

# Overview of functions



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The functionality of the SINUMERIK 808D family (SINUMERIK 808D, SINUMERIK 808D ADVANCED) complies with the export list restrictions. Accordingly, these CNC controls do not require official approval in accordance with EU or German law.

The information in the overview of functions of SINUMERIK 808D and SINUMERIK 808D ADVANCED controls is based on the following software version:

Control system	Software version
SINUMERIK 808D PPU 141.1	4.4 SP2
SINUMERIK 808D ADVANCED PPU 160.2/PPU161.2	4.6 SP1

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### Control structure and configuration/Drives/ Connectable measuring systems

✓ Basic version O Option – Not available	Article No.	SINUMERIK 808D PPU 141.1		SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2	
	Instructions	Turning	Milling	Turning	Milling
<b>Control structure and configuration</b>					
Panel-based control system comprising:					
• Compact operator panel		✓	✓	✓	✓
• CNC/PLC Control Unit		✓	✓	✓	✓
• Onboard digital PLC inputs/outputs		✓	✓	✓	✓
• CF card with system software Export version		Turning	Milling	Turning	Milling
SINUMERIK operator panel CNC:					
• Operator panel layout horizontal/vertical		✓/–	✓/–	✓/✓	✓/✓
• Color display		7.5"	7.5"	7.5"	7.5"
• Display resolution		640 × 480	640 × 480	640 × 480	640 × 480
• Integrated CNC keyboard with hard keys		✓	✓	✓	✓
• Specific CNC keyboard layout for		Turning	Milling	Turning	Milling
• Operator panel with Simplified Chinese layout		✓	✓	✓	✓
• Operator panel with English layout		✓	✓	✓	✓
SINUMERIK Operate BASIC		✓	✓	✓	✓
Quantity of pulse/direction interfaces for feed axis converter		3	3	–	–
Quantity of bus interfaces for feed axis converter		–	–	1	1
Quantity of analog ±10 V interfaces for spindle converter		1	1	1	1
Channels/mode groups MG:					
• Maximum configuration		1	1	1	1
CNC user memory (buffered) for CNC part programs	The 1.25 MB memory is for storing and editing the user program. There is another 500 MB memory for NC program storage.	1.25 MB	1.25 MB	1.25 MB	1.25 MB
Axes/spindles:					
• Basic quantity of axes/spindles		3	4	3	4
• Maximum configuration axes/spindles		4	4	5	5
• Axis/spindle, each additional	<b>6FC5800-0AK70-0YB0</b>	O	–	O	O
<b>Drives</b>					
Feed drives:					
• SINAMICS V60 via pulse/direction interface		O	O	–	–
• SINAMICS V70 via bus interface		–	–	O	O
• 3rd-party feed axis converter via pulse/direction interface		O	O	–	–
Spindles:					
• Analog Drive Interface		O	O	O	O
<b>Connectable measuring systems</b>					
Number of measuring systems per axis, max.		1	1	1	1
Incremental encoder installed in SIMOTICS S-1FL5 feed motors		✓	✓	–	–
Incremental encoder installed in SIMOTICS S-1FL6 feed motors		–	–	✓	✓
Absolute encoder installed in SIMOTICS S-1FL6 feed motors		–	–	✓	✓
RS422 (TTL) direct incremental spindle encoder	<b>6FX2001-2EB02</b>	O	O	O	O

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### Connectable CNC accessories/ Axis functions

