

SIEMENS

SINUMERIK

SINUMERIK 808D, SINUMERIK 808D ADVANCED

Service Manual

Legal information

Warning notice system

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

⚠ DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
⚠ WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
⚠ CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

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

Preface

Applicable products

This manual is valid for the following control systems:

Control system	Software version
SINUMERIK 808D ADVANCED T (Turning) SINUMERIK 808D ADVANCED M (Milling)	V4.8.1.2: PPU16x.3/PPU15x.3 with spindle/feed servo system
SINUMERIK 808D (Turning) SINUMERIK 808D (Milling)	V4.8.1.1: PPU141.3 with feed servo system

Documentation components and target audience

End-user documentation	Target audience
Programming and Operating Manual (Turning)	Programmers and operators of turning machines
Programming and Operating Manual (Milling)	Programmers and operators of milling machines
Programming and Operating Manual (ISO Turning/Milling)	Programmers and operators of turning/milling machines
Programming and Operating Manual (Manual Machine Plus (MM+), Turning)	Programmers and operators of turning machines
Diagnostics Manual	Mechanical and electrical designers, commissioning engineers, machine operators, and service and maintenance personnel
Manufacturer/service documentation	Target audience
Commissioning Manual	Installation personnel, commissioning engineers, and service and maintenance personnel
Function Manual	Mechanical and electrical designers, technical professionals
Parameter Manual	Mechanical and electrical designers, technical professionals
Service Manual	Mechanical and electrical designers, technical professionals, commissioning engineers, and service and maintenance personnel
Readme file	
Third-party software - Licensing terms and copyright information	

My Documentation Manager (MDM)

Under the following link you will find information to individually compile your documentation based on the Siemens content:

www.siemens.com/mdm

Standard scope

This manual only describes the functionality of the standard version. Extensions or changes made by the machine tool manufacturer are documented by the machine tool manufacturer.

Technical support

Country	Hotline ¹⁾	Further service contact information:
Germany	+49 911 895 7222	<ul style="list-style-type: none"> Worldwide Web site: https://support.industry.siemens.com/cs/ww/en/ Chinese Web site: http://www.siemens.com.cn/808D
China	+86 400 810 4288	

¹⁾ You can find more hotline information at the worldwide Web site given above.

EC Declaration of Conformity

The EC Declaration of Conformity for the EMC Directive can be found on the Internet at <http://www.siemens.com/automation/service&support>.

Here, enter the number "67385845" as the search term or contact your local Siemens office.

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1 Safety instructions

1.1 Fundamental safety instructions

1.1.1 General safety instructions



! WARNING

Electric shock and danger to life due to other energy sources

Touching live components can result in death or severe injury.

- Only work on electrical devices when you are qualified for this job.
- Always observe the country-specific safety rules.

Generally, the following six steps apply when establishing safety:

1. Prepare for disconnection. Notify all those who will be affected by the procedure.
2. Isolate the drive system from the power supply and take measures to prevent it being switched back on again.
3. Wait until the discharge time specified on the warning labels has elapsed.
4. Check that there is no voltage between any of the power connections, and between any of the power connections and the protective conductor connection.
5. Check whether the existing auxiliary supply circuits are de-energized.
6. Ensure that the motors cannot move.
7. Identify all other dangerous energy sources, e.g. compressed air, hydraulic systems, or water. Switch the energy sources to a safe state.
8. Check that the correct drive system is completely locked.

After you have completed the work, restore the operational readiness in the inverse sequence.



! WARNING

Electric shock due to connection to an unsuitable power supply

When equipment is connected to an unsuitable power supply, exposed components may carry a hazardous voltage that might result in serious injury or death.

- Only use power supplies that provide SELV (Safety Extra Low Voltage) or PELV- (Protective Extra Low Voltage) output voltages for all connections and terminals of the electronics modules.



⚠ WARNING

Electric shock due to damaged motors or devices

Improper handling of motors or devices can damage them.

Hazardous voltages can be present at the enclosure or at exposed components on damaged motors or devices.

- Ensure compliance with the limit values specified in the technical data during transport, storage and operation.
- Do not use any damaged motors or devices.



⚠ WARNING

Electric shock due to unconnected cable shields

Hazardous touch voltages can occur through capacitive cross-coupling due to unconnected cable shields.

- As a minimum, connect cable shields and the cores of cables that are not used at one end at the grounded housing potential.



⚠ WARNING

Electric shock if there is no ground connection

For missing or incorrectly implemented protective conductor connection for devices with protection class I, high voltages can be present at open, exposed parts, which when touched, can result in death or severe injury.

- Ground the device in compliance with the applicable regulations.



⚠ WARNING

Arcing when a plug connection is opened during operation

Opening a plug connection when a system is operation can result in arcing that may cause serious injury or death.

- Only open plug connections when the equipment is in a voltage-free state, unless it has been explicitly stated that they can be opened in operation.



⚠ WARNING

Electric shock due to residual charges in power components

Because of the capacitors, a hazardous voltage is present for up to 5 minutes after the power supply has been switched off. Contact with live parts can result in death or serious injury.

- Wait for 5 minutes before you check that the unit really is in a no-voltage condition and start work.

NOTICE

Property damage due to loose power connections

Insufficient tightening torques or vibration can result in loose power connections. This can result in damage due to fire, device defects or malfunctions.

- Tighten all power connections to the prescribed torque.
- Check all power connections at regular intervals, particularly after equipment has been transported.



⚠ WARNING

Spread of fire from built-in devices

In the event of fire outbreak, the enclosures of built-in devices cannot prevent the escape of fire and smoke. This can result in serious personal injury or property damage.

- Install built-in units in a suitable metal cabinet in such a way that personnel are protected against fire and smoke, or take other appropriate measures to protect personnel.
- Ensure that smoke can only escape via controlled and monitored paths.

 **WARNING**

Failure of pacemakers or implant malfunctions due to electromagnetic fields

Electromagnetic fields (EMF) are generated by the operation of electrical power equipment, such as transformers, converters, or motors. People with pacemakers or implants in the immediate vicinity of this equipment are at particular risk.

- If you have a heart pacemaker or implant, maintain a minimum distance of 2 m from electrical power equipment.

 **WARNING**

Pacemaker or implant malfunctions due to permanent magnetic fields

Even when switched off, electric motors with permanent magnets represent a potential risk for persons with heart pacemakers or implants if they are close to converters/motors.

- If you have a heart pacemaker or implant, maintain a minimum distance of 2 m.
- When transporting or storing permanent-magnet motors always use the original packing materials with the warning labels attached.
- Clearly mark the storage locations with the appropriate warning labels.
- IATA regulations must be observed when transported by air.

 **WARNING**

Unexpected movement of machines caused by radio devices or mobile phones

When radio devices or mobile phones with a transmission power > 1 W are used in the immediate vicinity of components, they may cause the equipment to malfunction. Malfunctions may impair the functional safety of machines and can therefore put people in danger or lead to property damage.

- If you come closer than around 2 m to such components, switch off any radios or mobile phones.
- Use the "SIEMENS Industry Online Support App" only on equipment that has already been switched off.

 **WARNING**

Motor fire in the event of insulation overload

There is higher stress on the motor insulation through a ground fault in an IT system. If the insulation fails, it is possible that death or severe injury can occur as a result of smoke and fire.

- Use a monitoring device that signals an insulation fault.
- Correct the fault as quickly as possible so the motor insulation is not overloaded.

 **WARNING**

Fire due to inadequate ventilation clearances

Inadequate ventilation clearances can cause overheating of components with subsequent fire and smoke. This can cause severe injury or even death. This can also result in increased downtime and reduced service lives for devices/systems.

- Ensure compliance with the specified minimum clearance as ventilation clearance for the respective component.

 **WARNING**

Unrecognized dangers due to missing or illegible warning labels

Dangers might not be recognized if warning labels are missing or illegible. Unrecognized dangers may cause accidents resulting in serious injury or death.

- Check that the warning labels are complete based on the documentation.
- Attach any missing warning labels to the components, where necessary in the national language.
- Replace illegible warning labels.

NOTICE

Device damage caused by incorrect voltage/insulation tests

Incorrect voltage/insulation tests can damage the device.

- Before carrying out a voltage/insulation check of the system/machine, disconnect the devices as all converters and motors have been subject to a high voltage test by the manufacturer, and therefore it is not necessary to perform an additional test within the system/machine.

WARNING

Unexpected movement of machines caused by inactive safety functions

Inactive or non-adapted safety functions can trigger unexpected machine movements that may result in serious injury or death.

- Observe the information in the appropriate product documentation before commissioning.
- Carry out a safety inspection for functions relevant to safety on the entire system, including all safety-related components.
- Ensure that the safety functions used in your drives and automation tasks are adjusted and activated through appropriate parameterizing.
- Perform a function test.
- Only put your plant into live operation once you have guaranteed that the functions relevant to safety are running correctly.

Note

Important safety notices for Safety Integrated functions

If you want to use Safety Integrated functions, you must observe the safety notices in the Safety Integrated manuals.

