9

Set spindle parameters

For detailed information refer to :-
Commissioning manual page 110

The data below must be set as default values:

Machine data	Setting
30130	1
30240	2
30134	0: output value is Bipolar 1or2: output value is Unipolar
30200	0: without spindle encoder 1: with spindle encoder



You can edit the spindle machine data required.
Vertical SK's allow you to edit, activate or set as default

- | | |
|-----------------|--|
| Axis + | Used to select the axis (X or Z turn or X, Y, or Z mill) |
| Axis - | Changes will be activated |
| Activate | MD set to default value |
| Default | MD set to previous value |
| Undo | MD set to previous value |
| Test | Test spindle in MDA mode |

To continue press the SK

Next Step

Commissioning the prototype

Create ser. Start-up archive

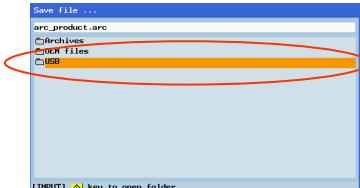
For detailed information
refer to :-
Commissioning manual
page 113



Vertical SK allows you to, create the “series start-up archive” press SK “Create archive”.

Create archive } Create production archive

Note:
When creating the production
backup, store archive to USB
memory stick.



To continue press the SK

Next Step



Step 9

Set SW limit

For detailed information
refer to :-
Commissioning manual
page 114



You can edit the axis machine data for the required axis.
Vertical SK's allow you to edit, activate or set as default

- | | |
|-----------------|--|
| Axis + | Used to select the axis (X or Z turn or X, Y, or Z mill) |
| Axis - | |
| Activate | Changes will be activated |
| Default | |
| Undo | MD set to previous value |

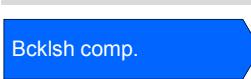
To continue press the SK

Next Step



Commissioning the prototype

Step 9



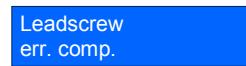
For detailed information refer to :-
Commissioning manual page 115



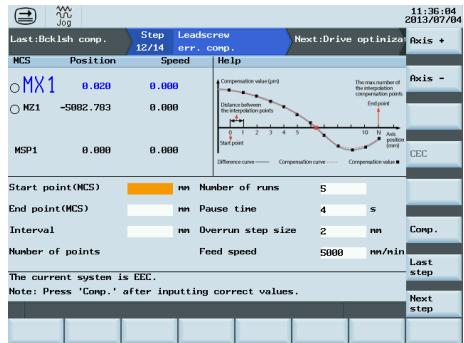
You can edit the axis machine data for the required axis.
Vertical SK's allow you to edit, activate or set as default

- | | |
|--|--|
| <input type="button" value="Axis +"/>
<input type="button" value="Axis -"/>
<input type="button" value="Activate"/>
<input type="button" value="Default"/>
<input type="button" value="Undo"/> | Used to select the axis (X or Z turn or X, Y, or Z mill)
Changes will be activated
MD set to default value
MD set to previous value |
|--|--|

To continue press the SK



For detailed information refer to :-
Commissioning manual page 115



You can edit the axis machine data for the required axis.
Vertical SK's allow you to edit, activate or set as default

- | | |
|---|--|
| <input type="button" value="Axis +"/>
<input type="button" value="Axis -"/>
<input type="button" value="Comp."/>

<input type="button" value="Activate"/> | Used to select the axis (X or Z turn or X, Y, or Z mill)
Used to enter compensation data via the HMI
Changes will be activated |
|---|--|

To continue press the SK



Commissioning the prototype

Drive optimization

For detailed information refer to :-
Commissioning manual page 117

Press the "options" and choose the optimization strategy as needed

Options

There are three "Optimization strategy":-
1 Moderate measurement
2 Aggressive measurement
3 Conservative measurement

 Select the required strategy.
To continue press the SK

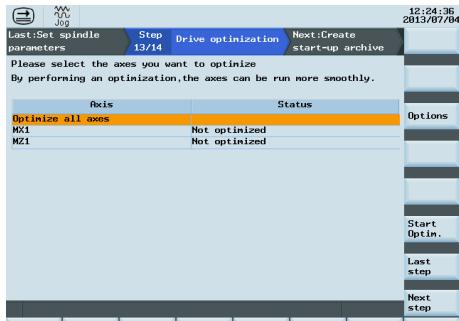
The following window will be shown.

To continue press the SK

Start Optimized

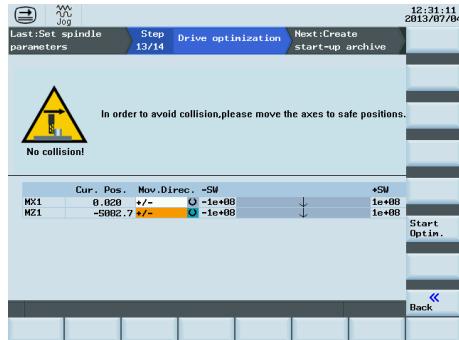
Page 45

Step 9



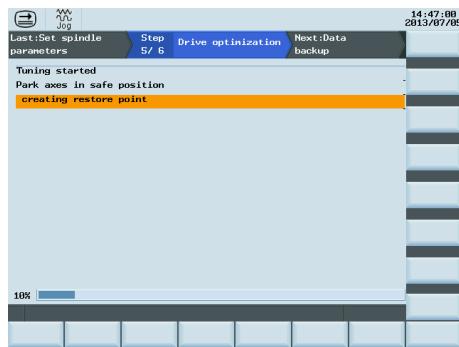
Drive optimization

Move axis into a safe position to avoid collisions when the axis moves.



Start Optim.

Press "Start Optim." SK to start optimization of all axis, Using the selected strategy.



To continue press the SK

Start Optimized

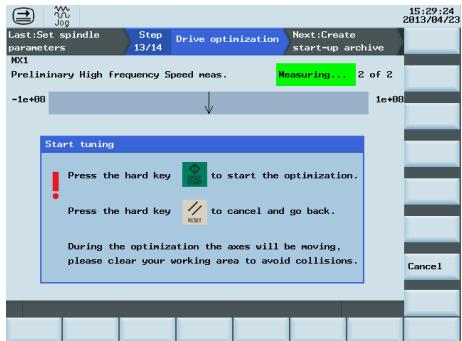
Commissioning Guide

Commissioning the prototype

Step 9

Drive optimization

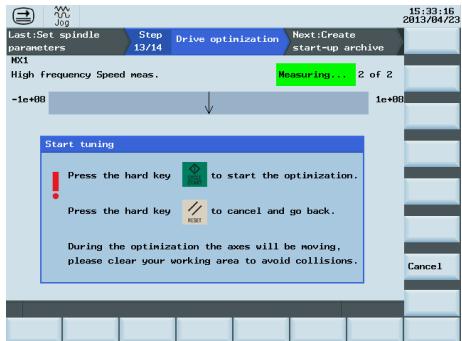
Preliminary high frequency speed measurement takes place with the first of two passes.



To continue press the BUTTON



High frequency speed measurement takes place with the first of two passes.

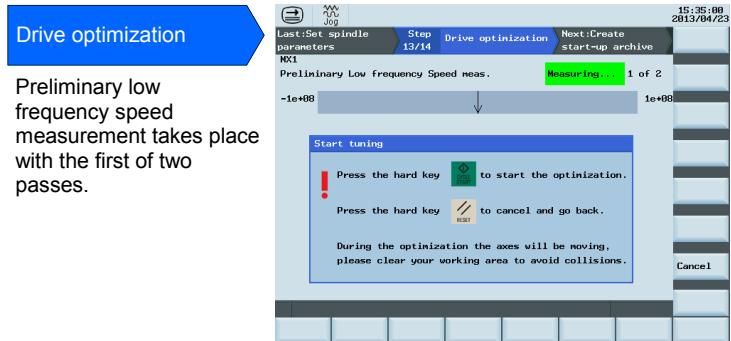


To continue press the BUTTON



Drive optimization

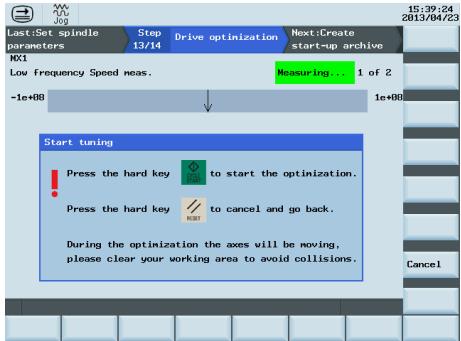
Preliminary low frequency speed measurement takes place with the first of two passes.



To continue press the BUTTON



Low frequency speed measurement takes place with the first of two passes.



To continue press the BUTTON



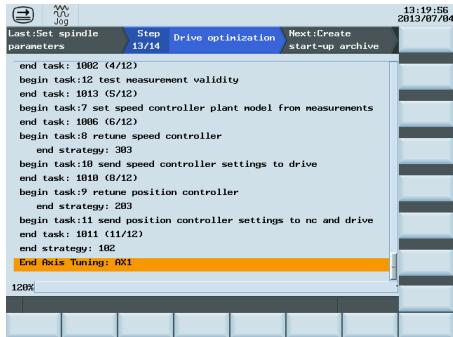
Commissioning of Prototype Machine using Sample PLC

SIEMENS

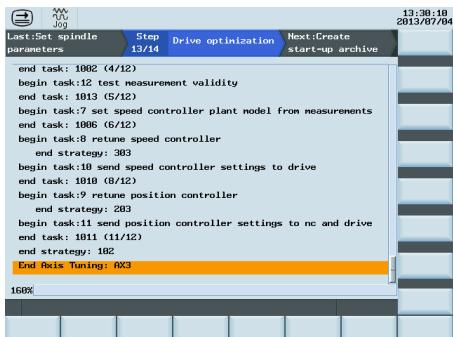
Commissioning the prototype

Drive optimization

The system will automatically tune, using the results of MX1 axis high and low frequency measurement as shown.



The axis optimization operation process will now optimise MZ1 axis of high and low frequency measurement process. (a repeat of the 8 passes as shown on previous page)



The system will automatically tune, using the results of MZ1 axis high and low frequency measurement as shown.

Step 9

Drive optimization

After the full optimization testing is completed, the system will automatically give a list of parameters before and after optimization of each axis data.

Activate

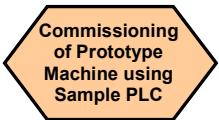
Press "activate" SK makes the data active.

Next step

Press "Next" SK to continue

	Last: Set spindle parameters	Step 13/14	Drive optimization	Next: Create start-up archive	Axis +
HX1					
	Original Data	Optimized Data			
P1460	0.317402	0.315117			
P1461	665.362061	649.706458			
P1665	665.362061	649.706458			
P1666	0.029594	0.059125			
P1667	1	2			
P1672	1	2			
M032240	0	1			
M032290	1.000000	4.000000			
M032310	0.003000	0.002099			
P1415	0	2			
P1421	1	2			
P1430	0.317402	0.315117			
P1433	111.292643	119.296394			
P1663	665.362061	649.706458			
P1665	665.362061	649.706458			
P1666	0.029594	0.059045			
P1667	1	2			
M032440	0	1			
					Next step
					Optimize Again
					Activate
					Export Result

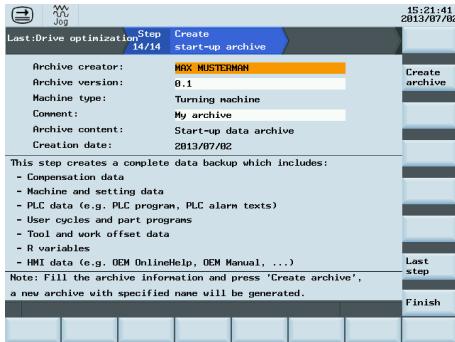
	Last: Set spindle parameters	Step 13/14	Drive optimization	Next: Create start-up archive	Axis -
HX1					
	Original Data	Optimized Data			
P1460	0.317402	0.315117			
P1461	665.362061	649.706458			
P1665	665.362061	649.706458			
P1666	0.029594	0.059045			
P1667	1	2			
P1672	1	2			
M032240	0	1			
M032290	1.000000	4.000000			
M032310	0.003000	0.002099			
P1415	0	2			
P1421	1	2			
P1430	0.317402	0.315117			
P1433	111.292643	119.296394			
P1663	665.362061	649.706458			
P1665	665.362061	649.706458			
P1666	0.029594	0.059045			
P1667	1	2			
M032440	0	1			
					Next step
					Optimize Again
					Activate
					Export Result



Commissioning the prototype

Create Start-up archive

For detailed information refer to :-
Commissioning manual page 119



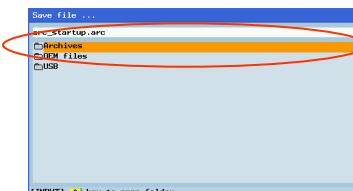
Vertical SK allows you to, create the "production archive" press SK "Create archive".