✓ Basic version ○ Option – Not available	Article No.	SINUMERIK 808D PPU 141.1		SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2	
	Instructions	Turning	Milling	Turning	Milling
<b>Connectable CNC accessories</b>					
Machine Control Panel:					
• SINUMERIK 808D MCP horizontal:					
- English layout	6FC5303-0AF35-0AA0	○	○	○	○
- Simplified Chinese layout	6FC5303-0AF35-0CA0	○	○	○	○
• SINUMERIK 808D MCP vertical:					
- English layout	6FC5303-0AF35-2AA0	○	○	○	○
- Simplified Chinese layout	6FC5303-0AF35-2CA0	○	○	○	○
• SINUMERIK 808D MCP vertical: with handwheel slot					
- English layout	6FC5303-0AF35-3AA0	○	○	○	○
- Simplified Chinese layout	6FC5303-0AF35-3CA0	○	○	○	○
• 3rd-party MCP via onboard digital PLC inputs/outputs		○	○	○	○
Number of digital tool probes, max.		–	1	–	1
Number of electronic handwheels RS422 5 V DC, max.		2	2	2	2
Electronic handwheels 5 V DC:					
• With 120 mm × 120 mm front panel	6FC9320-5DB01	○	○	○	○
• With 76.2 mm × 76.2 mm front panel	6FC9320-5DC01	○	○	○	○
• Without front panel, without setting wheel	6FC9320-5DF01	○	○	○	○
• Without front panel, with setting wheel	6FC9320-5DM00	○	○	○	○
<b>Axis functions</b>					
Feedrate override		0 ... 200 %	0 ... 200 %	0 ... 200 %	0 ... 200 %
Feedrate override axis-specific		0 ... 200 %	0 ... 200 %	0 ... 200 %	0 ... 200 %
Traversing range decades		± 9	± 9	± 9	± 9
Rotary axis, turning endlessly		✓	✓	✓	✓
Velocity, max.		300 m/s	300 m/s	300 m/s	300 m/s
Acceleration with jerk limitation		✓	✓	✓	✓
Programmable acceleration		✓	✓	✓	✓
Feedrate interpolation		✓	✓	✓	✓
Separate path feed for corners and chamfers		✓	✓	✓	✓
Travel to fixed stop		✓	✓	✓	✓
Velocity-dependent feed forward control		✓	✓	✓	✓
Friction compensation		–	–	✓	✓
Auto servo tuning (AST)		–	–	✓	✓
Direct servo control (DSC)		–	–	✓	✓
TRANSMIT/TRACYL without Y axis	6FC5800-0AS50-0YB0	–	–	○	○
Pair of synchronized axes (gantry axes), basic	6FC5800-0AS51-0YB0	–	–	○	○

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### Spindle functions/Interpolations/Measuring functions/ Technologies/Motion-synchronous actions

✓ Basic version O Option – Not available	Article No.	SINUMERIK 808D PPU 141.1		SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2	
	Instructions	Turning	Milling	Turning	Milling
<b>Spindle functions</b>					
Spindle speed, analog		✓	✓	✓	✓
Spindle speed, max. programmable value range (display ± 999999999.9999)		10 <sup>6</sup> ... 0.0001	10 <sup>6</sup> ... 0.0001	10 <sup>6</sup> ... 0.0001	10 <sup>6</sup> ... 0.0001
Spindle override		0 ... 200 %	0 ... 200 %	0 ... 200 %	0 ... 200 %
Gear stages		5	5	5	5
Intermediate gear		✓	✓	✓	✓
Automatic gear stage selection		✓	✓	✓	✓
Oriented spindle stop	Requires direct spindle encoder.	✓	✓	✓	✓
Spindle speed limitation min./max.		✓	✓	✓	✓
Constant cutting rate		✓	✓	✓	✓
Spindle control via PLC (positioning, oscillation)		✓	✓	✓	✓
Changeover to axis mode	Requires servo spindle and direct encoder.	✓	✓	✓	✓
Axis synchronization on-the-fly	Requires servo spindle and direct encoder.	✓	✓	✓	✓
Thread run-in and run-out programmable		✓	✓	✓	✓
Thread cutting with constant or variable pitch		✓	✓	✓	✓
Tapping with compensating chuck/rigid tapping	Requires servo spindle and direct encoder.	✓	✓	✓	✓
<b>Interpolations</b>					
Linear interpolation axes, max.		3	3	3	4
Circle via center point and end point		✓	✓	✓	✓
Circle via interpolation point		✓	✓	✓	✓
Helical interpolation		✓	✓	✓	✓
Universal interpolator NURBS (non-uniform rational B splines)		✓	✓	✓	✓
Continuous-path mode with programmable rounding clearance		✓	✓	✓	✓
Advanced Surface		–	✓	–	✓
Advanced Surface look ahead, velocity control and CNC block compression		–	✓	–	✓
High-speed setting cycle CYCLE 832		–	✓	–	✓
Look ahead (number of blocks)		1	50	1	50
<b>Measuring functions</b>					
Measuring in JOG:					
• Number of probes (switching) with/without deletion of distance-to-go		–	1	–	1
<b>Technologies</b>					
Contour handwheel	6FC5800-0AM08-0YB0	–	–	O	O
<b>Motion-synchronous actions</b>					
CNC inputs/outputs, high-speed:					
• Digital inputs CNC onboard		3	3	3	3
• Digital outputs CNC onboard		1	1	1	1
Synchronized actions and high-speed auxiliary function output incl. 3 synchronous functions		✓	✓	✓	✓
Positioning axes and spindles via synchronized actions (command axes)		✓	✓	✓	✓