WARNING

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

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

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

WARNING

Injury caused by moving or ejected parts

Contact with moving motor parts or drive output elements and the ejection of loose motor parts (e.g. feather keys) out of the motor enclosure can result in severe injury or death.

- Remove any loose parts or secure them so that they cannot be flung out.
- Do not touch any moving parts.
- Safeguard all moving parts using the appropriate safety guards.

WARNING

Fire due to inadequate cooling

Inadequate cooling can cause the motor to overheat, resulting in death or severe injury as a result of smoke and fire. This can also result in increased failures and reduced service lives of motors.

- Comply with the specified cooling requirements for the motor.

 **WARNING**

Fire due to incorrect operation of the motor

When incorrectly operated and in the case of a fault, the motor can overheat resulting in fire and smoke. This can result in severe injury or death. Further, excessively high temperatures destroy motor components and result in increased failures as well as shorter service lives of motors.

- Operate the motor according to the relevant specifications.
- Only operate the motors in conjunction with effective temperature monitoring.
- Immediately switch off the motor if excessively high temperatures occur.

 **CAUTION**

Burn injuries caused by hot surfaces

In operation, the motor can reach high temperatures, which can cause burns if touched.

- Mount the motor so that it is not accessible in operation.

Measures when maintenance is required:

- Allow the motor to cool down before starting any work.
- Use the appropriate personnel protection equipment, e.g. gloves.

1.1.2 Equipment damage due to electric fields or electrostatic discharge

Electrostatic sensitive devices (ESD) are individual components, integrated circuits, modules or devices that may be damaged by either electric fields or electrostatic discharge.



NOTICE

Equipment damage due to electric fields or electrostatic discharge

Electric fields or electrostatic discharge can cause malfunctions through damaged individual components, integrated circuits, modules or devices.

- Only pack, store, transport and send electronic components, modules or devices in their original packaging or in other suitable materials, e.g. conductive foam rubber or aluminum foil.
- Only touch components, modules and devices when you are grounded by one of the following methods:
 - Wearing an ESD wrist strap
 - Wearing ESD shoes or ESD grounding straps in ESD areas with conductive flooring
- Only place electronic components, modules or devices on conductive surfaces (table with ESD surface, conductive ESD foam, ESD packaging, ESD transport container).

1.1.3 Warranty and liability for application examples

The application examples are not binding and do not claim to be complete regarding configuration, equipment or any eventuality which may arise. The application examples do not represent specific customer solutions, but are only intended to provide support for typical tasks. You are responsible for the proper operation of the described products. These application examples do not relieve you of your responsibility for safe handling when using, installing, operating and maintaining the equipment.

1.1.4 Industrial security

Note

Industrial security

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

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

The customer is responsible for preventing unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit:

Industrial security (<http://www.siemens.com/industrialsecurity>).

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

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

Industrial security (<http://www.siemens.com/industrialsecurity>).

WARNING

Unsafe operating states resulting from software manipulation

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

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

1.1.5 Residual risks of power drive systems

When assessing the machine- or system-related risk in accordance with the respective local regulations (e.g., EC Machinery Directive), the machine manufacturer or system installer must take into account the following residual risks emanating from the control and drive components of a drive system:

1. Unintentional movements of driven machine or system components during commissioning, operation, maintenance, and repairs caused by, for example,
 - Hardware and/or software errors in the sensors, control system, actuators, and cables and connections
 - Response times of the control system and of the drive
 - Operation and/or environmental conditions outside the specification
 - Condensation/conductive contamination
 - Parameterization, programming, cabling, and installation errors
 - Use of wireless devices/mobile phones in the immediate vicinity of electronic components
 - External influences/damage
 - X-ray, ionizing radiation and cosmic radiation
2. Unusually high temperatures, including open flames, as well as emissions of light, noise, particles, gases, etc., can occur inside and outside the components under fault conditions caused by, for example:
 - Component failure
 - Software errors

- Operation and/or environmental conditions outside the specification
 - External influences/damage
3. Hazardous shock voltages caused by, for example:
 - Component failure
 - Influence during electrostatic charging
 - Induction of voltages in moving motors
 - Operation and/or environmental conditions outside the specification
 - Condensation/conductive contamination
 - External influences/damage
 4. Electrical, magnetic and electromagnetic fields generated in operation that can pose a risk to people with a pacemaker, implants or metal replacement joints, etc., if they are too close
 5. Release of environmental pollutants or emissions as a result of improper operation of the system and/or failure to dispose of components safely and correctly
 6. Influence of network-connected communication systems, e.g. ripple-control transmitters or data communication via the network

For more information about the residual risks of the drive system components, see the relevant sections in the technical user documentation.

1.2 Carrying out of repairs



Carrying out of repairs

Anywhere in the automation equipment where faults might cause physical injury or major material damage, in other words, where faults could be dangerous, additional external precautions must be taken, or facilities must be provided, that guarantee or enforce a safe operational state, even when there is a fault (e.g. using an independent limit value switch, mechanical locking mechanisms, EMERGENCY STOP/EMERGENCY OFF devices).

2 Service case overview

In this manual, the following four types of service cases are described:

Service cases of the hardware/software faults (Page 12)

Service cases of the PLC alarms (Page 31)

Service cases of the NC program alarms (Page 45)

General NC program alarms (Page 48)

Notes

A large rectangular area filled with a fine grid of light gray lines, intended for writing notes. The grid consists of approximately 30 columns and 40 rows of small squares.

3 Service cases of the hardware/software faults

In this chapter, the following service cases are described:

Case 1	→	System startup fault (Page 12)
Case 2	→	PPU/HMI fault (Page 13)
Case 3	→	MCP connection fault (Page 13)
Case 4	→	MCP key press fault (Page 14)
Case 5	→	Spindle fault (Page 15)
Case 6	→	Spindle encoder alarm (Page 16)
Case 7	→	Handwheel fault (Page 16)
Case 8	→	Feed axis fault (Page 17)
Case 9	→	Axis moving direction fault (Page 18)
Case 10	→	Positioning error (Page 18)
Case 11	→	Tool change fault (Page 18)
Case 12	→	Overload (Page 19)
Case 13	→	System crash during startup (Page 19)
Case 14	→	Hardware limit fault (Page 20)
Case 15	→	Reference point approach fault (Page 20)
Case 16	→	Drive alarm (Page 22)
Case 17	→	Option activation failure after PPU replacement (Page 23)
Case 18	→	CNC lock alarms (Page 28)
Case 19	→	OEM PIN forgotten for CNC lock (Page 29)

Note

In case of the necessity of replacing a defective PPU or a defective system CF card, both the PPU and the CF card must be replaced since the CF card always remains as an undetachable component of the PPU.

3.1 System startup fault

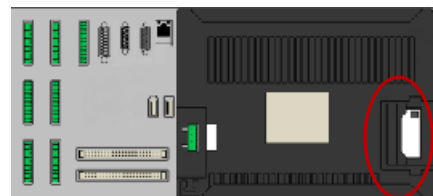
Fault description

The control system cannot start up successfully after power-on; the PPU normally shows a black screen with no display at all.

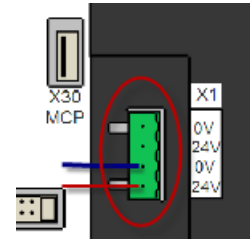
Diagnostic steps

1. Check the status LED on the PPU panel.

- If the status LED is lit, power off the control system and check whether you have inserted the CF card properly. Then power on again and observe whether you have eliminated the fault.



- If the status LED is off, check the power supply interface (X1) on the back of the PPU for the following:
 - Whether the connection is loose
 - Whether the 24 V terminal matches the interface
 - Whether the 24 VDC power supply is available by measuring with a multimeter



2. Replacement and maintenance are necessary if the fault still exists after the above operations, because probably the PPU is damaged.

3.2 PPU/HMI fault

Fault description

The HMI screen or the keys on the PPU are inactive.

Diagnostic steps

1. Check whether the control system is in the crashed state. If yes, restart the control system and then check whether the fault still exists.
2. Replacement and maintenance are necessary if the fault still exists after the above operations, because probably the PPU is damaged.

3.3 MCP connection fault

Fault description

- The MCP does not respond after power-on. All the status LEDs on the MCP are off and no operation is possible.



- All the status LEDs on the MCP are flashing all the time.



Note that the alarm 40003 may appear in the above cases.

Diagnostic steps

1. Check whether the connection cable between the MCP and the PPU is in good condition and properly connected. You may verify this by using a new cable.
2. Check whether the PPU interface X30 or the MCP interface X10 is damaged or subject to bad contact. You may verify this by using a new cable.



3. Check the PLC programs since a PLC program fault can also cause the flashing of all the status LEDs on the MCP.
4. Replacement and maintenance are necessary if the fault still exists after the above operations, because probably the PPU or MCP is damaged.