Create archive

} Create Start-up archive

Note:

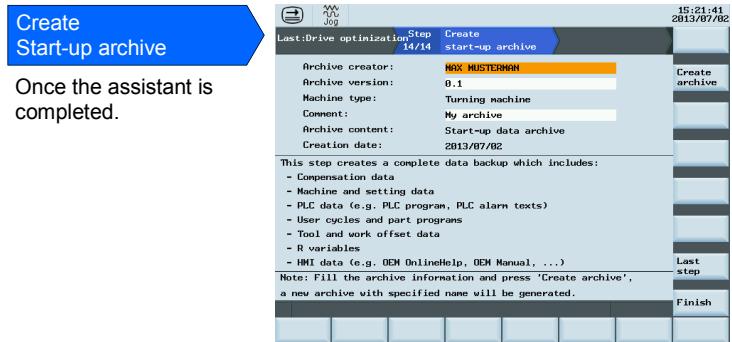
When creating the Start-up archive, store archive to USB memory stick and Archive folder.



Step 9

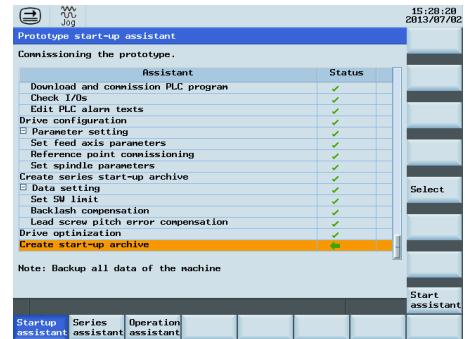
Create Start-up archive

Once the assistant is completed.



To continue press the SK

Finish



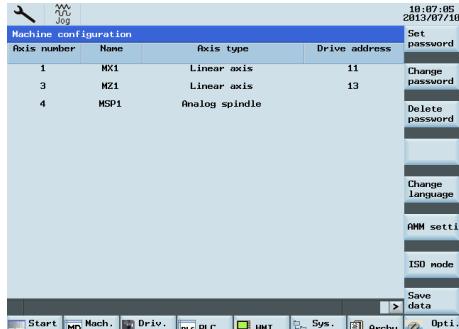
To continue press button



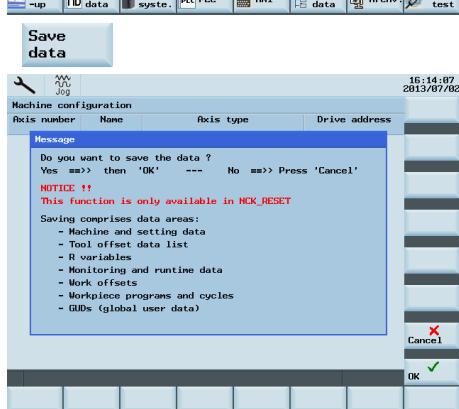
Commissioning the prototype

Now that the commissioning is completed a "SAVE DATA" should be performed.

Step 9



To continue press the SK



To continue press the SK



Electrical cabinet design

It may be preferable to always use cooler units as this allows the cabinet to be sealed which is the best option for stopping the entry of contaminants. Within the cabinets it may also be necessary to install fans to ensure the air is circulated and prevent "Hot spots" from forming.

The technical specifications of the individual hardware component will provide details of the power loss measured in Watts. Calculations are made to see if the cabinet can dissipate the heat naturally.

The cabinet manufacturer can supply details of the heat-loss of the cabinet.

Natural heat dissipation occurs through the cabinet walls providing the wall is in free air and not against a wall for example.

A general rule is that the energy dissipated is approximately 50Watts/m² of free cabinet wall assuming a 10° temperature difference between the cabinet and the outside air.

Step 10

Electrical cabinet design

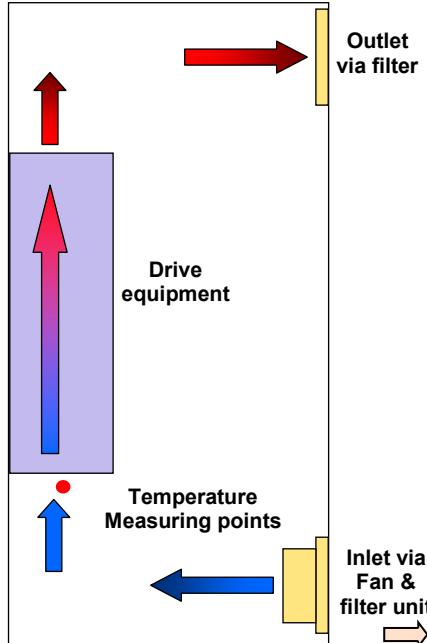
Step 10

Correct installation of fans

For cabinets it is possible that the cooling can be achieved with fans drawing air from the outside via a filter. Natural convection causes the warm air to exit via a filter.

The fact that air is being drawn directly from the outside means that this system can never be airtight. Having a fan for the inlet side only ensures that the cabinet is positively pressurised which helps keep contaminants from entering. It is extremely important that the filters are service regularly to avoid ingress of contaminants and to maintain the efficiency of the cooling process.

Fan & filter type cooling system



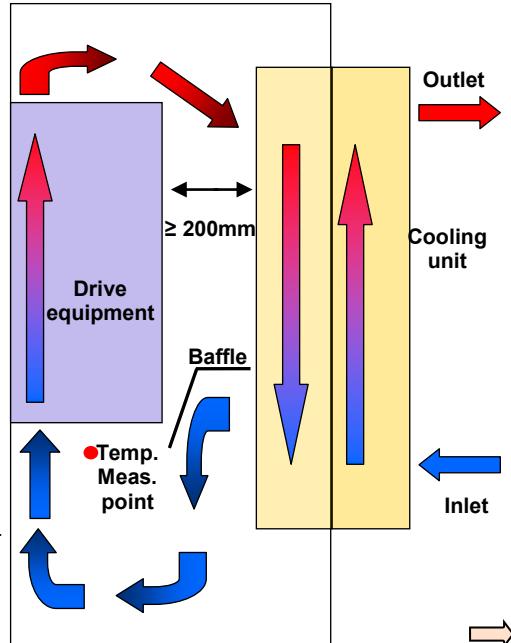
Correct installation of cooling units

The cool air should be directed to the bottom of the drive. The natural convection will draw the air through the drives.

The cool air from the cooling unit should not be directed straight onto/into the drives, it should be allowed to mix with the warmer air already in the cabinet, this will minimise the risk of condensation forming.

Cabinet top mounted cooling units require a method of directing the cool air from the cooling unit to the bottom of the drives. In the case of a door mounted unit it may be necessary to direct the cool air with the use of a baffle.

Cabinet door mounted cooling unit.



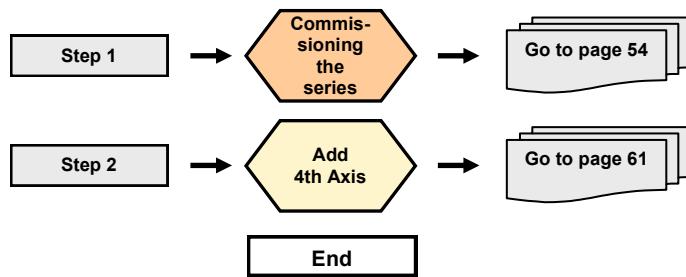
Notes

A large rectangular area filled with a light gray square grid, intended for handwritten notes.

Notes



Basic Commissioning procedure for series machines



Commissioning the series machine

To start the assistant

Press button



First set the Pass word.

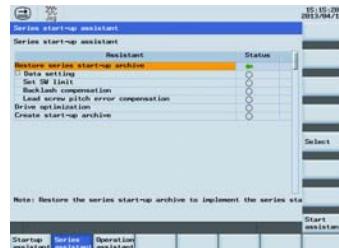
Press



Followed by **Series
assistant**

The PPU shows this screen.

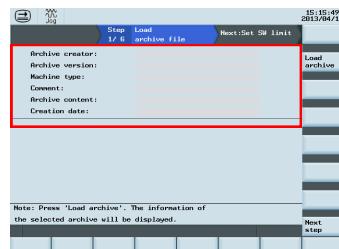
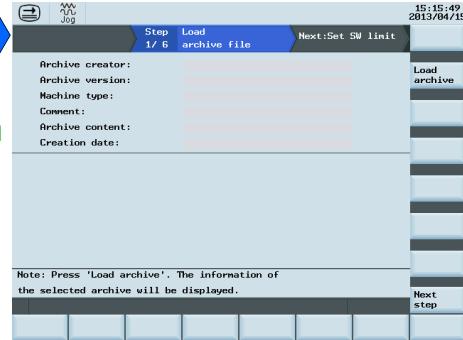
Press



Step 1

Load archive file

For detailed information refer to :-
Commissioning manual page 123



Vertical SK allows you to load the “production archive” press SK “Load Archive”.

**Load
Archive**

} Loads production archive

Note:

When loading the production archive, use archive on USB memory stick.



Commissioning the series machine

Step 1

Set SW limit

For detailed information refer to :-
Commissioning manual page 114



You can edit the axis machine data for the required axis.
Vertical SK's allow you to edit, activate or set as default

- | | |
|--|--|
| <input type="button" value="Axis +"/>
<input type="button" value="Axis -"/>
<input type="button" value="Activate"/>
<input type="button" value="Default"/>
<input type="button" value="Undo"/> | Used to select the axis (X or Z turn or X, Y, or Z mill)
Changes will be activated
MD set to default value
MD set to previous value |
|--|--|

Bcklsh comp.

For detailed information refer to :-
Commissioning manual page 115



You can edit the axis machine data for the required axis.
Vertical SK's allow you to edit, activate or set as default

- | | |
|--|--|
| <input type="button" value="Axis +"/>
<input type="button" value="Axis -"/>
<input type="button" value="Activate"/>
<input type="button" value="Default"/>
<input type="button" value="Undo"/> | Used to select the axis (X or Z turn or X, Y, or Z mill)
Changes will be activated
MD set to default value
MD set to previous value |
|--|--|

To continue press the SK

Next Step

To continue press the SK

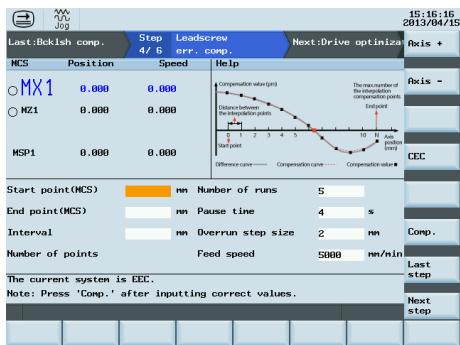
Next Step

Commissioning the series machine

Step 1

Leadscrew err. Comp.

For detailed information refer to :-
Commissioning manual page 115



You can edit the axis machine data for the required axis.
Vertical SK's allow you to edit, activate or set as default

- Axis +** } Used to select the axis (X or Z turn or X, Y, or Z mill)
- Axis -** } Changes will be activated
- Comp.** } Control will activate MD
- Activate** } To continue press the SK

To continue press the SK

Next Step

Page 56

Drive optimization

For detailed information refer to :-
Commissioning manual page 117

Press the "options".
choose the optimization strategy as required.

Options

There are three "Optimization strategy":-

- 1 Moderate measurement
- 2 Aggressive measurement
- 3 Conservative measurement

Select the required strategy.
To continue press "OK" SK



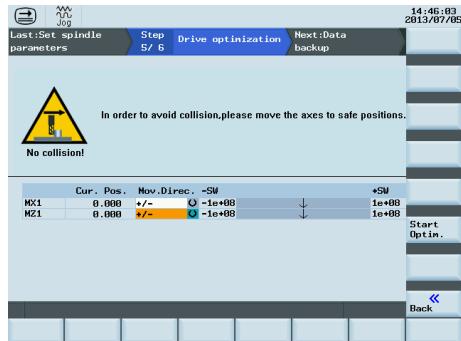
To continue press the SK

Start Optimized

Commissioning the series machine

Drive optimization

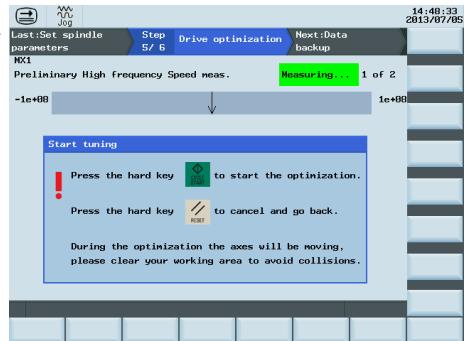
Move axis into a safe position to avoid collisions when the axis moves.