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Open Architecture/  
CNC programming

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✓ Basic version O Option – Not available	Article No.	SINUMERIK 808D PPU 141.1		SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2	
	Instructions	Turning	Milling	Turning	Milling
<b>Open Architecture</b>					
Customizable HMI:					
• Customizable screens in the HMI		✓	✓	✓	✓
• Input screens for customized user cycles		✓	✓	✓	✓
<b>CNC programming</b>					
Programming methods:					
• SINUMERIK style programming language (DIN 66025 and high-level language expansion)		✓	✓	✓	✓
• ISO code		✓	✓	✓	✓
Main program call from main program and subroutine		✓	✓	✓	✓
Subprogram levels, max.		11	11	11	11
Number of subprogram repetitions		≤ 9999	≤ 9999	≤ 9999	≤ 9999
Number of levels for skip blocks		1	1	1	1
Polar coordinates		✓	✓	✓	✓
Dimensions metric/inch, changeover:					
• Manually		✓	✓	✓	✓
• Via program		✓	✓	✓	✓
Inverse-time feedrate		✓	✓	✓	✓
Auxiliary function output:					
• Via M word, max. programmable value range		INT 231 <sup>-1</sup>	INT 231 <sup>-1</sup>	INT 231 <sup>-1</sup>	INT 231 <sup>-1</sup>
• Via H word, max. programmable value range REAL ± 3.4028 ex 38 (display ± 999999999.9999)		INT -231 ... 231 <sup>-1</sup>	INT -231 to 231 <sup>-1</sup>	INT -231 to 231 <sup>-1</sup>	INT -231 to 231 <sup>-1</sup>
Basic frames, max. number		1	1	1	1
Settable offsets, max. number		6	6	6	6
Work offsets, programmable (frames)		✓	✓	✓	✓
Global and local user data		✓	✓	✓	✓
Global program user data		✓	✓	✓	✓
SINUMERIK high-level CNC language with:					
• Frame concept TRANS/ROT/SCALE/MIRROR		✓	✓	✓	✓
• User variables, configurable		✓	✓	✓	✓
• Predefined user variables (arithmetic parameters)		✓	✓	✓	✓
• Predefined user variables (arithmetic parameters), configurable		✓	✓	✓	✓
• Read/write system variables		✓	✓	✓	✓
• Indirect programming		✓	✓	✓	✓
• Program jumps and branches		✓	✓	✓	✓
• Arithmetic and trigonometric functions		✓	✓	✓	✓
• Compare operations and logic combinations		✓	✓	✓	✓
• Macro techniques		✓	✓	✓	✓
• Control structures IF-ELSE-ENDIF		✓	✓	✓	✓
• Control structures WHILE, FOR, REPEAT, LOOP		✓	✓	✓	✓
• STRING functions		✓	✓	✓	✓

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## SINUMERIK 808D family

### Technology cycles/ Canned cycles

- ✓ Basic version
- Option
- Not available

Article No.