3.4 MCP key press fault

Fault description

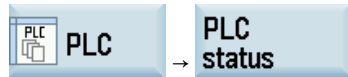
Some keys on the MCP have no response. A key press fault occurs normally in the following keys:



Diagnostic steps




1. Select the system data operating area.
2. Open the PLC status monitoring window through the following softkey operations:



3. Check the PLC interface status in the following window:

PLC status display		Active	
Operand	Format	Value	
DB1000.DBB3	B	0000	0000
		①	②

①: Address of the  key (DB1000.DBX3.5)

②: Address of the  key (DB1000.DBX3.3)

- If the PLC status bit changes after you press the corresponding key, it suggests the key functions correctly. In this case, make further observation to see if there are other alarms or whether the PLC program is correct in a different position.
- If the PLC status bit does not change after you press the corresponding key, replacement and maintenance are necessary because the key is damaged.

3.5 Spindle fault

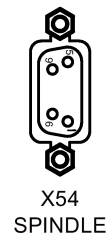
Fault description

- Case 1: The spindle cannot move; the PPU screen shows the message of waiting for the spindle signal and no alarm prompts.
- Case 2: The PPU shows the spindle speed values, but the spindle cannot move and no alarm prompts.
- Case 3: The spindle speed is not stable (varies during rotation).

Diagnostic steps

Case 1

- Check the settings of machine data MD30200 (= 1: for the spindle with an encoder; = 0: for the spindle without an encoder).
- If you use an analog spindle, check the spindle interface X54 on the back of the PPU for the following:
 - Whether the interface is loose or damaged
 - Whether there is voltage output by measuring pins 1 and 9 of X54 with a multimeter after starting the spindle
- Check whether the connection cables of the PPU, spindle drive, and encoder are in good condition.
- Check whether the settings of the following machine data are correct:
 - MD30130 = 1
 - MD30240: encoder type (= 1: for the spindle with motor encoder; = 2: for the spindle with an external encoder via X60)
 - MD30134: spindle output polarity (= 0: dual polarity; = 1/2: single polarity, as the case may be)
 - MD32250 = 100/MD32260, consistent with the rated motor speed
- Check whether the spindle drive has a fault.
- Replacement and maintenance are necessary if the fault still exists after the above inspection, because probably the PPU is damaged.



Case 2

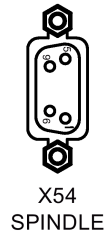
- Check whether the control system is in the program test state:
 - Check whether the status LED for program test on the MCP is lit (it must be off)
 - Check whether the PRT icon appears in the program status bar on the PPU screen (it must be deactivated)



- Perform the above diagnostic steps for case 1 to check the spindle if the fault still exists.

Case 3

1. Check whether there is interference between the connection cables. Make sure you route the power cables and signal cables separately.
2. If you use an analog spindle, check the interface X54 on the back of the PPU for the following:
 - Whether the interface is loose or damaged
 - Whether the connections have bad contact



3. Check whether the connection cable to the spindle drive is loose or whether the drive is damaged.

3.6 Spindle encoder alarm

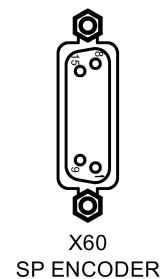
Fault description

The spindle cannot move, and the alarm 025000 appears on the screen at the same time.

025000 ↓ 02 Axis MSP1 hardware fault of active encoder 13:42

Diagnostic steps

1. If you use an external encoder for the spindle, check whether the spindle encoder interface X60 on the back of the PPU is loose or damaged.



2. Check whether the connection cable of the spindle encoder is damaged or connected incorrectly.
3. Check whether the settings of machine data MD30200 and MD30240 are correct as follows:
 - MD30200: number of encoders (= 1: for the spindle with an encoder; = 0: for the spindle without an encoder)
 - MD30240: encoder type (= 1: for the spindle with motor encoder; = 2: for the spindle with an external encoder via X60)
4. Check whether the spindle encoder is damaged. Replace the encoder with a new one and test it again.
5. Replacement and maintenance are necessary if the fault still exists after the above inspection, because probably the PPU is damaged.

3.7 Handwheel fault

Fault description

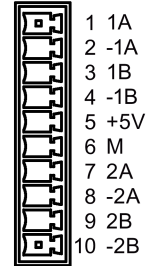
The handwheel is not available or cannot be assigned to an axis successfully.

Diagnostic steps

1. Check whether the operating sequence is correct, and whether the feed axis is selected for handwheel assignment in the handwheel mode.
Use the PLC to monitor and test the PLC input/output status of the selected axis traversing key.



2. Check whether the connections on the handwheel are correct, and observe if there are short circuits in adjacent connections.
3. Check the interface X10 on the back of the PPU for the following:
 - Whether the connection is loose
 - Whether the cable is damaged
 - Whether there is voltage output of 5 V at the interface (terminal 5/6)



X10
HAND WHEEL

4. Check whether the handwheel is damaged.
5. Replacement and maintenance are necessary if the fault still exists after the above inspection, because probably the PPU is damaged.

3.8 Feed axis fault

Fault description

The following fault cases may occur with the axes referenced:

- Case 1: The screen displays the movement values of the feed axis, but actually the axis does not move.
- Case 2: The actual traversing direction of the axis is opposite to the direction selected in operation or the direction displayed on the PPU screen.

Diagnostic steps

Case 1

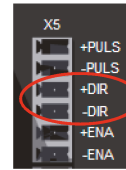
1. Check whether the control system is in the program test state:
 - Check whether the status LED for program test on the MCP is lit (it must be off)
 - Check whether the PRT icon appears in the program status bar on the PPU screen (it must be deactivated)



2. Check whether the mechanical coupling is loose.
3. Check whether the connections between the control system and the drives are in good condition, and whether the terminals on the drives are damaged.
4. Replacement and maintenance are necessary if the fault still exists after the above inspection, because probably the PPU is damaged.

Case 2

1. Check whether the settings of machine data MD32100 and MD32110 are correct as follows:
 - MD32100: axis traversing direction (default value = 1, change to -1 as required)
 - MD32110: encoder position feedback polarity (default value = 1, change to -1 as required)
2. For the SINUMERIK 808D control system, you should also check the connections of the terminals +DIR and -DIR on the drives.



3.9 Axis moving direction fault

Fault description

The axis can only move in one direction when the axis traversing keys are pressed in "JOG" mode, and the direction cannot be changed.

Diagnostic steps

Check whether the corresponding drive is damaged.

3.10 Positioning error

Fault description

The operating position of the machine coordinate system is not accurate.

Diagnostic steps

1. Check whether the settings of the following machine data are consistent with the actual mechanical parameters:
 - MD31030: pitch of leadscrew
 - MD31050/MD31060: denominator/numerator of the deceleration ratio
 - MD31020/MD31400 = 10000: encoder lines per revolution (SINUMERIK 808D only)**Note:** check whether there is frequency multiplication on the drive encoder.
2. Check whether the turret is installed properly on the machine.
3. Check whether the mechanical coupling is loose or the belt is slipping.
4. Check whether it is necessary to adjust the compensation of the leadscrew pitch and/or the backlash.

3.11 Tool change fault

Fault description

Case 1: The tool cannot be changed; the wrong tool is changed; the turret keeps rotating.

Case 2: During the tool change, the tool arm does not go back to the home position.

Diagnostic steps

Case 1

1. Check whether the phase sequence of the connection of the machine power supply/turret motor is correct.
2. Check the interface of turret rotation signal output/turret in-position signal input on the back of the PPU:
 - Whether it is damaged
 - Whether the wires are loose
 - Whether the terminals 1 and 10 are connected respectively to 24 V and 0 V
 - Whether the connection is wrong or different from the settings in the PLC program

3. Check whether the wires between the turret signal input/output interface on the back of the PPU and the turret are loose or damaged.
4. Check whether the turret signal encoder on the machine is damaged.
5. Replacement and maintenance are necessary if the fault still exists after the above inspection, because probably the PPU is damaged.

Case 2

1. Check the PLC output signals related to the tool arm positions.
2. Check the PPU input signals related to the tool arm positions.

Note

This fault case may occur because the PLC control action is influenced by the interference to the turret signal reception/transmission, which is caused by the instable fluctuation of voltage and contactor arc.

3.12 Overload

Fault description

The axis cannot move or moves difficultly because of overload (the drive may issue an overload alarm).

Diagnostic steps

1. Check whether the guide lubrication is sufficient:
 - Whether the lubricating pipe/nozzle is blocked
 - Whether the lubrication interval time is set properly (the interval should not be too long)
2. Stop the machine and check whether the guides/screws are blocked by the machining waste. If so, it may need proper cleaning.
3. Check whether the connection of the shaft coupling is smooth and concentric.

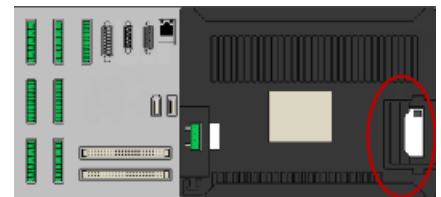
3.13 System crash during startup

Fault description

The system loading process crashes during startup (usually the HMI freezes when it loads to 40%).