Step 1

Drive optimization

Preliminary high frequency speed measurement takes place with the first of two passes.



Start Optim.

Press "Start Optim." SK to start optimization of selected axis, Using the selected strategy.



To continue press the SK

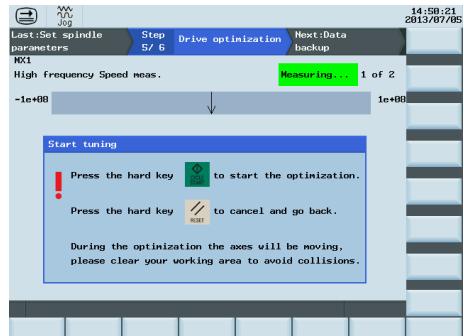
Start Optimized

Page 57



To continue press the BUTTON

High frequency speed measurement takes place with the first of two passes.



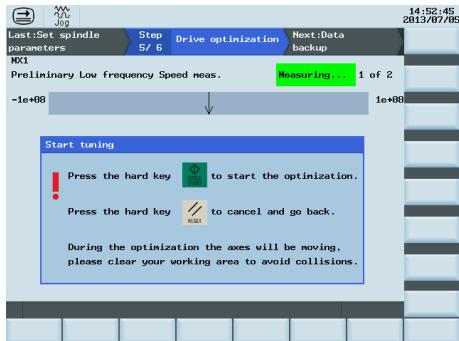
To continue press the BUTTON



Commissioning the series machine

Drive optimization

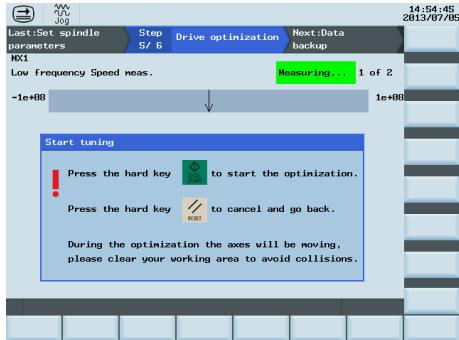
Preliminary low frequency speed measurement takes place with the first of two passes.



To continue press the BUTTON



Low frequency speed measurement takes place with the second of two passes.



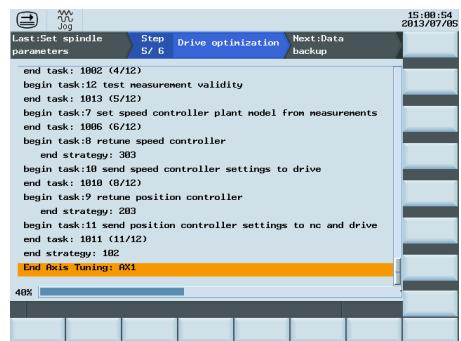
To continue press the BUTTON



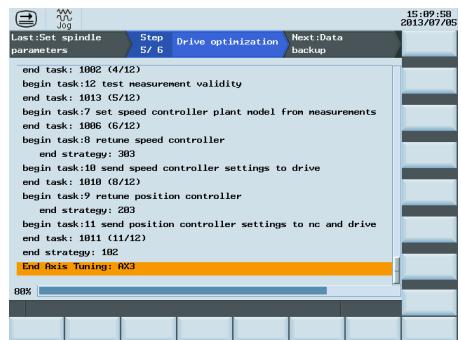
Step 1

Drive optimization

The system will automatically tune, using the results of MX1 axis high and low frequency measurement as shown.



The axis optimization operation process will now optimise MX1 axis of high and low frequency measurement process. (a repeat of the 8 passes as shown on previous page)



Commissioning the series machine

Drive optimization

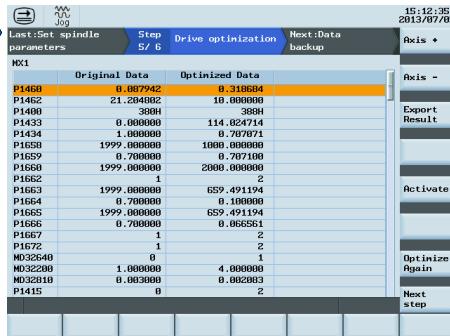
After the full optimization testing is completed, the system will automatically give a list of parameters before and after optimization of each axis data.

Activate Press “activate”
SK makes the
data active.

Next

Press “Next” SK to continue

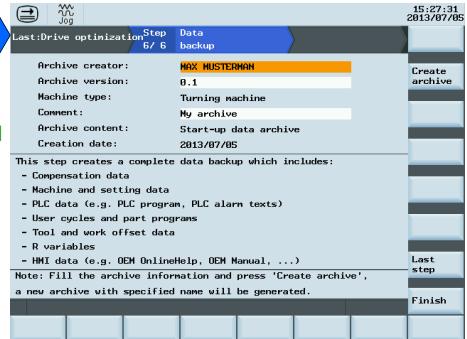
The system will automatically be optimized after the machine data is written to the NC and drives. Once successfully saved the system will automatically jump to the next step "to establish the machine debug file".



Step 1

Data backup

For detailed information
refer to :-
Commissioning manual
page 68



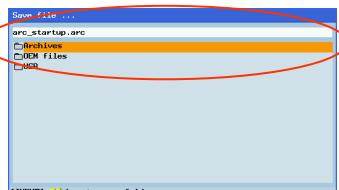
Vertical SK allows you to, create the “production archive” press SK “Create archive”.

Create archive

Create start-up archive

Note:

When creating the start-up archive, store archive into OEM directory and on a USB memory stick



To continue press the SK

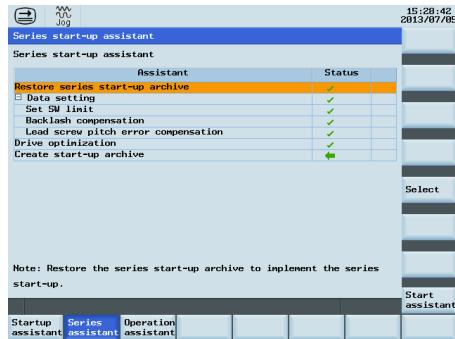
Finish



Commissioning the series machine

Step 1

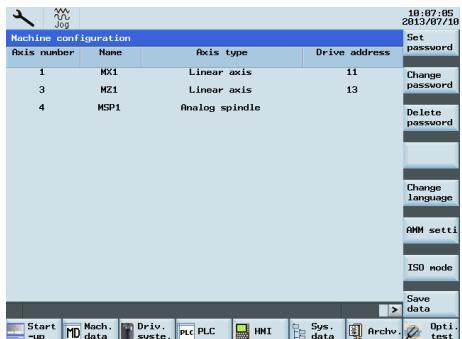
"Series Assistant" has now finished, with green "ticks" in the status column.



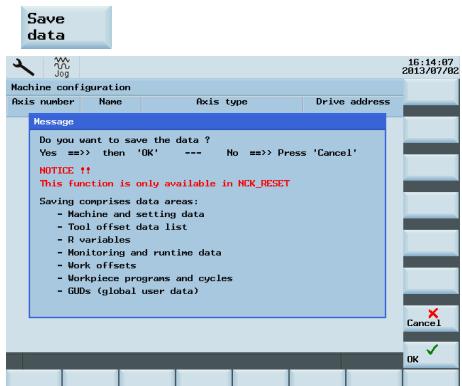
To Continue press button



Now that the commissioning is completed a "SAVE DATA" should be performed.



To continue press the SK



To continue press the SK



Add 4th axis

Step 2

A common requirement is for a standard machine to be fitted with an additional axis. This requirement usually arises after the machine has left the factory. Reconfiguring the drives will result in any user settings of the existing drives being overwritten by default data.

Step 1 Set options for adding 4th axis

When a license key is entered, the corresponding option is used to activate the function.

For more information see:
Commissioning Manual page 94

Press button +

First set the password.

Press button >

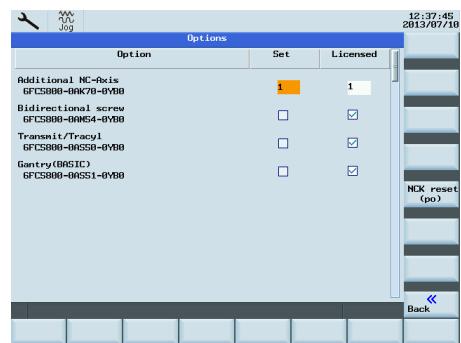
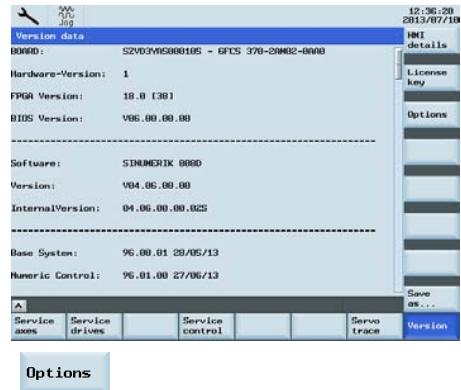
Press "Serv. Disp." SK



Press "Version" SK



Press "Options" SK



Enter the number of added needs to be activated, press "NCK Reset" SK

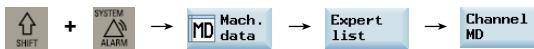


Add 4th axis

Step 2 The additional axes Machine Data settings

Modify MD20070 and MD20080

Press the following buttons



Turning

To add an additional axis, modify

20070 [3] = 2

20080 [3] = axis name to be displayed

To add two additional axes, modify

20070 [3] = 2, 20070 [4] = 5

20080 [3] = first axis letter to be displayed

20080 [4] = second axis letter to be displayed

Channel-specific machine data					
20070[0]	ACOMP_ANCHOR_USED	1	po		
20070[1]	ACOMP_ANCHOR_USED	2	po		
20070[2]	ACOMP_ANCHOR_USED	3	po		
20070[3]	ACOMP_ANCHOR_USED	4	po		
20070[4]	ACOMP_ANCHOR_USED	5	po		
20080[0]	ACOMP_CHANNEL_NAME_THR	X	po		
20080[1]	ACOMP_CHANNEL_NAME_THR	V	po		
20080[2]	ACOMP_CHANNEL_NAME_THR	Z	po		
20080[3]	ACOMP_CHANNEL_NAME_THR	SP	po		
20080[4]	ACOMP_CHANNEL_NAME_THR	A	po		
20090	SPIND_DEF_WHEEL_SPIND	1	po		
20094	SPIND_RIGID_TAPPING_M_NR	70	po		
20095	EXTON_RIGID_TAPPING_M_NR	29	po		
20096	T_M_ADDRESS_EXT_IS_SPIND	0	po		
Machine axis number valid in channel					
Name:ACOMP_ANCHOR_USED					
Unit:					
Select group:					
General	Channel	Axis	Drive	Display	Servo trace
MD	MD	MD	MD	MD	MD

Channel-specific machine data					
20060[0]	ACOMP_GEOX_NAME_THR	X	po		
20060[1]	ACOMP_GEOX_NAME_THR	V	po		
20060[2]	ACOMP_GEOX_NAME_THR	Z	po		
20070[0]	ACOMP_ANCHOR_USED	1	po		
20070[1]	ACOMP_ANCHOR_USED	2	po		
20070[2]	ACOMP_ANCHOR_USED	3	po		
20070[3]	ACOMP_ANCHOR_USED	4	po		
20070[4]	ACOMP_ANCHOR_USED	5	po		
20080[0]	ACOMP_CHANNEL_NAME_THR	X	po		
20080[1]	ACOMP_CHANNEL_NAME_THR	V	po		
20080[2]	ACOMP_CHANNEL_NAME_THR	Z	po		
20080[3]	ACOMP_CHANNEL_NAME_THR	SP	po		
20080[4]	ACOMP_CHANNEL_NAME_THR	A	po		
20090	SPIND_DEF_WHEEL_SPIND	1	po		
Machine axis number valid in channel					
Name:ACOMP_ANCHOR_USED					
Unit:					
Select group:					
General	Channel	Axis	Drive	Display	Servo trace
MD	MD	MD	MD	MD	MD

Step 2

Modify MD19100

Press the following buttons



Turning

If you only need to add an additional axis, modify 19100 = 4

If you need to add two additional axis, modify 19100 = 5

General machine data					
19100	NUM_AXES_IN_SYSTEM	4	po		
19102	NUM_ADD_AXES_IN_SYSTEM	0	po		
19100	COMP_MSK	2H	po		
19100	AXIS_FUNCTION_MSK	0H	po		
19410	TRAVO_TYPE_MSK	0H	po		
1975010	DRIVE_EXTENSION_MSK	0H	po		
1975011	DRIVE_EXTENSION_MSK	0H	po		
1975012	DRIVE_EXTENSION_MSK	0H	po		
Additionally 1 axis/spindle					
Name:NUM_AXES_IN_SYSTEM					
Unit:					
Select group:					
General	Channel	Axis	Drive	Display	Servo trace
MD	MD	MD	MD	MD	MD