SINUMERIK 808D  
PPU 141.1SINUMERIK 808D ADVANCED  
PPU 160.2/PPU 161.2

Instructions

Turning

Milling

Turning

Milling

#### Technology cycles

Technology cycles for SINUMERIK style programming language:

- Drilling, centering – CYCLE81
- Drilling, counterboring – CYCLE82
- Deep-hole drilling – CYCLE83
- Rigid tapping – CYCLE84
- Tapping with compensating chuck – CYCLE840
- Reaming 1 – CYCLE85
- Boring – CYCLE86
- Position pattern: Row/grid of holes – HOLES1
- Position pattern: Circle of holes – HOLES2
- CYCLE 92 cut-off
- Groove – CYCLE93
- Undercut (forms E and F according to DIN) – CYCLE94
- Contour cutting with relief cut – CYCLE95
- Thread undercut – CYCLE96
- Thread cutting – CYCLE99
- Chaining of threads – CYCLE98
- Face milling – CYCLE71
- Contour milling – CYCLE72
- Rectangular spigot milling – CYCLE76
- Circular spigot milling – CYCLE77
- Long holes located on a circle – LONGHOLE
- Slots on a circle – SLOT1
- Circumferential slot – SLOT2
- Milling a rectangular pocket – POCKET3
- Milling a circular pocket – POCKET4
- Thread milling – CYCLE90

#### Canned cycles

Canned cycles for ISO code milling:

- Deep hole drilling cycle with chip breakage (G73)
- Left tapping cycle (G74)
- Fine boring cycle (G76)
- Drilling cycle counterboring (G81)
- Countersink drilling cycle (G82)
- Deep hole drilling cycle with chip removal (G83)
- Right tapping cycle (G84)
- Drilling cycle (G85)
- Drilling cycle, retraction with G00 (G86)
- Reverse countersinking (G87)
- Drilling cycle, retraction with machining feedrate (G89)

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### Canned cycles/Program and workpiece management/ Programming support/Simulation

✓ Basic version O Option – Not available	Article No.	SINUMERIK 808D PPU 141.1		SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2	
	Instructions	Turning	Milling	Turning	Milling
<b>Canned cycles (continued)</b>					
Canned cycles for ISO code turning (G code system A):					
• Thread cutting with constant lead (G32)		✓	–	✓	–
• Thread cutting with variable lead (G34)		✓	–	✓	–
• Finishing cycle (G70)		✓	–	✓	–
• Stock removal cycle longitudinal axis (G71)		✓	–	✓	–
• Stock removal cycle transverse axis (G72)		✓	–	✓	–
• Repeat contour (G73)		✓	–	✓	–
• Deep hole drilling and recessing in longitudinal axis (G74)		✓	–	✓	–
• Deep hole drilling and recessing in facing axis (G75)		✓	–	✓	–
• Multiple thread cutting (G76)		✓	–	✓	–
• Axial cutting (G90)		✓	–	✓	–
• Thread cutting (G92)		✓	–	✓	–
• Radial cutting (G94)		✓	–	✓	–
<b>Program and workpiece management</b>					
Part programs on PPU, max. number		255	255	255	255
Readable part program names		✓	✓	✓	✓
Sub-folders for part programs with readable names		✓	✓	✓	✓
<b>Programming support</b>					
Background editing		✓	✓	✓	✓
Program editor:					
• Full screen CNC editor with cut, copy and paste functionality		✓	✓	✓	✓
• Programming support programGUIDE BASIC for SINUMERIK technology cycles		✓	✓	✓	✓
• Contour computer with programming graphics/free contour input (contour calculator)		✓	✓	✓	✓
<b>Simulation</b>					
2D simulation		✓	✓	✓	✓
Real-time simulation of current machining operation		✓	✓	✓	✓