Diagnostic steps

1. Power off and restart the control system. Check whether the fault is resolved.
2. Power off the control system and check whether the CF card is inserted correctly or has a faulty contact, and then power on again to check whether the fault is resolved.



3. Replacement and maintenance are necessary if the fault still exists after the above inspection, because probably the PPU is damaged.

3.14 Hardware limit fault

Fault description

Case 1: The hardware limit switch alarm appears on the PPU.



Case 2: The axis has crossed the hardware limit, but can still move without any alarm.

Diagnostic steps

Case 1

1. Press and hold down the following key on the PPU while pressing the axis traversing key at the same time to make the feed axis move in the opposite direction. The alarm can then be cleared when the axis moves away from the hardware limit switch.



2. Check the hardware limit switches on the machine if the fault still exists:
 - Check whether the hardware limit switch connection is good with a multimeter.
 - Check whether the hardware limit switches are damaged.

Case 2

1. Check whether the hardware limit switch wire is short-circuited with the high level signal.
2. Check whether the hardware limit switches are damaged.

3.15 Reference point approach fault

Fault description

- Case 1: Press the desired axis traversing key, the position values displayed on the PPU do not change and the axis does not move.
- Case 2: Press the desired axis traversing key, the position values displayed on the PPU change but the axis does not move.
- Case 3: Press the desired axis traversing key, the axis moves until the hardware limit switch alarm appears.
- Case 4: Press the desired axis traversing key, the axis always moves in the opposite direction.
- Case 5: Press the desired axis traversing key, the axis moves only for a short distance.
- Case 6: Press the desired axis traversing key, the machine alarm 20002 appears after the axis exits the deceleration switch.
- Case 7: Press the desired axis traversing key, the Jog operation and automatic program execution run normally, but the system does not respond when approaching the reference point.
- Case 8: When approaching the reference point, the position of the axis is out by the pitch of leadscrew.

Diagnostic steps

Case 1

1. Check if there is an alarm on the PPU screen, and continue operation after eliminating the alarm via the following key:



2. The machine data is lost if the alarms 004060, 004062, and 004065 appear; in this case, it is necessary to restore the backup data and restart after power-off to check whether the fault has been eliminated.

Case 2

1. Check whether the control system is in the program test state:
 - Check whether the status LED for program test on the MCP is lit (it must be off)
 - Check whether the PRT icon appears in the program status bar on the PPU screen (it must be deactivated)



2. Check whether the settings of machine data MD30130, MD30240, and MD30350 are correct:
 - MD30130 = 2
 - MD30240 = 3
 - MD30350 = 0

Case 3

Check whether the machine deceleration switches and their connections are broken.

Case 4

1. Check whether the deceleration switches cannot bounce back.
2. Check whether there is connection fault of the deceleration switches.

Case 5

Check whether the machine data MD34000 is set correctly (the deceleration switches are not available when MD34000 = 0).

Case 6

1. Check whether the machine approaching switch and its related connections are damaged.
2. Check whether the machine data MD34060 is set properly.
3. Check whether the encoder corresponding to the feed axis and its related connections are damaged.

Case 7

Check whether the machine data MD30200 is set correctly (the system cannot approach the reference point when MD30200 = 0).

Case 8

1. Check whether the machine data MD31020 is set correctly.
2. Alternatively adjust the reference cam switch by 2 mm to 3 mm.

3.16 Drive alarm

Fault description

Case 1: The control system issues a drive-related alarm.

025201 ↓  **Axis MX1 drive fault 15:17**

Case 2: The drive also issues an alarm, normally A05/A06/A07/A08/A09 for the SINAMICS V60 drive, and F30001/F30002/F31117 for the SINAMICS V70 drive.

Diagnostic steps

A05/A06/F30001: IGBT or internal chip overcurrent

It may appear when the main power supply is connected/during motor operation.

1. Check the U, V, W, and PE connections on the drive for the following:

- Whether connections between different phases are short-circuited
- Whether a U, V, or W phase is disconnected
- Whether the grounding connection is incorrect or has bad grounding
- Whether the wires are damaged



2. Power on again and observe whether the fault still exists after verification.
3. If the fault still exists after the above operation, check the insulation of the motor and see if it is damaged. The motor can be changed when necessary. Then power on again and observe whether the fault still exists.
4. Replacement and maintenance are necessary if the fault still exists after the above inspection, because probably the drive is damaged.

A07/F30002: ground connection short-circuited

It may appear when the main power supply is connected/during motor operation.

1. Check the U, V, W, and PE connections on the drive to see whether the connections among different phases are short-circuited.
2. Power on again and observe whether the fault still exists after verification.
3. Replacement and maintenance are necessary if the fault still exists after the above inspection, because probably the IGBT module in the drive is damaged.

A08: incorrect encoder U/V/W connections

1. Check the signal cable between the motor and the drive (from the drive to the motor encoder) for the following:
 - Whether the internal cable connections have faulty contacts
 - Whether the cable shielding is poor
 - Whether the shielded ground cable is connected correctly
2. Power on again and observe whether the fault still exists after verification.
3. If the fault still exists after the above operation, check the connection of the encoder interface.
4. Replacement and maintenance are necessary if the fault still exists after the above operation, because probably the motor encoder is damaged.

A09/F31117: encoder TTL pulse fault

1. Check the signal cable between the motor and the drive (from the drive to the motor encoder):
 - Whether the connection of the encoder cable is correct
 - Whether the internal cable connections have faulty contacts
 - Whether the cable shielding is poor
 - Whether the shielded ground cable is connected correctly
2. Power on again and observe whether the fault still exists after verification.
3. If the fault still exists after the above operation, check the connection of the encoder interface.
4. Replacement and maintenance are necessary if the fault still exists after the above inspection, because probably the motor encoder is damaged.

F7452: following error out of tolerance; F7011/A7012: motor overload

1. Check whether the cutting load is too high, or the spindle stops while the axes are still moving.
2. Check whether the counter balance for axis Z is too light or pressure is low (milling machine).
3. Check whether the encoder cable is loose.

3.17 Option activation failure after PPU replacement

Fault description

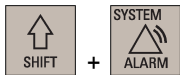
After the replacement of a defective PPU, the optional functions purchased earlier cannot be activated since the original license key is invalid.

Remedy

Note

After the initial power up of the control system with the new PPU, you are recommended to import an existing commissioning archive created with the previous PPU.

You must first contact the Siemens Hotline to unassign the licenses of the options, and then proceed through the following steps to reactivate the options on the new PPU:



1. Select the system data operating area.

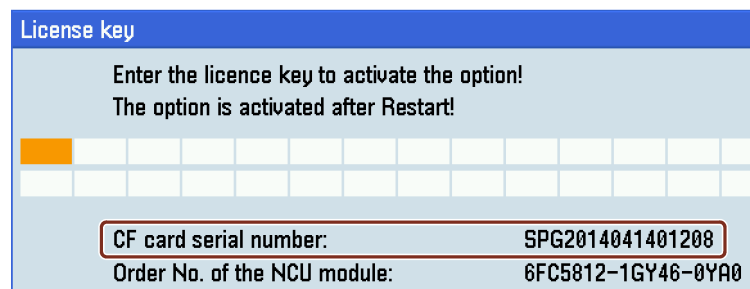


2. Press this key to view the extended softkeys.

3. Open the dialog box for entering the license key through the following softkey operations:



Then you can find the serial number of CF card in the following dialog box:



4. Go to the Web License Manager (<http://www.siemens.com/automation/license>) on a computer with Internet access, and login via "Direct access".

- Follow the instructions in the Web License Manager to assign the licenses of your purchased options to the new PPU. A license key is generated after the licenses are assigned successfully.
- Enter the license key generated by the Web License Manager in the following dialog box:

License key	
Enter the licence key to activate the option! The option is activated after Restart!	
<input type="text"/>	
CF card serial number:	SPG2014041401208
Order No. of the NCU module:	6FC5812-1GY46-0YA0



- Press this softkey to confirm your entry.



- Then you can press this softkey to check the licensing status in the following window, for example:

Option	Set	Licensed
Additional NC-axis, basic 6FC5800-0AK70-0YB0	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contour handwheel 6FC5800-0AM08-0YB0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Bidir. lead screw error comp. 6FC5800-0AM54-0YB0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Manual Machine Plus 6FC5800-0AP07-0YB0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Transmit/Tracyl 6FC5800-0AS50-0YB0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gantry (BASIC) 6FC5800-0AS51-0YB0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CNC lock 6FC5800-0AS71-0YB0	<input type="checkbox"/>	<input checked="" type="checkbox"/>



- Set the licensed options as required, and then press this softkey to restart the NCK. The options can then be activated successfully.

Note

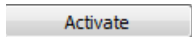
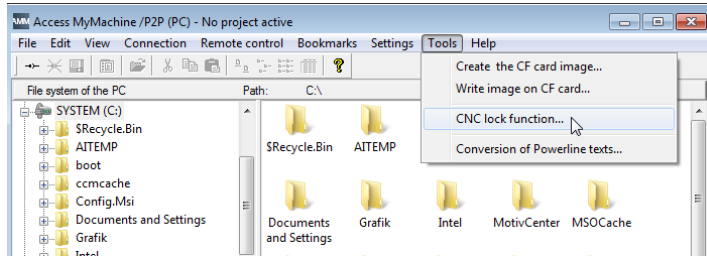
To use the CNC lock function, further activation operations are required after the CNC lock option is activated. For more information, see the instructions below.