General machine data					
18794	INL_TRACK_VOL_SIGNAL	0H	po		
18908	POS_DVM_MODE	0	po		
19010101	SYSTEM_INFO	7H	po		
19010111	SYSTEM_INFO	4H	po		
19010121	SYSTEM_INFO	eH	po		
19010131	SYSTEM_INFO	FH	po		
19100	NUM_AXES_IN_SYSTEM	5	po		
19102	NUM_ADD_AXES_IN_SYSTEM	0	po		
19100	COMP_MSK	2H	po		
19100	AXIS_FUNCTION_MSK	0H	po		
19410	TRAVO_TYPE_MSK	0H	po		
1975010	DRIVE_EXTENSION_MSK	0H	po		
1975011	DRIVE_EXTENSION_MSK	0H	po		
1975012	DRIVE_EXTENSION_MSK	0H	po		
Additionally 1 axis/spindle					
Name:NUM_AXES_IN_SYSTEM					
Unit:					
Select group:					
General	Channel	Axis	Drive	Display	Servo trace
MD	MD	MD	MD	MD	MD



Add 4th axis

Set PLC MD 14215[20] set bit 1&2

Press “Activate” SK 

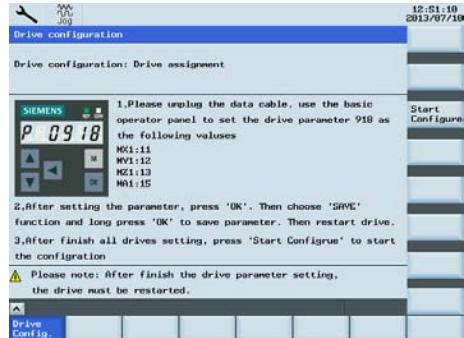
With these Machine Data modification, the additional axes will be displayed within the system.

Step 2

Drive configuration

V70 Drive:

Set “address data” for each axis:

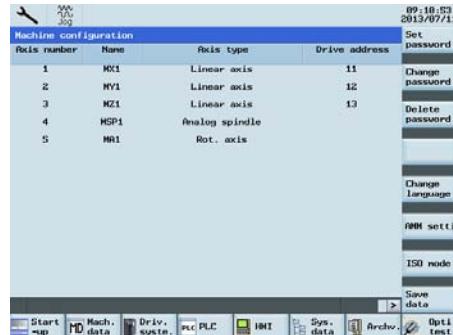


Step 3 Drive configuration

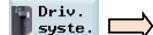
To configure the 4th axis drive

First set the password.

Press button  + 



To continue press the SK



Remove drive bus cable from terminal X10
Press M repeatedly (until “FUnC” is displayed)

Press OK

Press ▼ (until “Addr” is displayed)

Press OK

Press ▼ (until desired address is displayed)

Press M

Press ▼ (until “SAvE” is displayed)

Press OK

Screen will go blank (wait about 20sec)

If “SAvE” is displayed

Press M (2 times)

(Screen will display “S OFF” or a fault code)

Replace drive bus cable to terminal X10

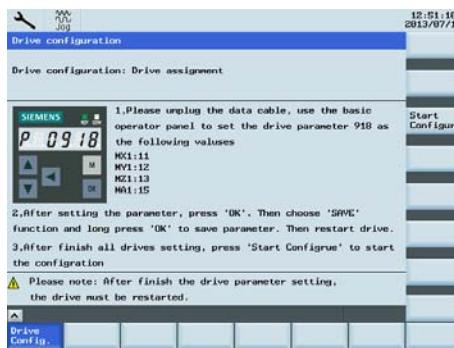
Drives must now be powered off/on

Type of machine	Turning	Milling	
The number of additional axes	1	2	
Drive address data (P 0918)	12	12 / 15	15

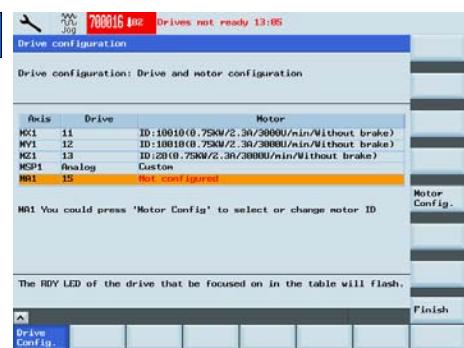
Add 4th axis

Step 2

Drive configuration



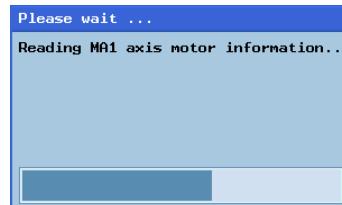
Drive configuration



You can start the drive axis configuration by using the vertical SK.

Start Configure Starts the configuring of the V70 drive.

The control will identify all motors on the M3 Drive Bus



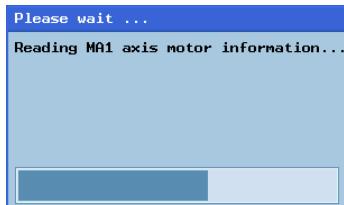
To continue press the SK

Start Configure



All BISS motors will automatically identified.
All TTL motors will have to be configured individually.

Motor Config. Starts the configuration of each unidentified motor.



To continue press the SK

Motor Config.



Add 4th axis

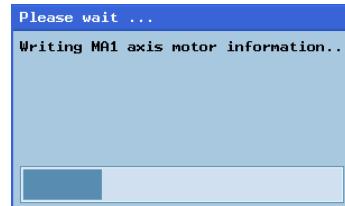
Drive configuration



Select the motor from the table that matches the motor name plate.

Select Starts the configuring of the motor data to the drive.

The control will write motor information



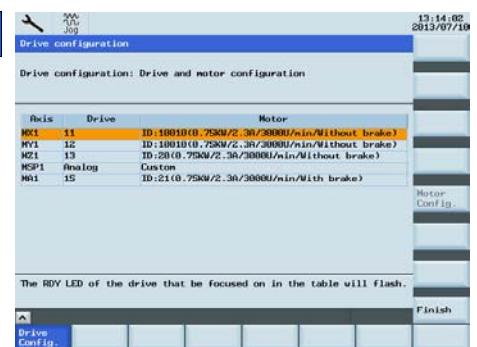
To continue press the SK

Select



Step 2

Drive configuration



All axis motors are identified.

Motor Config. Starts the configuration of each unidentified spindle motor.

To continue press the SK

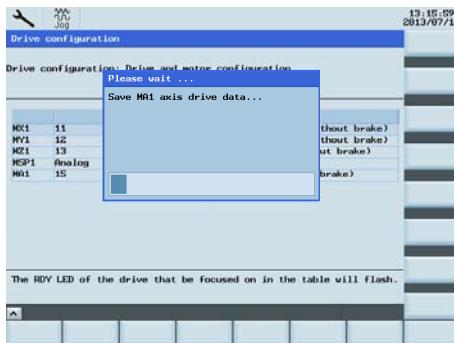
Finish



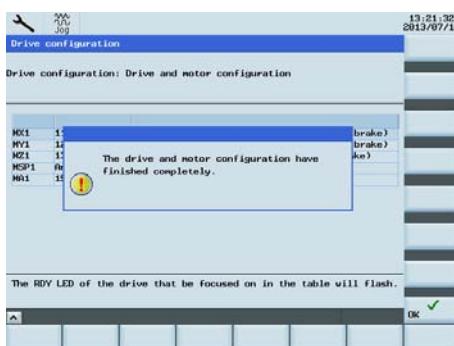
Add 4th axis

Drive configuration

Each drive will have a backup file created that will contain each drive data.



Step 2



To continue press the SK



Step 4 Setting MD for additional axis

MD to consider and set before the "Optimization of the drives".
Referencing MD
SW limits MD
Backlash MD
Leadscrew error comp. MD

Step 5 Drive Optimization

To optimize the 4th axis drive

First set the password.

Press button

Machine configuration			
Axis number	Name	Axis type	Drive address
1	MX1	Linear axis	11
2	MV1	Linear axis	12
3	MZ1	Linear axis	13
4	MSP1	Analog spindle	
5	M01	Rot. axis	15

To continue press the SK



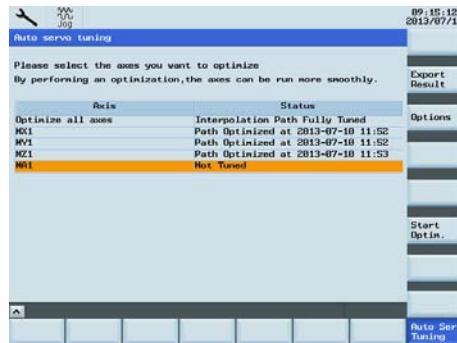
Add 4th axis

Drive optimization

Press the "options" SK.

Options

choose the optimization strategy as needed



There are three "Optimization strategy":-

- 1 Moderate measurement
- 2 Aggressive measurement
- 3 Conservative measurement



Select the required strategy.
To continue press the SK



To continue press the SK

Start Optimized

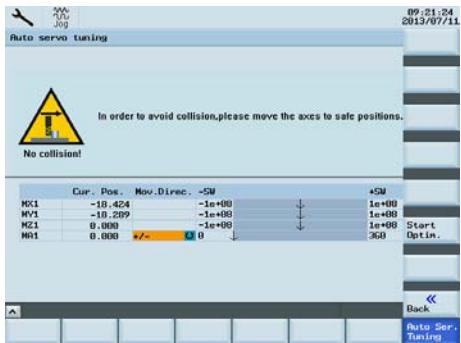
→

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Step 2

Drive optimization

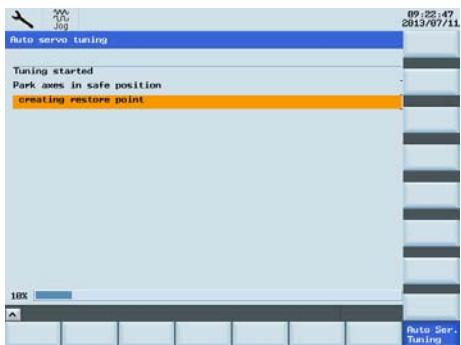
Move axis into a safe position to avoid collisions when the axis moves.



Press "Start Optim." SK

Start Optim.

to start optimization of the selected axis, Using the selected strategy.



To continue press the SK

Start Optimized

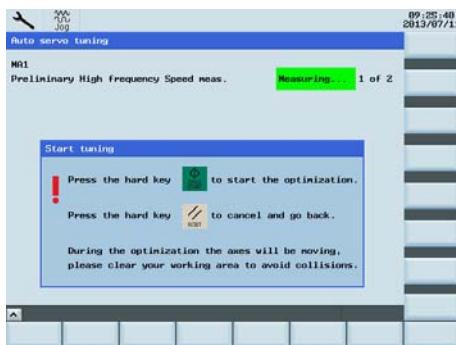
→

Commissioning Guide

Add 4th axis

Drive optimization

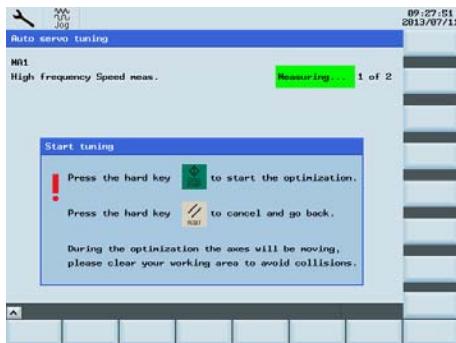
Preliminary high frequency speed measurement takes place with the first of two passes.



To continue press the BUTTON



High frequency speed measurement takes place with the first of two passes.



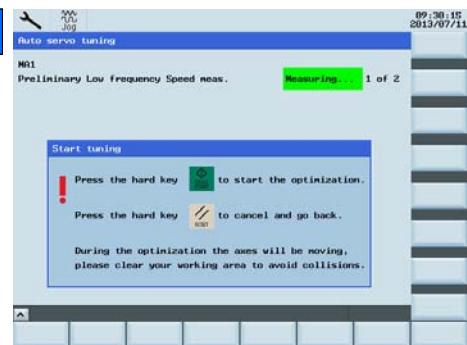
To continue press the BUTTON



Step 2

Drive optimization

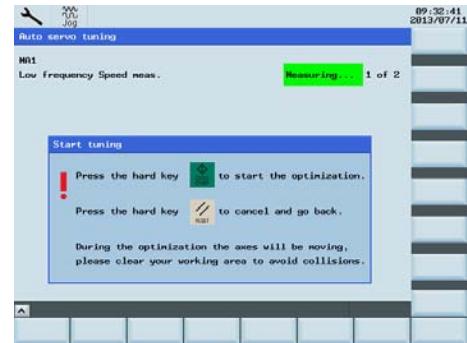
Preliminary low frequency speed measurement takes place with the first of two passes.