Special cases of CNC lock function

- Case 1:** A commissioning archive created after the CNC lock function is **deactivated** is imported after the PPU replacement.
To activate the CNC lock function again, a new activation file (.clc) appropriate for the control system must be created by the machine manufacturer or dealer and imported into the control system.

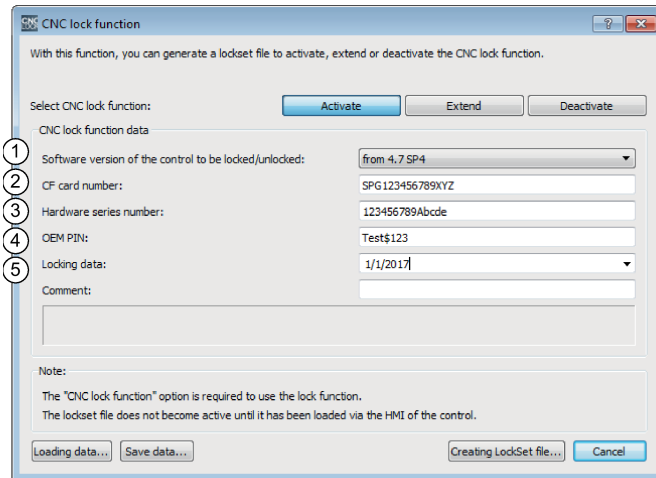
Proceed through the following steps to create the encrypted file for activating the CNC lock function:


1. Start Access MyMachine on your computer.
2. Select the following menu command:

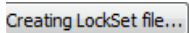


3. Click this button in the displayed dialog box to proceed to the next step.

4. Enter the data required in the dialog box, for example:



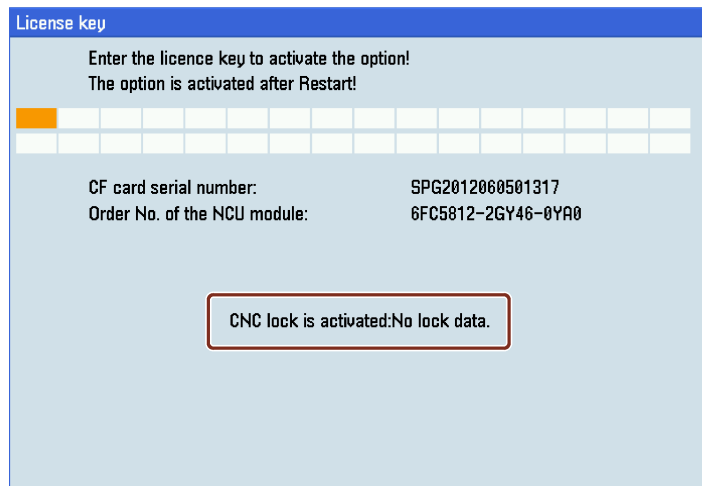
- ① The software version 4.7 SP4 must be selected for the SINUMERIK 808D/SINUMERIK 808D ADVANCED control system.
- ② Serial number of the new CF card, which can be found on the PPU HMI through the following operations:

- ③ Serial number of the new hardware (PPU), which can be found on the PPU rating plate
- ④ The OEM PIN must be limited to 8 to 32 English characters and contain a mixture of upper and lower case letters, numbers, and special characters (spaces are not allowed).
- ⑤ Lock date in accordance with the status of the CNC lock function (last lock date or new lock date)



5. Click this button to save the activation data in the form of .clc file.
6. Store the .clc file in a USB memory stick or a connected network drive.
7. Open the license key dialog box through the following PPU operations:



8. Check and make sure the screen displays as follows, which indicates the CNC lock option is licensed and set properly:



9. Press this softkey to open the file opening dialog box.

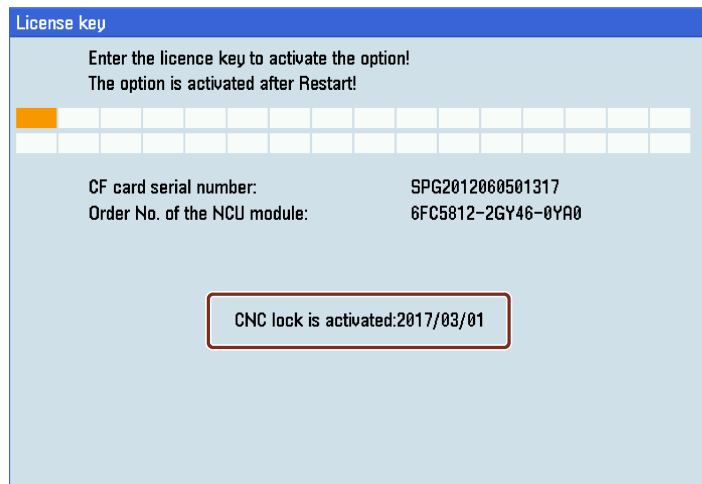


10. Select the target directory and press this key to enter it.



11. Find the desired activation file and press this softkey to import.

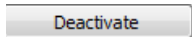
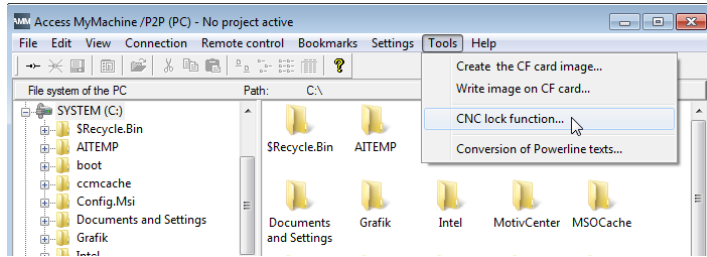
If no error occurs when importing the activation file, the CNC lock function is active in the control system. You can find the lock date being displayed on the HMI screen, for example:



- **Case 2:** A commissioning archive created after the CNC lock function is **activated** is imported after the PPU replacement. In this case, alarm 8062 is displayed and NC start disabled. The cause of the alarm is the new serial numbers of the new control system hardware and new CF card. To unlock the control system, a deactivation file (.clc) appropriate for the control system must be created by the machine manufacturer or dealer and imported into the control system.

Proceed through the following steps to create and import the deactivation file:

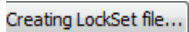
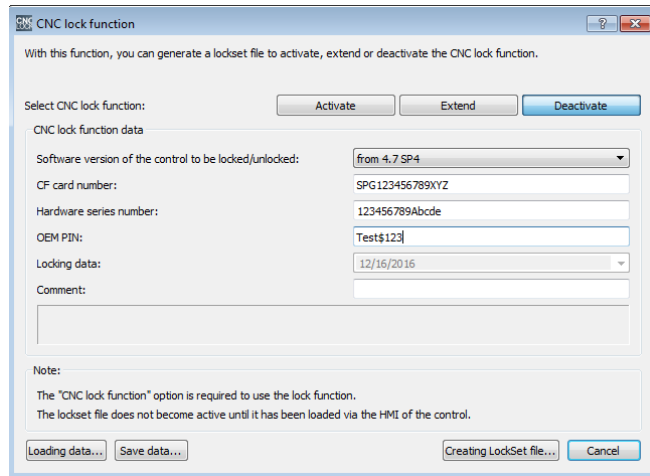
1. Start Access MyMachine on your computer.
2. Select the following menu command:



3. Click this button in the displayed dialog box to proceed to the next step.

4. Enter the following data in the dialog box:
 - Serial number of the new CF card
 - Serial number of the new hardware (PPU)
 - The original assigned OEM PIN

For example:



5. Click this button to save the deactivation data in the form of .clc file.
6. Store the .clc file in a USB memory stick or a connected network drive.
7. Open the license key dialog box through the following PPU operations:



8. Press this softkey to open the file opening dialog box.



9. Select the target directory and press this key to enter it.



10. Find the desired deactivation file and press this softkey to import.

If no error occurs when importing the deactivation file, the CNC lock function is deactivated.

To activate the CNC lock function again, a new activation file (.clc) appropriate for the control system must be created by the machine manufacturer or dealer and imported into the control system. For more information about creating and importing a new activation file, see the steps in Case 1 above.

3.18 CNC lock alarms

Fault description

The control system issues a CNC lock function-specific alarm, i.e. 8060/8061/8062/8063/8064/8065/8066.

Remedy

Alarm 8060/8061

If the .clc file for activating/extending/deactivating the CNC lock function contains incorrect data, alarm 8060/8061 is issued with specific cause as follows:

- Cause 13: The .clc file version is not supported.
- Cause 14: The serial number of CF card is not correct.
- Cause 15: The lock date is invalid.

To clear the alarm, you must correct the corresponding errors in the .clc file with AMM.

Alarm 8062 (cause1/cause 2)

The cause of the alarm is the new serial numbers of the new PPU and CF card after a defective PPU is replaced.

For more information about how to clear alarm 8062, see Case 2 of CNC lock function in Section "Option activation failure after PPU replacement (Page 23)".

Alarm 8063

The alarm is a reminder of the lock date, indicating the remaining days before the NC start is locked.

- Contact the machine manufacturer or dealer to extend/deactivate the CNC lock function.

Alarm 8064

If the lock date is reached, alarm 8064 is issued and the NC start disabled.

- Contact the machine manufacturer or dealer to deactivate the CNC lock function.

Alarm 8065

If a date earlier than the actual date is set, alarm 8065 is issued after NC restart and then the NC start is disabled.

- Correct the date on the HMI and perform an NC restart again.

Alarm 8066

- If a date equal to or later than the lock date is set, alarm 8066 is issued.
 - If no NC restart has been performed, correct the date on the HMI.
 - If an NC restart has been performed, alarm 8064 is issued and the NC start disabled. In this case, the CNC lock must be deactivated and/or reactivated by the machine manufacturer according to the status of the CNC lock function (last lock date, new lock date, or no lock date).
- If a future date earlier than the lock date is set, alarm 8066 is issued.
 - If no NC restart has been performed, correct the date on the HMI.
 - If an NC restart has been performed, a date set in the future is considered as being an actual date and can no longer be reset. This reduces the service life until the lock date. In this case, the CNC lock must be deactivated and/or reactivated by the machine manufacturer according to the status of the CNC lock function (last lock date, new lock date, or no lock date).

Reference

You can find detailed description of the alarms in the SINUMERIK 808D/SINUMERIK 808D ADVANCED Diagnostics Manual.

3.19 OEM PIN forgotten for CNC lock

Fault description

The machine manufacturer or dealer has forgotten the OEM PIN that was assigned during the initial creation and so can no longer create a valid activation file for the associated control system.

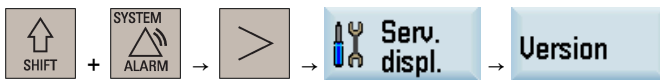
Remedy

The machine manufacturer or dealer must contact the Siemens Hotline and provide the following information to unlock the machine:

- License certificate (CoL) for the option of the CNC lock function
- Serial number of the CF card
- Serial number of the hardware (PPU)
- Software version of the CNC software

Note

The software version of the CNC software can be found on the PPU HMI through the following operations:



After receiving the activation file from the Hotline, the machine manufacturer or dealer can import the file into the control system to unlock the machine.

The unlocking acts, however, only on the hardware of the control system (PPU). The PLC project is not unlocked. For this reason, the original PLC project appropriate for the machine must be available.

Notes

A large rectangular area filled with a fine grid of light gray lines, intended for writing notes. The grid consists of approximately 30 columns and 40 rows of small squares.

4 Service cases of the PLC alarms

In this chapter, the following service cases are described:

General alarms

Case 1	→	Alarm 700010 (Page 32)
Case 2	→	Alarm 700012 (Page 32)
Case 3	→	Alarm 700014 (Page 32)
Case 4	→	Alarm 700015 (Page 33)
Case 5	→	Alarm 700016 (Page 33)
Case 6	→	Alarm 700018 (Page 34)
Case 7	→	Alarm 700021 (Page 34)
Case 8	→	Alarm 700029 (Page 34)
Case 9	→	Alarm 700030 (Page 35)
Case 10	→	Alarm 700060 (Page 35)

Specific milling alarms

Case 1	→	Alarm 700019 (Page 36)
Case 2	→	Alarm 700020 (Page 36)
Case 3	→	Alarm 700031 (Page 37)
Case 4	→	Alarm 700032 (Page 37)
Case 5	→	Alarm 700033 (Page 38)
Case 6	→	Alarm 700034 (Page 38)
Case 7	→	Alarm 700035 (Page 39)
Case 8	→	Alarm 700036 (Page 39)
Case 9	→	Alarm 700059 (Page 40)

Specific turning alarms

Case 1	→	Alarm 700013 (Page 40)
Case 2	→	Alarm 700017 (Page 41)
Case 3	→	Alarm 700022 (Page 41)
Case 4	→	Alarm 700023 (Page 41)
Case 5	→	Alarm 700024 (Page 42)
Case 6	→	Alarm 700025 (Page 42)
Case 7	→	Alarm 700026 (Page 43)
Case 8	→	Alarm 700028 (Page 43)

Note

PLC interface signal addresses are represented with the V structure on the HMI while the manual shows them by the DB structure.

See the following table for the relationship between the two representations.

V Structure		DB Structure	
Access	Example	Example	Access
Bit	V38000002.1	DB3800.DBX2.1	Bit
Byte	VB38000002	DB3800.DBB2	Byte
Word	VW38000002	DB3800.DBW2	Word
Double Word	VD38000004	DB3800.DBD4	Double word

4.1 General alarms

4.1.1 Alarm 700010

Alarm description

700010 Handheld unit active 11:17

It is not a fault, but a reminder that the handwheel is activated and assigned to an axis.

PLC information

PLC address: DB1600.DBX1.2

Subroutine: MINI_HHU (SBR 41)

Remedy

No special action is required. The alarm will disappear after deactivating the handwheel function/unassigning the handwheel.

4.1.2 Alarm 700012

Name of alarm

700012 Spindle being braked 11:14

It is not a fault but a reminder that the spindle is braking.

PLC information

PLC address: DB1600.DBX1.4

Subroutine: SPINDLE (SBR 42)

Remedy

Wait for the end of spindle braking, and then the alarm will disappear.

4.1.3 Alarm 700014

Alarm description

700014 Gear stage change timeout 11:15

The spindle gear change time is beyond the time limit.

PLC information

PLC address: DB1600.DBX1.6

Subroutine: GearChg1_Auto (SBR 49)

Remedy

- Check whether the gear change monitoring time is too short.
- Check whether the spindle gearbox has mechanical problems.

4.1.4 Alarm 700015

Alarm description

700015 Gear position signal error 11:15

The control cannot receive the gear level signal/the control receives the wrong gear level signal.

PLC information

PLC address: DB1600.DBX1.7

Subroutine: GearChg1_Auto (SBR 49)

Remedy

- Check the related parts of the gear level signal as follows:
 - Use the PLC monitoring to detect if there is an input signal at the input interface of the gear level signal.
 - Check whether the input terminals of the interface on the back of the PPU are damaged/loose.
- Check whether the spindle gearbox has mechanical problems.

4.1.5 Alarm 700016

Alarm description

700016 Drives not ready 11:15

The drive is not ready for operation.

Note

This alarm always appears along with the alarm of emergency stop.

PLC information

PLC address: DB1600.DBX2.0

Subroutine: EMG_STOP (SBR 33)

Remedy

- Check whether there is an emergency stop alarm on the control system, which results in this alarm.
- Check whether the drive has an alarm/is not started/is damaged.

For the SINAMICS V60 drive, you should also check the X6 terminal to see whether the wires are loose/broken or whether pins 65 and M24 have faults.



4.1.6 Alarm 700018

Alarm description

700018 Cooling motor overload 11:15

The motor of the cooling system is overloaded. The coolant function cannot be used normally, and the control system issues an alarm.

PLC information

PLC address: DB1600.DBX2.2

Subroutine: COOLING (SBR 44)

Remedy

- Check whether the overload protection switch of the cooling motor works.
- Check the interface X102 on the back of the PPU for the following:
 - Whether the connection of pin 7 is loose/broken
 - Whether pin 10 is connected to 0 V properly

4.1.7 Alarm 700021

Alarm description

700021 Lubricant level too low 11:15

This alarm appears because the lubricating oil level in the oil box is lower than the minimum set value. It may cause mechanical damage if no remedies are taken in time.

PLC information

PLC address: DB1600.DBX2.5

Subroutine: LUBRICAT (SBR 45)

Remedy

- Check whether the lubricating oil level is too low and add lubricating oil in time.
- Check the relevant interfaces on the back of the PPU for the following:
 - Whether the input terminals are damaged/loose
 - Whether pin 10 is connected to 0 V properly

4.1.8 Alarm 700029

Alarm description

700029 Warning: the 1st maintenance task will expire 11:16

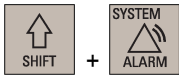
It is not a fault but a reminder that the first service plan preset on the control system is approaching.

PLC information

PLC address: DB1600.DBX3.5

Subroutine: PI_SERVICE (SBR 46)

Remedy



1. Check the preset service maintenance plan and make the relevant preparations.
2. Select the system data operating area.
3. Press this key on the PPU to access the extended softkeys.
4. Enter the main screen of service planning.
5. Press this softkey on the PPU to cancel the alarm.

4.1.9 Alarm 700030

Alarm description

700030

Alarm: the 1st maintenance task has expired 11:16

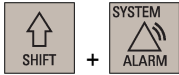
It is not a fault but a reminder that the time is up for the first service plan preset on the control system. You need to execute the service plan immediately.