To continue press the BUTTON



Low frequency speed measurement takes place with the first of two passes.



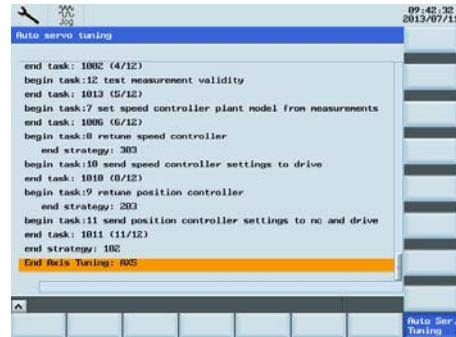
To continue press the BUTTON



Add 4th axis

Drive optimization

The system will automatically tune, using the results of MA1 axis high and low frequency measurement as shown.



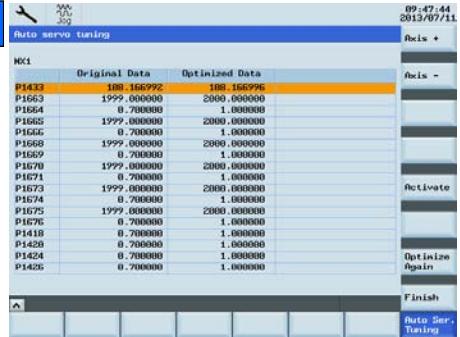
Step 2

Drive optimization

After the full optimization testing is completed, the system will automatically give a list of parameters before and after optimization of each axis data.

Activate

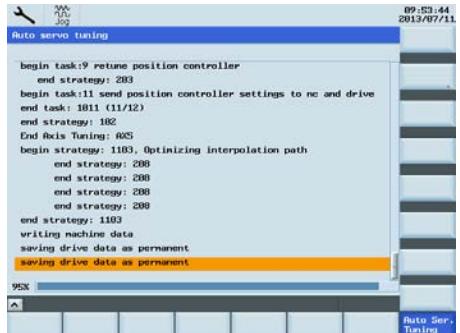
Press “activate” SK makes the data active.



Next step

Press “Next” SK to continue

The system will automatically be optimized after the machine data is written to the NC and drives. Once successfully saved the system will automatically jump to the next step “to establish the machine debug file”



Add 4th axis

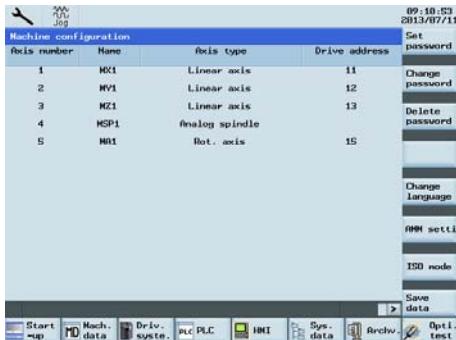
Step 6 Backing up

Now that the 4th axis is completed a new "Archive" should be Created.

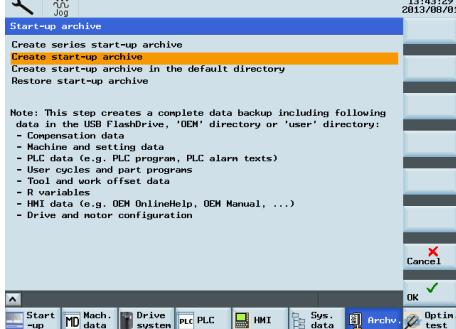
To Continue press button



To continue press the SK



Curser down to highlight "Create start-up archive"



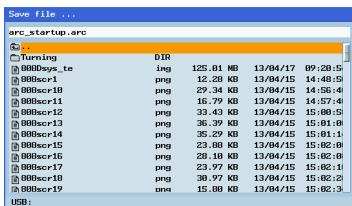
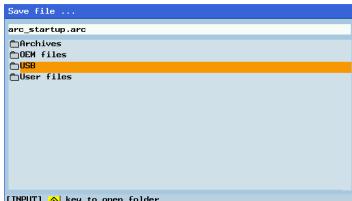
To continue press the SK



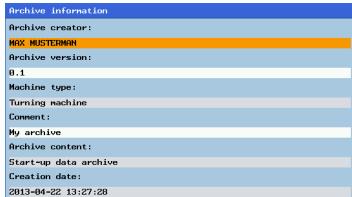
Step 2

Using the cursor "up and down" buttons to select location for "archive file"

To continue press the button



To continue press the SK

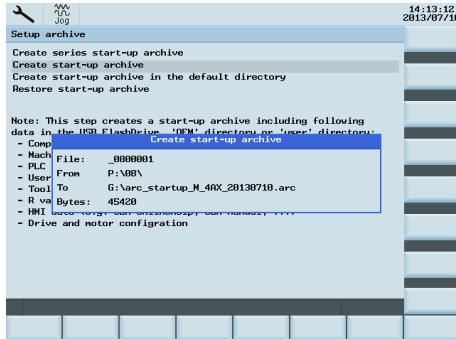


To continue press the SK



Add 4th axis

When the “Start-up archive” is completed the window will Disappear.

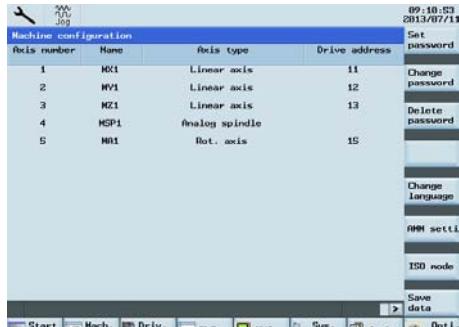


To continue press the SK

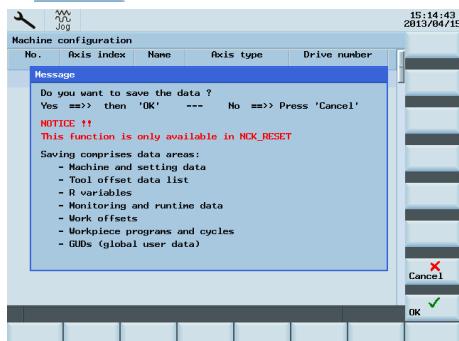


Step 2

Now that the 4th axis is completed a “SAVE DATA” should be performed.



To continue press the SK



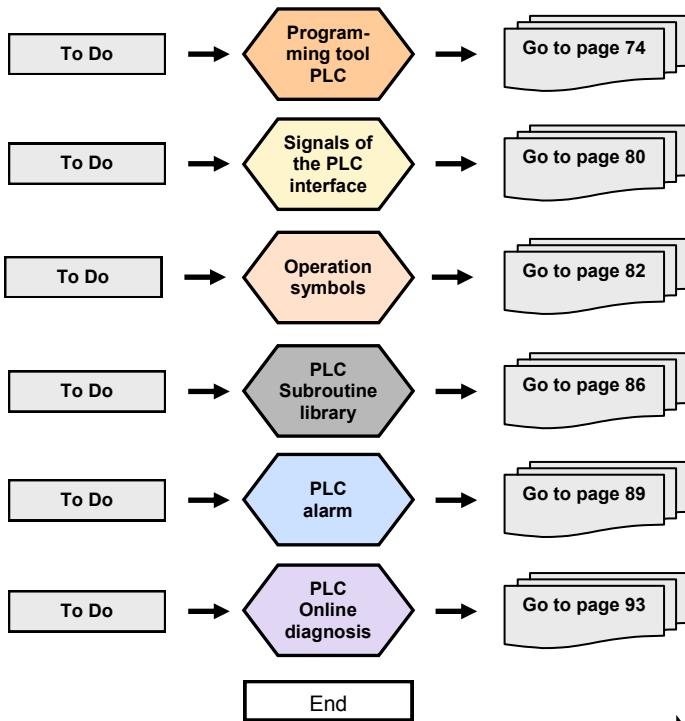
To continue press the SK



Notes



Basic PLC design and adjustment.



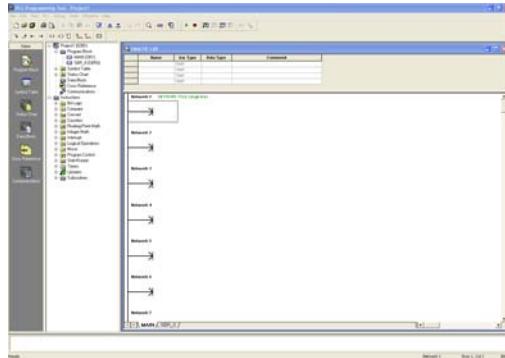
Programming tool PLC

In order to edit the PLC program we must use Programming Tool PLC V3.2.4 or higher .

Using the PLC programming tool you can:-

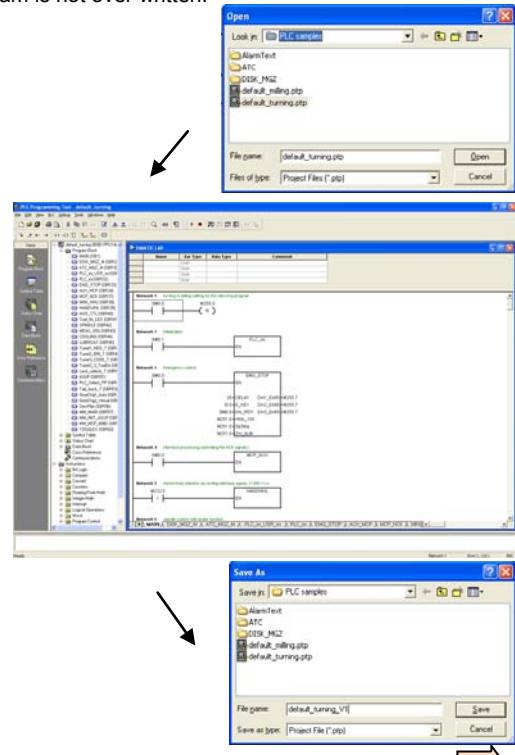
- Create the PLC program
- Edit the PLC program
- Make a connection between the programming tool and the system
- Compile the PLC program
- Download the PLC program
- Upload the PLC program
- Monitor the PLC

The software is started by double clicking the icon on your desktop.



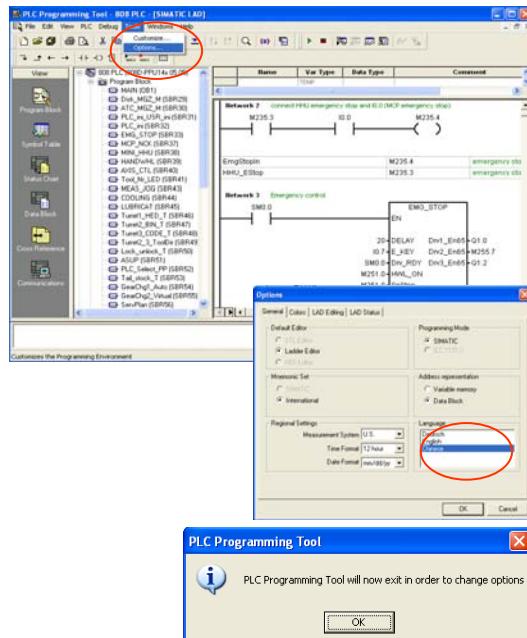
Page 74

Open the “default PLC” program and save this file under a new name so that the default program is not over written.



Programming tool PLC

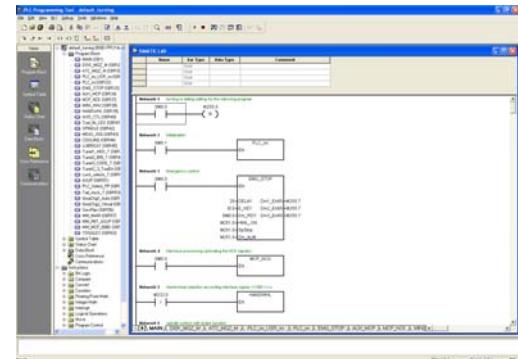
The PLC programming tool has 5 languages that can be selected when installing the software, you choose the display languages by using the following sequence.



The programming tool will prompt you that the software will close automatically and you will have to start the programming tool again.