PLC information

PLC address: DB1600.DBX3.6

Subroutine: PI_SERVICE (SBR 46)

Remedy



1. Select the system data operating area.
2. Press this key on the PPU to access the extended softkeys.
3. Enter the main screen of service planning.
4. Press this softkey on the PPU after executing the relevant service plan to cancel the alarm.

4.1.10 Alarm 700060

Alarm description

700060

PRT/AFL change not possible: channel not reset 11:17

It is not possible to change the program test state on the control system during program execution. You must first place the control system to the reset state.

PLC information

PLC address: DB1600.DBX7.4

Subroutine: MCP_NCK (SBR 37)

Remedy



Press this key on the PPU to cancel the alarm, and the program will continue.



You can also press this key on the MCP to cancel the alarm.

Note: The program execution is also reset in this case.

4.2 Specific milling alarms

4.2.1 Alarm 700019

Alarm description

700019

Coolant level too low 11:15

This alarm appears because the coolant level in the machine is lower than the minimum set value. It may cause mechanical damage if no remedies are taken in time.

PLC information

PLC address: DB1600.DBX2.3

Subroutine: COOLING (SBR 44)

Remedy

- Check whether the coolant level is too low and add coolant in time.
- Check the interface X102 on the back of the PPU for the following:
 - Whether the connection of pin 6 is loose/broken
 - Whether pin 10 is connected properly to 0 V

4.2.2 Alarm 700020

Alarm description

700020

Lubricating motor overload 11:15

The motor of the lubricating system is overloaded. The lubricant function cannot be used normally, and the control system issues an alarm.

PLC information

PLC address: DB1600.DBX2.4

Subroutine: LUBRICAT (SBR 45)

Remedy

- Check whether the overload protection switch of the lubricating motor works.
- Check the relevant interfaces on the back of the PPU for the following:
 - Whether the input terminals are damaged/loose
 - Whether pin 10 is connected to 0 V properly

4.2.3 Alarm 700031

Alarm description

700031 Magazine not in spindle pos. or original pos. 11:16

The system detects that the magazine is neither in the spindle position nor in the original position. The tool change action stops in this case.

PLC information

PLC address: DB1600.DBX3.7

Subroutine: DISK_MGZ_M (SBR 60)

Remedy

- Check the interface X101 on the back of the PPU for the following:
 - Whether the input state of I1.3/I1.4 is normal through the PLC status monitoring
 - Whether the connections of pins 5 and 6 are loose/broken
 - Whether pin 10 is connected to 0 V properly
- Check whether the switches for detecting the extrusion and withdrawal limits of the magazine are faulty.

Note

Press the following key on the MCP to cancel the alarm after the magazine has returned to the correct position:



4.2.4 Alarm 700032

Alarm description

700032 Magazine in spindle pos. and original pos. 11:16

The system detects that the magazine is in the spindle position and the original position at the same time. The tool change action stops in this case.

PLC information

PLC address: DB1600.DBX4.0

Subroutine: DISK_MGZ_M (SBR 60)

Remedy

- Check the interface X101 on the back of the PPU for the following:
 - Whether the input state of I1.3/I1.4 is normal through the PLC status monitoring
 - Whether the connections of pins 5 and 6 are loose/broken
 - Whether pin 10 is connected to 0 V properly
- Check whether the switches for detecting the extrusion and withdrawal limits of the magazine are faulty.

Note

Press the following key on the MCP to cancel the alarm after the magazine has returned to the correct position:



4.2.5 Alarm 700033

Alarm description

700033 Magazine rot. failed: magazine/spindle not ready
11:17

The magazine moving key is pressed when the magazine or the spindle is not ready. The magazine cannot move in this case.

PLC information

PLC address: DB1600.DBX4.1

Subroutine: DISK_MGZ_M (SBR 60)

Remedy



Press this key on the MCP to cancel the alarm.

Note

The magazine cannot move in the following cases:

- The spindle is rotating.
 - The magazine is rotating in the forward/reverse direction.
 - The spindle is executing the tool release command.
 - The emergency stop state is activated.
-

4.2.6 Alarm 700034

Alarm description

700034 Blk search finds tool on spindle <> tool programed
11:17

This alarm appears because the spindle tool number is different from that in the program. The program cannot be executed in this case.

PLC information

PLC address: DB1600.DBX4.2

Subroutine: DISK_MGZ_M (SBR 60)

Remedy

- Check whether the number of the tool to be activated in the current program is consistent with the number of the tool currently loaded on the spindle.
 - Make sure that you use the correct program search method to restart the program.
-

Note

Press the following key on the MCP to cancel the alarm after eliminating the faults.



4.2.7 Alarm 700035

Alarm description

700035 Spindle positioning to unclamping position timeout
11:17

The tool release time exceeds the monitoring time, which results in the failure of spindle tool release.

PLC information

PLC address: DB1600.DBX4.3

Subroutine: DISK_MGZ_M (SBR 60)

Remedy

- Check the interface X101 on the back of the PPU for the following:
 - Whether the input state of I1.5 is normal through the PLC status monitoring
 - Whether the connection of pin 7 is loose/broken
 - Whether pin 10 is connected to 0 V properly
- Check whether the tool release monitoring timer (T19) in the PLC is set correctly.
- Check whether the air pressure is sufficient.
- Check whether the spindle tool release switch works normally.

Note

Press the following key on the MCP to cancel the alarm after eliminating the faults.



4.2.8 Alarm 700036

Alarm description

700036 Spindle positioning to clamping position timeout
11:17

The tool clamping time exceeds the monitoring time, which results in the failure of spindle tool clamping.

PLC information

PLC address: DB1600.DBX4.4

Subroutine: DISK_MGZ_M (SBR 60)

Remedy

- Check the interface X101 on the back of the PPU for the following:
 - Whether the input state of I1.6 is normal through the PLC status monitoring
 - Whether the connection of pin 8 is loose/broken
 - Whether pin 10 is connected to 0 V properly
- Check whether the tool clamping monitoring timer (T20) in the PLC is set correctly.
- Check whether the air pressure is sufficient.
- Check whether the spindle tool clamping switch works normally.

Note

Press the following key on the MCP to cancel the alarm after eliminating the faults.



4.2.9 Alarm 700059

Alarm description

700059 NC start not possible: safety door not closed 11:17

The part program cannot be executed without closing the safety door.

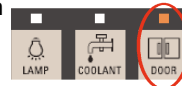
PLC information

PLC address: DB1600.DBX7.3

Subroutine: AUX_MCP (SBR 20)

Remedy

- Check whether the safety door is closed (if using the safety door control key on the MCP, check whether this key is activated).
- Check the interface X102 on the back of the PPU for the following:
 - Whether the connection of pin 7 is loose/broken
 - Whether pin 10 is connected to 0 V properly
- Check whether the door-closed limit switch works normally.



Note

Press the following key on the MCP to cancel the alarm after eliminating the faults.



4.3 Specific turning alarms

4.3.1 Alarm 700013

Alarm description

700013 Operation not allowed: chuck unclamped 11:17

The chuck is not clamped. In this case, the operations of cycle start as well as the forward/reverse rotation of the spindle are not allowed.

PLC information

PLC address: DB1600.DBX1.5

Subroutine: Lock_unlock_T (SBR 56)

Remedy

- Check whether the chuck control key on the MCP is activated (the indicator is lit).
- Check whether the workpiece is clamped in the chuck on the machine.
- Check the interface X102 on the back of the PPU for the following:
 - Whether the connection of pin 5 is loose/broken
 - Whether pin 10 is connected to 0 V properly



4.3.2 Alarm 700017

Alarm description

700017

Chuck operation not allowed: spindle/prog. running 11:15

No chuck operation is allowed when the spindle or the part program is running.

PLC information

PLC address: DB1600.DBX2.1

Subroutine: MAIN (OB1)

Remedy



Press this key on the PPU to cancel the alarm, and the program will continue.



You can also press this key on the MCP to cancel the alarm.

Note: The program execution is also reset in this case.

4.3.3 Alarm 700022

Alarm description

700022

Turret motor overload 11:15

This alarm appears because the turret motor is overloaded, and the turret function cannot be used normally. In this case, all operations are not available.

PLC information

PLC address: DB1600.DBX2.6

Subroutine: MAIN (OB1)

Remedy

- Check whether the overload protection switch of the turret motor works.
- Check the interface X102 on the back of the PPU for the following:
 - Whether the connection of pin 2 is loose/broken
 - Whether pin 10 is connected to 0 V properly

4.3.4 Alarm 700023

Alarm description

700023

Prog. tool pos. number > max. tool pos. number 11:16

The program is incorrect. The programmed tool position number is larger than the maximum tool position number.

PLC information

PLC address: DB1600.DBX2.7

Subroutine: MAIN (OB1)

Remedy

Check the content of the part program, and edit the program according to the actual number of tools created.

4.3.5 Alarm 700024

Alarm description

700024 Max. tool position number illegal 11:16

The maximum number of tools is not set properly (should be set to 4 or 6) on the control system.