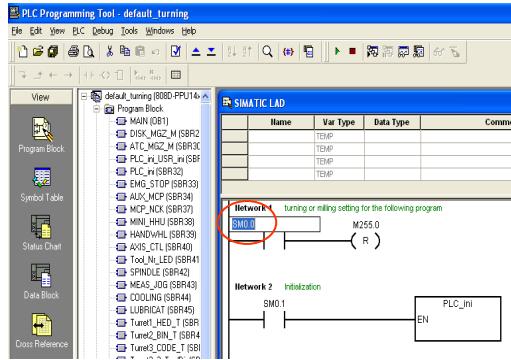


Overview of PLC programming tool.

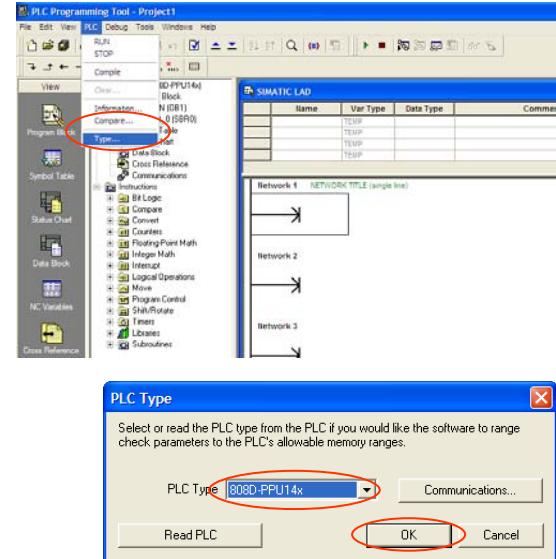


Programming tool PLC

The address of each instruction can be edited at any time by highlighting the instruction.

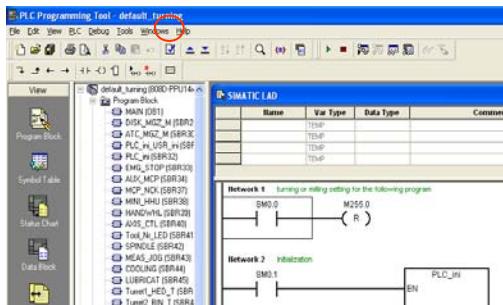


The correct PLC type must be chosen.

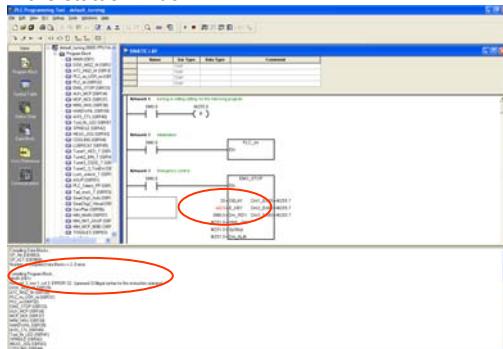


Programming tool PLC

To compile the PLC program.
Press the “compile” icon

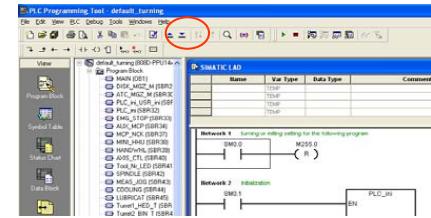


The location of the syntax error can be located easily, using the information contained in the status window.

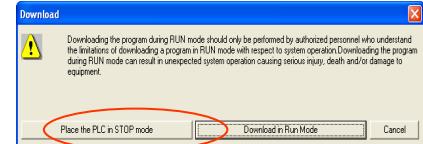


To download the modified PLC program.

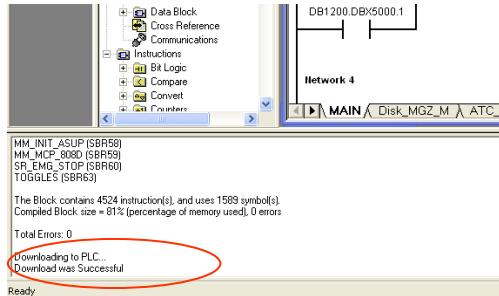
Press icon.



Place the PLC into STOP.



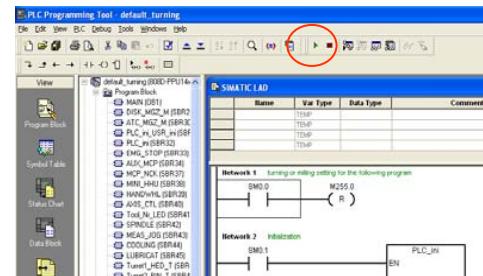
Programming tool PLC



Once the PLC is successfully downloaded, it must be placed in RUN mode.

To place the modified PLC program in RUN mode.

Press icon.

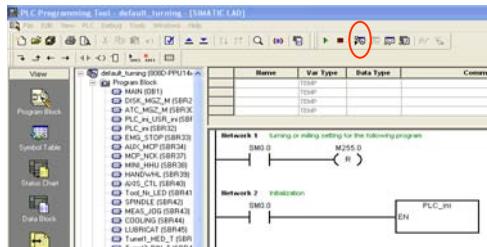


Programming tool PLC

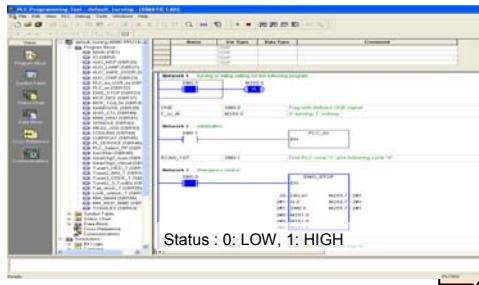
Online monitoring can be used when the PLC program is in the run mode.

To display the online conditions of the PLC.

Press SK



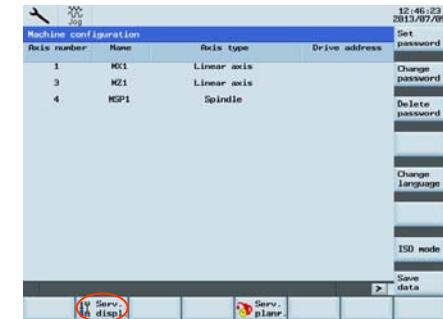
The blue represents an online connection showing the status.



Please confirm the Step 7 connection should have been deactivated after the PLC commissioning has finished.

Press button +

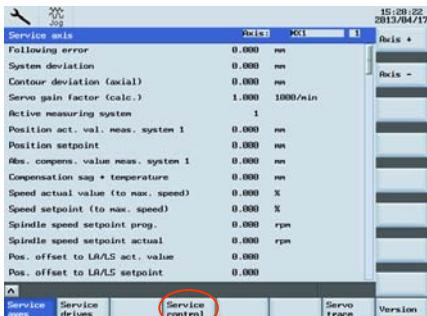
Press button



Programming tool PLC

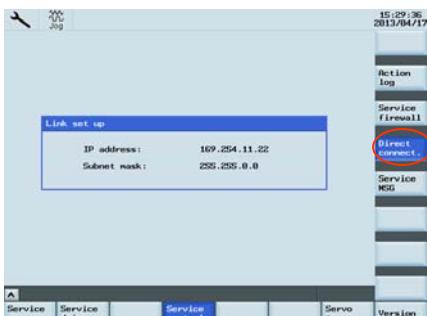
Press SK

Service
control



Press SK

Direct
connect.

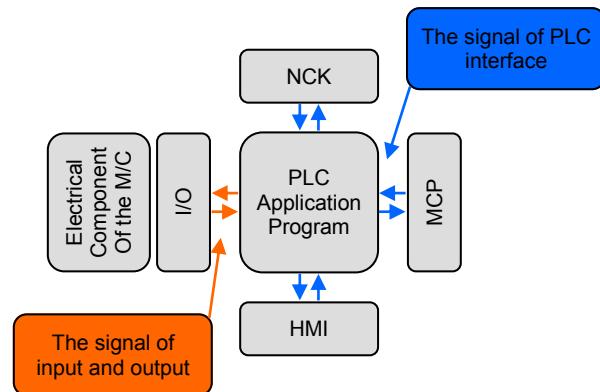


The IP ADDRESS window will
disappear, and the "Direct connect." SK will change to gray in colour.

Signals of the PLC interface

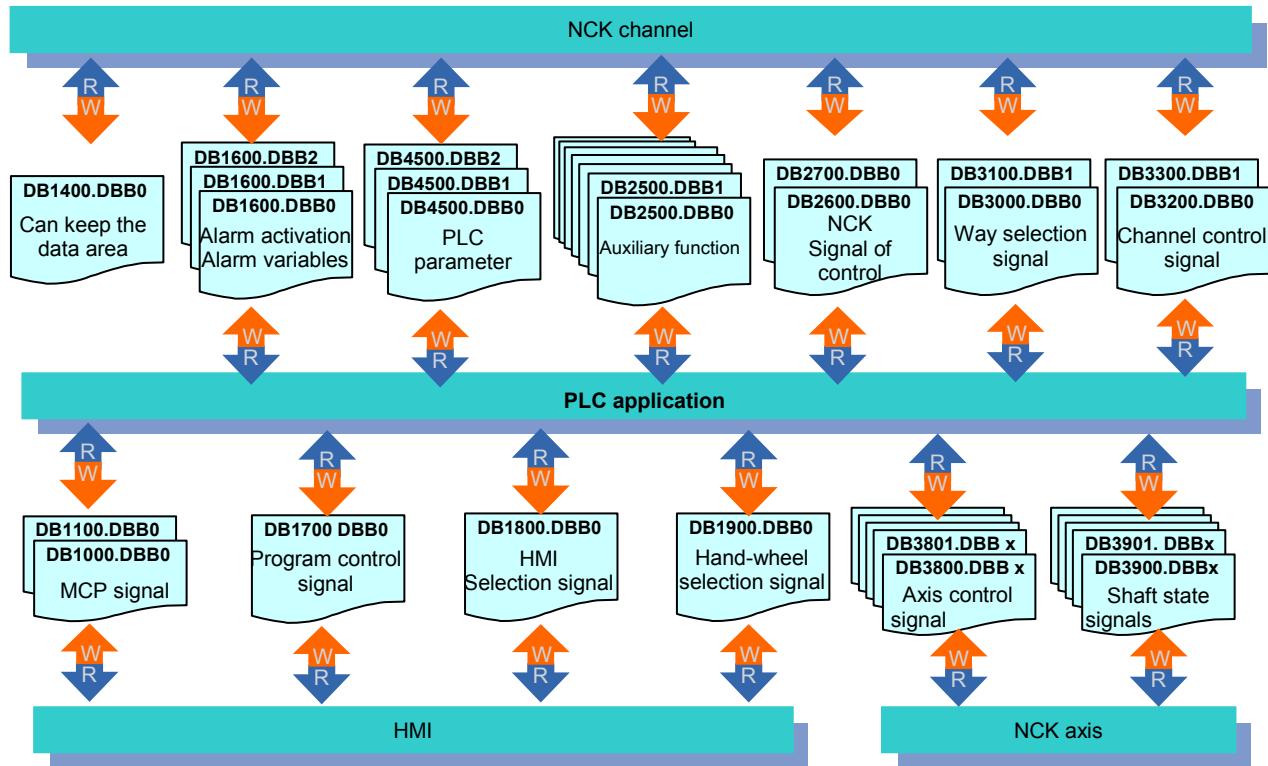
The signals of the PLC interface and the signals of the input and output.

The PLC program exchanges information between NCK, HMI, MCP and I/O through the signals of the interface and the signals of the input and output cards.



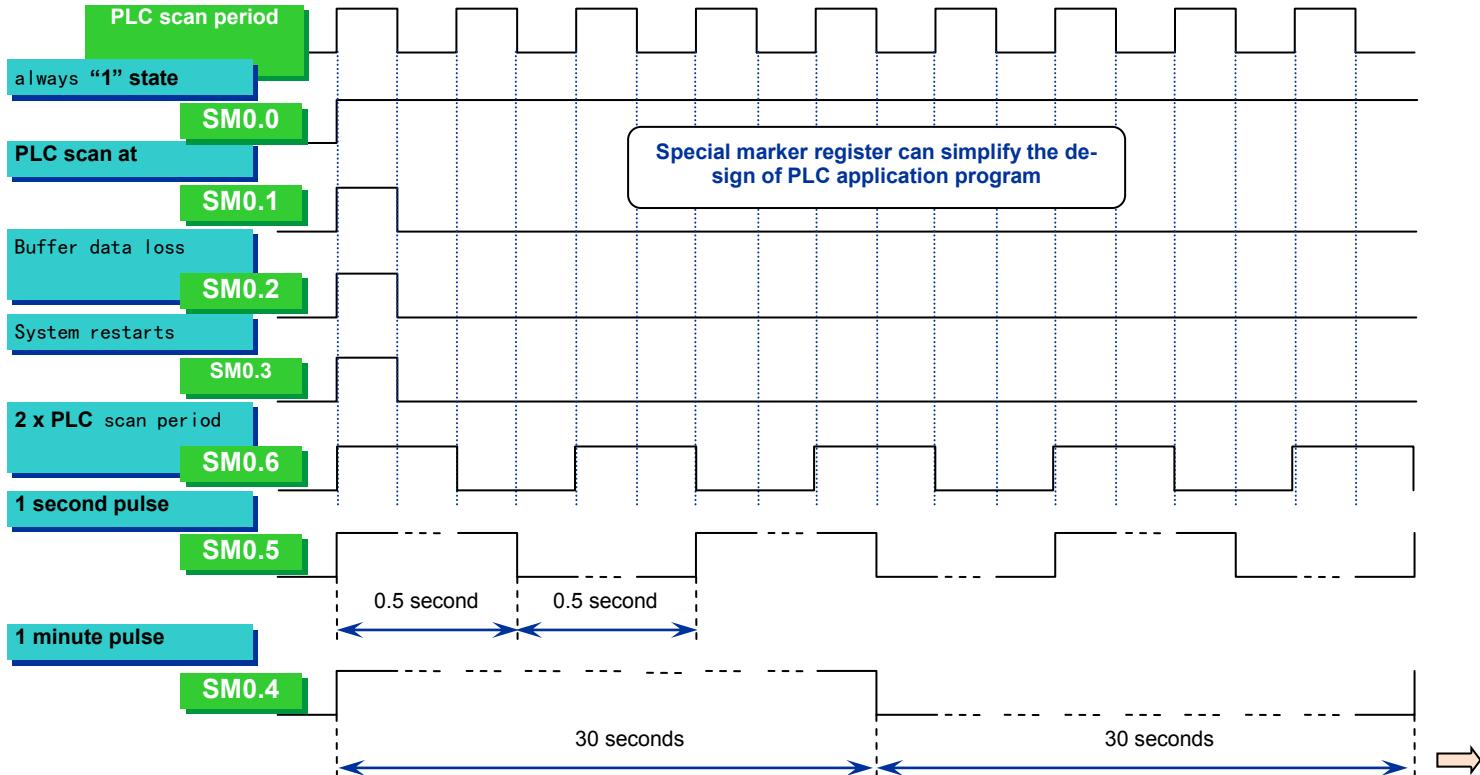
Signals of the PLC interface

The signals of the interface



Operation symbols of PLC programming language

Special markers



Operation symbols of PLC programming language

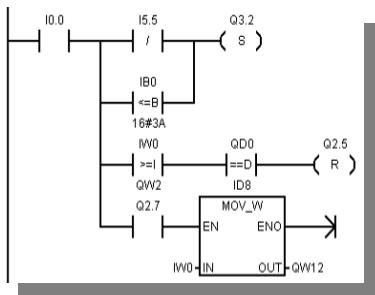
The signal of input and output.

Address

Input; I output; Q

form

bit	I0.0, I4.6;	Q2.1, Q1.7
byte	IB4, IB12;	QB3, QB7
word	IW2, IW4;	QW0, QW6
double word	ID2, ID8;	QD0, QD4



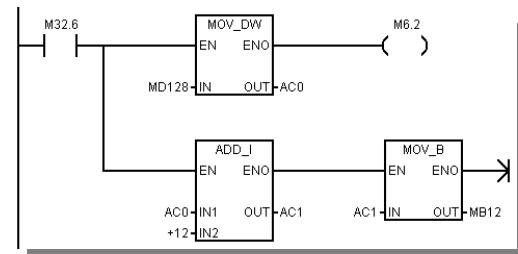
Accumulator transport and storage

Accumulator transport: AC (max 4 Accumulators)

Form; Arithmetic accumulators **AC0 AC1**, logical accumulator **AC2, AC3**.

Flag register: M

bit	M0.1,	M124.5
byte	MB21,	MB12
word	MW22,	MW106
double word	MD4,	MD28



Operation symbols of PLC programming language

Counter

Counter: C

Form:
condition of counter bit C3, C25; - represents the comparison result of the counter and present value.

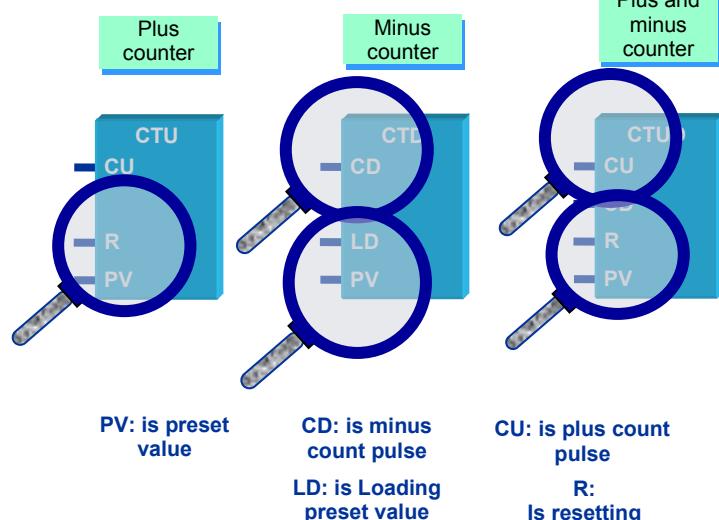
Style:

plus counter **CTU** count: counter value+1;
R=1 counter resets; counter value>preset value
Cn=1

minus counter **CTD** count: counter value -1;
LD counter value = preset; value = counter value=0
Cn=1

plus and minus counter **CTUD** plus counter:
counter value+1;

minus counter: counter value **R=1** counter
resets: counter value>preset value **C=1**



Operation symbols of PLC programming language

Timers

Timer: T

Form;
condition of timer bit **T3, T25**; — represent the
comparison result of timer value and preset value

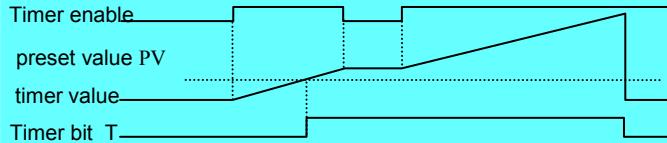
timer value **T3, T25**; — represent timer value

Style;
open delay timer **TON IN=1 begin timing ; IN=0**
timer resetting ; count value>preset value **T_n=1**

close delay timer **TOF IN=1 timer resetting ; IN=0**
begin timing; count value>preset value **T_n=0**
keep delay timer **CTUD IN=1begin timing;**
IN=0timer stops; count value>preset value **T_n1**

Assign word constant "0" to **T** to make counter composite

Keep the sequence



PLC subroutine library

The purpose of the PLC subroutine library.

In order to simplify PLC design, refined PLC functions which have generality, such as initialization, machine panel signal processing, abrupt stop processing, shaft enable control, hard limit, reference point etc. Producers only need to add the needed subroutines module to main procedure, plus other under action procedures, then you can complete PLC procedure design very quickly.

Composition of PLC subroutine library.



PLC project file: SAMPLE_TURN.PTP (application program as examples for turning machine)



PLC project file: SAMPLE_MILL.PTP (application program as examples for milling machine)

System resource

	resource	
PLC system resource	Input	I0.0 to I2.7 (24 inputs of CNC) I3.0 to I8.7 (48 allocated input)
	Output	Q0.0 to Q1.7 (24 outputs of CNC) Q2.0 to Q5.7 (48 allocated output)
	RAM	M0.0 to M255.7 (256 bytes)
	No volatile memory	DB1400.DBX0.0 to DB14000.DBX127.7 (128 bytes)
	PLC user alarm	DB1600.DBX0.0 to DB16000.DBX15.7 (128 user alarms)
	Timer	T0 to T15 (100ms timer) T16 to T32 (10ms timer)
	counter	C0 to C63 (64 counters)
NC resource	Parameter MD14510(32)	Statistic INT: DB4500.DBW0 to DB4500.DBW62 (32 double word)
	Parameter MD14514(32)	Statistic HEX: DB4500.DBB1000 to DB4500.DBB1031 (32 bytes)
	Parameter MD14514(8)	Statistic REAL: DB4500.DBD2000 to DB4500.DBD2028 (8 double)
Programming tool resource	Subroutine (64)	SBR0 to SBR63 (64 subroutines)
	Symbol table (32)	SYM1 to SYM32 (32 symbol tables)

Through these application programs as examples, you can clearly realize how to create or invoke PLC subroutines. You can reorganize PLC subroutines or modify some networks to realize most machine functions. Test and debug subroutines of the subroutine library on machines overall according to practical situation to assure the correctness of subroutine library's functions.



PLC subroutine library

A constant definition

Constant input	symbol	address
Constant "1"	ONE	SM0.0
Constant "2"	ZERO	M251.0

Zero output definition

Statistic type	symbol	address
bit	NULL_b	M255.7
byte	NULL_B	MB255
word	NULL_W	MW254
Long word	NULL_DW	MD252

All the addresses in PLC subroutine library are programmed by symbols.
All the signals of interfaces are named by symbols and arranged in different symbol table.

The name of symbols follows some conventions.

Please refer to the PLC subroutine library instructions.

symbol	List name	Symbol list details
1	PP_1	PP module 1 I/O defined by manufacturer
.....
4~15		Preset for manufacturer
16	IS_MCP	Send to or from machine control panel MCP
.....



PLC subroutine library

A constant definition.

When using the PLC sample subroutine or manual writing PLC program :
All the reference functions related to safety such as Emergency stop, and limit switches.

The operation function works : mode select, manual control, rate set.

PLC sample subroutine offers adequate PLC functions for machine tool.

0 to 19	...	Saved for producers
SBR 20	AUX_MCP	MT auxiliary function
SBR 21	AUX_LAMP	Working lamp
SBR 22	AUX_SAFE_DOOR	Safety door
SBR 23	AUX_CHIP	Chip remover
SBR 31	PLC_ini_USER_ini	Initialize for PLC user data (called in SBR 32)
SBR 32	PLC_INI	PLC initialize
SBR 33	EMG_STOP	Emergency stop
SBR 37	MCP_NCK	Signal transfer from MCP & HMI to the NCK interface
SBR 38	MCP_Tool_Nr	Tool number display on MCP

SBR 39	HANDWHL	Hand wheel selection in HMI
SBR 40	AXES_CTL	Axis control (feed axis and spindle)
SBR 41	MINI_HHU	HHU (hand held unit) control
SBR 42	SPINDLE	Spindle control
SBR 43	MEAS_JOOG	Measure in JOG
SBR 44	COOLING	Coolant control
SBR 45	LUBRICATE	Lubrication control
SBR 46	PI_SERVICE	ASUP control
SBR 47	PLC_Select_PP PLC	NC program selection via PLC
SBR 48	ServPlan	Service planner
SBR 49	GearChg1_Auto	Automatic gear change
SBR 50	GearChg2_Virtual	Gear change (virtual)
SBR 54	TOOL_DIR	Tool change direction control
SBR 58	MM_MAIN	Manual machine related
SBR 59	MM_MCP_808D	Manual machine related
SBR 63	TOGGLE	Toggle switch control
34-36/57/61/62	...	Reserve for OEM



PLC subroutine library

PLC sample subroutine also offers adequate lathe functions.

For turning only

SBR 51	Turret1_HED_T	HED turret control
SBR 52	Turret2_BIN_T	Bi-direction changeable turret (binary coded)
SBR 53	Turret3_CODE_T	Bi-direction changeable turret (coded by turret supplier)
SBR 55	Tail_stock_T	Tailstock control
SBR 56	Lock_unlock_T	Chuck control

PLC sample subroutine can realize adequate milling functions.