PLC information

PLC address: DB1600.DBX3.0

Subroutine: MAIN (OB1)

Remedy

Check whether the setting of MD14510[20] (max. tool number) is correct.

4.3.6 Alarm 700025

Alarm description

700025 No tool position signal from turret 11:16

No position signals can be detected from the turret.

PLC information

PLC address: DB1600.DBX3.1

Subroutine: MAIN (OB1)

Remedy

- Check the turret encoder to see whether the turret signal interface is damaged.
- Check whether the turret has fault.
- Check the corresponding I/O interface on the back of the PPU for the following:
 - Whether the connections are disconnected/broken
 - Whether the terminals are damaged/loose
 - Whether pin 10 is connected to 0 V properly

4.3.7 Alarm 700026

Alarm description

700026 Tool change timeout 11:16

This alarm appears because no tool position is detected within the time limit.

PLC information

PLC address: DB1600.DBX3.2

Subroutine: MAIN (OB1)

Remedy

- Check the turret encoder to see whether the turret signal interface is damaged.
- Check whether the turret has fault.
- Check the corresponding I/O interface on the back of the PPU for the following:
 - Whether the connections are disconnected/broken
 - Whether the terminals are damaged/loose
 - Whether pin 10 is connected to 0 V properly
- Check whether the setting of MD14510[22] is correct (the value can be increased appropriately).

4.3.8 Alarm 700028

Alarm description

700028 Tool unclamped 11:16

The control system does not detect the tool clamp signal.

PLC information

PLC address: DB1600.DBX3.4

Subroutine: Turret3_CODE_T (SBR 53)

Remedy

Check the tool clamp signal in the following ways:

- Check whether the relevant input terminals on the back of the PPU are loose/damaged.
- Check whether the connections of relevant input terminals on the back of the PPU are damaged/broken.
- Check whether there is input signal at the corresponding input interface through the PLC monitoring.

Notes

A large rectangular area filled with a light gray grid pattern, intended for writing notes. The grid consists of small, uniform squares.

5 Service cases of the NC program alarms

In this chapter, the following service cases are described:

- Case 1 → G81 deactivated in ISO mode (Page 45)
- Case 2 → M10/M11 deactivated (Page 45)
- Case 3 → Thread cutting interruption (Page 45)
- Case 4 → Wrong zero offsets in ISO mode (Page 46)

5.1 G81 deactivated in ISO mode

Fault description

G81 is deactivated when the control system is switched to ISO mode.

Remedy

Replace "-ZSFR[0]" with "-ZSFR[10]". Because the tool change cycle uses "-ZSFR[0]" which conflicts with the ISO machine data by default.

5.2 M10/M11 deactivated

Fault description

- Case 1: Run the program in the MDA mode, M10 is deactivated so that the chuck cannot be clamped.
- Case 2: Run the program in the AUTO mode, M11 is deactivated so that the chuck cannot be released.

Remedy

Case 1

In the PLC program an "interlock" exists, so the program running is prohibited when the chuck is released. You need to modify the PLC subroutine. In most cases, with the chuck released, the spindle is not allowed to run in CW or CCW direction when in the positioning or oscillating mode.

Case 2

A dwell of at least two seconds between M5 and M11 should be programmed.

Example:

```
M5           ; Spindle stop.
G4F2        ; 2 seconds dwell time.
M11         ; Chuck is released.
```

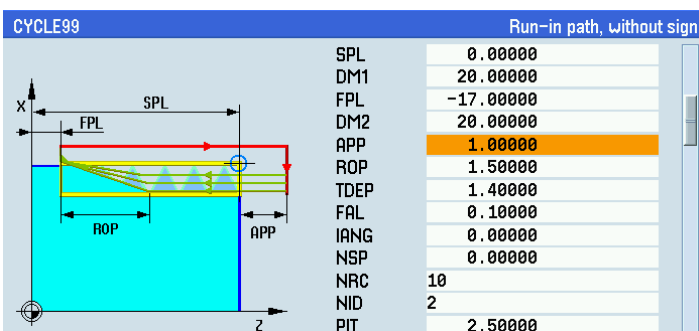
5.3 Thread cutting interruption

Fault description

The internal thread cutting is interrupted before the cycle is finished. In this case, no alarm appears and the spindle is still running.

Remedy

Check the value format of the parameter "APP" (running path, without sign). A decimal point may have been used between the two commas for parameter APP.



5.4 Wrong zero offsets in ISO mode

Fault description

The zero offset activated in ISO mode cannot be reset to zero after the control system is switched back to Siemens mode.

Remedy



1. Select the machining operating area.



2. Switch to "MDA" mode.

3. Enter the following program in the block editor:

G291

G50.3 X0 Z0

4. Press this key on the MCP, and the zero offset activated previously in ISO mode is reset to zero.



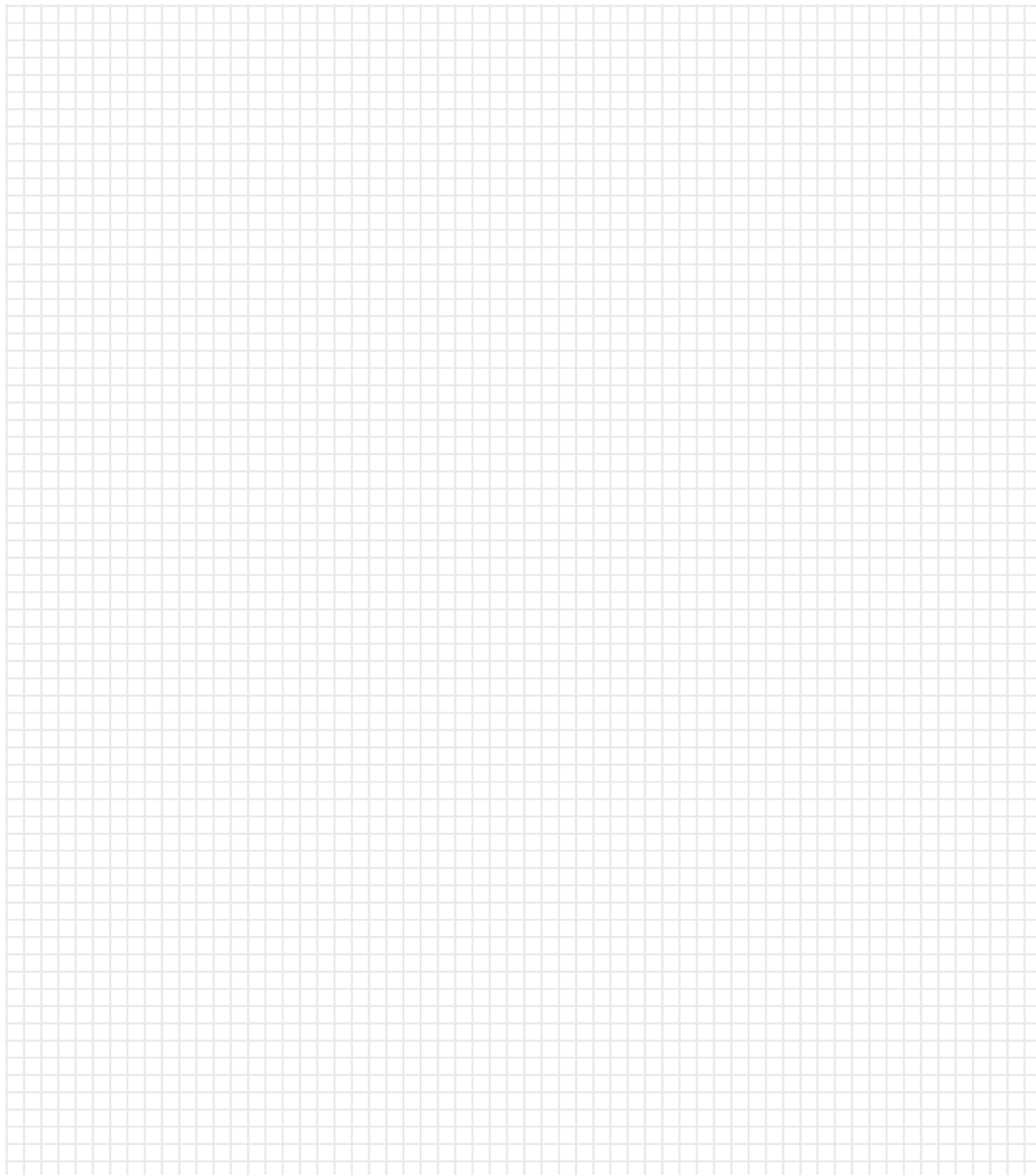
Notes

A large rectangular area filled with a light gray grid pattern, intended for writing notes. The grid consists of small, uniform squares.

6 General NC program alarms

For more information about the general NC program alarms, refer to the SINUMERIK 808D/SINUMERIK 808D ADVANCED Diagnostics Manual.

Notes

A large grid of graph paper, consisting of a 30x40 grid of small squares, intended for taking notes.

Notes

A large rectangular area filled with a fine grid of light gray lines, intended for writing notes. The grid consists of approximately 30 columns and 40 rows of small squares.

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