For milling only

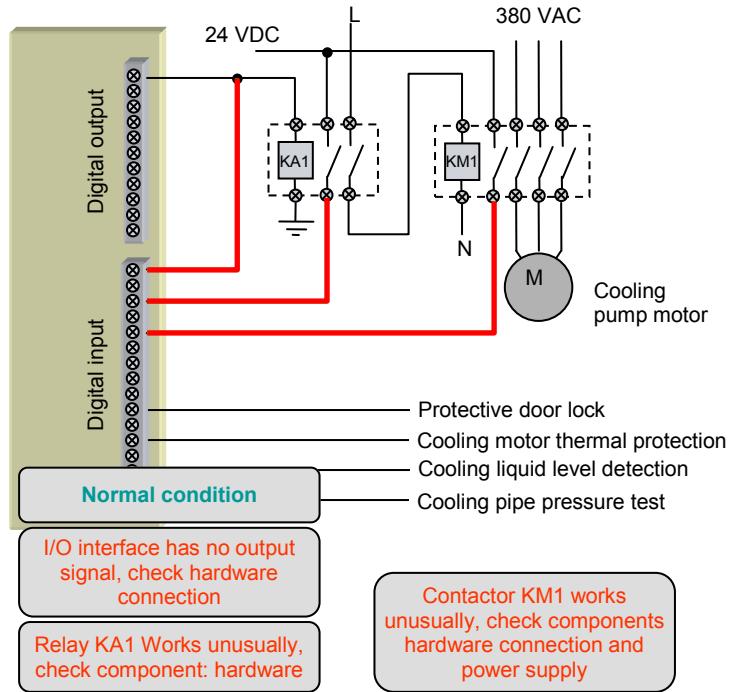
SBR 60	Disk_MGZ_M	Disk magazine control (w/o automatic tool changer)
--------	------------	--

For detail information please refer to:-
PLC Subroutines manual Page 35

PLC alarm

Diagnosing of the machine is important.

Complete diagnosis of the external electrics can help users understand the cause and the location of breakdown immediately.



PLC alarm

System provides users with 128 PLC user alarms. Every user alarm has a corresponding NCK address bit:DB1600.DBX0.0 ~ DB1600.DBX15.7. The address bit "1" can activate the corresponding alarm, reset "0" can cancel the alarm.

In PLC cross reference, you can find the reason for the PLC alarm through looking up reference addresses to make corresponding modification.

Alarm number	PLC signal	PLC alarm variable	Alarm attribute setup	Alarm text
700000	DB1600.DBX0.0	DB16000.DBBD1000	MD14516[0]	
.....
700016	DB1600.DBX2.0	DB16000.DBBD1064	MD14516[16]	Driver is not ready
700018	DB1600.DBX2.2	DB16000.DBBD1072	MD14516[17]	Coolant motor overload
.....
700127	DB1600.DBX15.7	DB16000.DBBD1508	MD14516 [127]	User alarm 127

Conditions of alarm cancel/reset.

power-on clear : after the cancel of alarm, you need to re-power it on
cancel key or after the cancel of alarm, you need to use the cancel key or reset key, then the alarm will be cancelled .

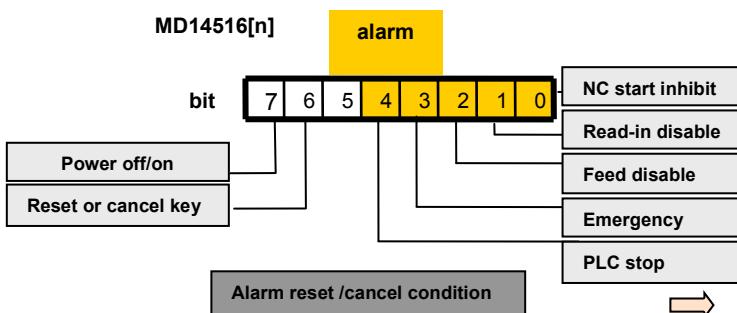
After the cancel of alarm, the alarm displayed will disappear by itself.

Alarm reaction.

React by two ways after alarm

PLC reaction: the PLC program detects the reaction through the corresponding PLC interface, such as cancel the axis-enable when giving an alarm.

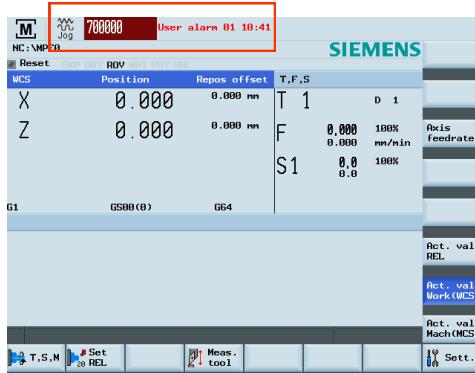
NC reaction: every alarm has a 8 configuration MD14516[0]~ [127].you can set a cancelation condition and alarm reaction of every alarm according to current condition. The system makes corresponding reaction when the alarm begins.



PLC alarm

Alarm text.

Create or edit alarm text correctly and reasonably can make users clearly realize and understand the reason of PLC alarm then locate and resolve a breakdown.



1. edit PLC user alarm using USB
2. edit PLC user alarm using HMI

Edit PLC user alarm by USB.



Press SK

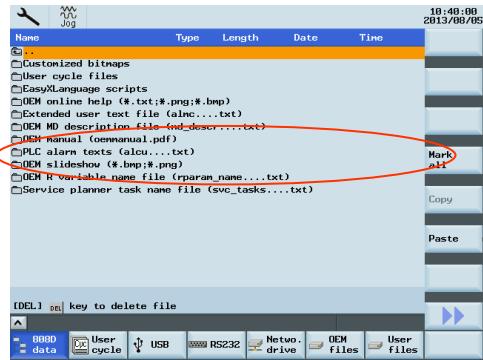


Curser over HMI

Press SK



1. Choose text “PLC alarm text (alcu.txt)
2. Then press vertical soft key “copy”,
3. Press horizontal soft key “USB” and press vertical soft key “paste”.



PLC alarm

Edit PLC user alarm by USB.

Connect USB storage medium with PC USB, find PLC alarm text which is downloaded. And open it by WordPad.

Find alarm number which needs to be edited and input your own text.

Save and close file after editing alarm text.

Remove USB storage from PC and connect it with USB interface on the front panel of PPU again.

Copy “PLC alarm text (alcu.txt)” which is copied back in to “HMI statistic”.

In <system>operation area · press soft key “PLC” > “edit PLC alarm text”. You can check the result of edit.



PLC alarm

Edit PLC user alarm by HMI.

Create PLC alarm text directly in 808D Advanced system.

Press button

Press SK

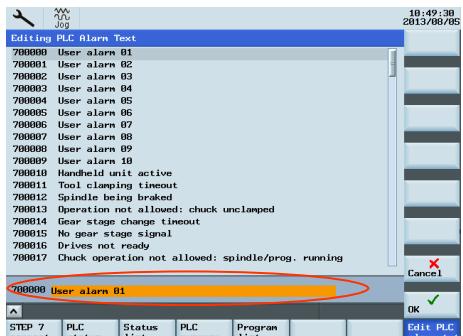
Press SK

Move the cursor to choose the alarm number which needs to be edited and go into the condition of alarm text edit.

Press SK

Change alarm text.

Input alarm text in Chinese, combination key ALT+S, will give you Chinese input characters.



Press SK

PLC online diagnosis

Check the condition of PLC using "PLC program" and decide logical error or external electrical error online.

Press button

Press SK

Press SK

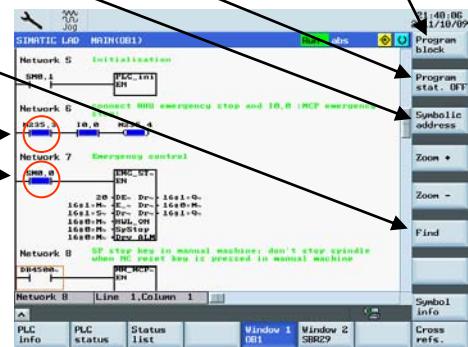
Symbol display/
address displaying

Display the
condition of "can
close"

Alter the program
displayed in the
window

Find appointed
target in the
display program

On state



Display another
program in
window 2

PLC online diagnosis

Check the PLC operating status and data.

- Press button 
- Press SK 
- Press SK 
- Press SK 



PLC style and versions

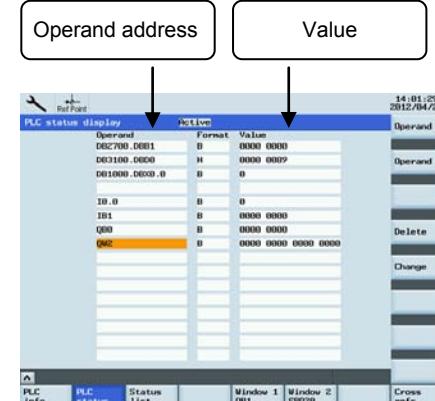
PLC scan period

PLC running time

Check the condition of PLC using "PLC status display" and decide logical error or external electrical error online.

Check the condition of PLC using "PLC status display" and decide logical error or external electrical error online.

- Press button 
- Press SK 
- Press SK 
- Press SK 



PLC online diagnosis

Check the status of hardware connection through examining the state of input value.

- Press button +
- Press SK PLC
- Press SK PLC program
- Press SK PLC status

Check if there is any errors of the connection in the input value according to the PLC status display screen.

PLC status display				Active	Format	Value	Operand +
Operand	I	B	0000 0000				
I00							
I01							

Operand -

PLC status display				Active	Format	Value	Operand +
Operand	I	B	0000 0000				
Q0							

Delete

Change

Cross refs.

Check the condition of hardware connection through examining the status of input point.

PLC status display				Active	Format	Value	Operand +
Operand	I	B	0000 0000				
I00							
I01							

Operand -

PLC status display				Active	Format	Value	Operand +
Operand	I	B	0000 0000				
Q0							

Operand -

Accept

Cancel

Change

Cross refs.

Move the cursor to the operand which needs modification and press "Change"

PLC status display				Active	Format	Value	Operand +
Operand	I	B	0000 0000				
I00							
I01							

Operand -

PLC status display				Active	Format	Value	Operand +
Operand	I	B	0000 0000				
Q0							

Operand -

Accept

Cancel

Change

Cross refs.

Set the condition of output point, confirm by pressing

Check electrical level of the output point (whether the relay is in absorption), check if there is any error in the connection of the output point.

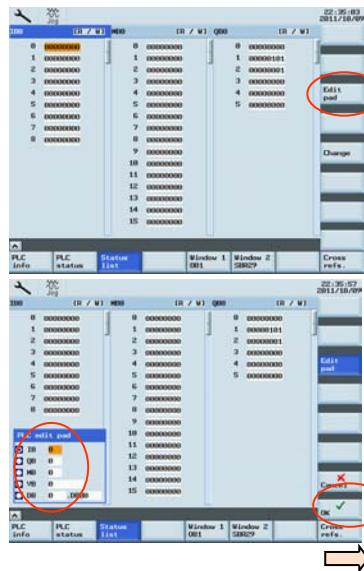
If the output is forced, and the signal of interface is used in PLC program, its state will be refreshed by the PLC program.

PLC online diagnosis

Observe the condition of PLC , judge logical error quickly or external electrical error through displaying PLC program online.

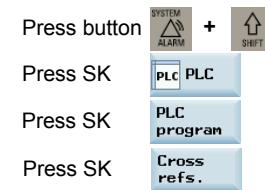


Amend operand address accurately and confirm by soft key.



Display conditions of inputs, outputs, auxiliary relay, and the signal of interface by listing.

Check the condition of PLC , judge logical error quickly or external electrical error through displaying PLC program online.



Look for the target address in cross-reference table

Element	Block	Address	Context
1 10.0	M00 (001)	Network 6 ->1/-	
2 10.7	M00 (001)	Network 11 R015_Ctl	
3 11.0	M00 (001)	Network 11 R015_Ctl	
4 11.6	M00 (001)	Network 11 R015_Ctl	
5 12.3	M00 (001)	Network 14 Turret1_R0	
6 12.6	M00 (001)	Network 13 L000_R0	
7 12.7	M00 (001)	Network 13 L000_R0	
8 13.8	M00 (001)	Network 14 Turret1_R0	
9 13.1	M00 (001)	Network 14 Turret1_R0	
10 13.4	M00 (001)	Network 14 Turret1_R0	
11 13.5	M00 (001)	Network 14 Turret1_R0	
12 13.4	M00 (001)	Network 14 Turret1_R0	
13 13.5	M00 (001)	Network 14 Turret1_R0	
14 13.9	M00 (001)	Network 14 Turret1_R0	
15 00.4	M00 (001)	Network 12 COOLING	

The target address can be displayed and show whether signals of I/O or interfaces are used or not and which subroutine and network they are used in.

Notes

A large rectangular area filled with a light gray square grid, intended for handwritten notes.

Everything ever wanted to know about SINUMERIK 808D:

www.automation.siemens.com/mcms/m2/en/automation-systems/cnc-sinumerik/sinumerik-controls/sinumerik-808/Pages/sinumerik-808.aspx

Everything about shopfloor manufacturing:

www.siemens.com/cnc4you

Everything about the SINUMERIK Manufacturing Excellence portfolio of services:

www.siemens.com/sinumerik/manufacturing-excellence

Information about CNC training:

www.siemens.com/sinumerik/training

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