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### Operating modes/ Tools

✓ Basic version ○ Option – Not available	Article No.	<b>SINUMERIK 808D PPU 141.1</b>		<b>SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2</b>	
	Instructions	Turning	Milling	Turning	Milling
<b>Operating modes</b>					
Manual Machine plus for manual controlled semi-CNC lathes	<b>6FC5800-0AP07-0YB0</b>	○	–	○	–
JOG:					
• T, S, M screen for quick activation of machine functions		✓	✓	✓	✓
• Face milling cycle for workpiece preparation		–	✓	–	✓
• Handwheel selection		✓	✓	✓	✓
• Switchover: inch/metric		✓	✓	✓	✓
• Manual measurement of work offset		✓	✓	✓	✓
• Manual measurement of tool offset		✓	✓	✓	✓
• Semi-automatic tool measurement with tool probe		–	✓	–	✓
MDI:					
• Input in text editor		✓	✓	✓	✓
Automatic:					
• Execution from memory stick connected to USB interface on operator panel front		✓	✓	✓	✓
• Program control (dry-run feed, block skip etc.)		✓	✓	✓	✓
• Program editing		✓	✓	✓	✓
• Block search with/without calculation		✓	✓	✓	✓
Repos (repositioning on the contour):					
• With operator command/semi-automatically		✓	✓	✓	✓
• Program-controlled		✓	✓	✓	✓
Preset:					
• Set actual value		✓	✓	✓	✓
<b>Tools</b>					
Tools/cutting edges, max.		64/128	64/128	64/128	64/128
Tool types:					
• Turning		✓	–	✓	–
• Drilling		✓	✓	✓	✓
• Milling		–	✓	In preparation	✓
Tool radius compensations in plane:					
• With approach and retract strategies		✓	✓	✓	✓
• With transition circle/ellipse on outer edges		✓	✓	✓	✓
Tool offset selection via T and D numbers		✓	✓	✓	✓
Look-ahead detection of contour violations		✓	✓	✓	✓



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### Communication and data management

✓ Basic version O Option – Not available	Article No.	SINUMERIK 808D PPU 141.1		SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2	
	Instructions	Turning	Milling	Turning	Milling
<b>Communication and data management</b>					
USB interface on panel front for memory stick and USB PC keyboard:					
• Transfer of:		✓	✓	✓	✓
- Machine and setting data		✓	✓	✓	✓
- PLC data		✓	✓	✓	✓
- Compensation data		✓	✓	✓	✓
- Tool and work offset data		✓	✓	✓	✓
- R parameter		✓	✓	✓	✓
- HMI data		✓	✓	✓	✓
- User cycles		✓	✓	✓	✓
- Part programs		✓	✓	✓	✓
- PLC program (*.pte)		✓	✓	✓	✓
• Execute part program		✓	✓	✓	✓
Serial interface RS232C:					
• Part program send/receive		✓	✓	✓	✓
• PLC program upload/download		✓	✓	✓	✓
• PLC status monitoring		✓	✓	✓	✓
Ethernet interface:					
• Transfer of:		–	–	✓	✓
- Machine and setting data		–	–	✓	✓
- PLC data		–	–	✓	✓
- Compensation data		–	–	✓	✓
- Tool and work offset data		–	–	✓	✓
- R parameter		–	–	✓	✓
- HMI data		–	–	✓	✓
- User cycles		–	–	✓	✓
- Part programs		–	–	✓	✓
• Execute part program		–	–	✓	✓
• Part program send/receive		–	–	✓	✓
• PLC program upload/download		–	–	✓	✓
• PLC status monitoring		–	–	✓	✓

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### HMI functions/Monitoring functions/ Compensations

✓ Basic version ○ Option – Not available	Article No.	<b>SINUMERIK 808D PPU 141.1</b>		<b>SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2</b>	
	Instructions	Turning	Milling	Turning	Milling
<b>HMI functions</b>					
SINUMERIK 808D startGUIDE:					
<ul style="list-style-type: none"> <li>Startup assistant Built-in graphical interactive assistant for 1st commissioning of machines with SINUMERIK 808D</li> </ul>		✓	✓	✓	✓
<ul style="list-style-type: none"> <li>Series startup assistant Built-in graphical interactive assistant for the series production of machines with SINUMERIK 808D</li> </ul>		✓	✓	✓	✓
<ul style="list-style-type: none"> <li>Sales assistant Built-in viewer for bitmaps with sales arguments for SINUMERIK 808D, extendable by customer-specific sales arguments for the machine</li> </ul>		✓	✓	✓	✓
Online help for programming, alarms and machine data		✓	✓	✓	✓
CNC program messages		✓	✓	✓	✓
Screen saver		✓	✓	✓	✓
Access protection level support		✓	✓	✓	✓
Chinese input method editor for part program names, sub-directory names and CNC comments		✓	✓	✓	✓
Operating software languages:					
<ul style="list-style-type: none"> <li>Simplified Chinese, English, German, Portuguese, Russian</li> </ul>		✓	✓	✓	✓
<ul style="list-style-type: none"> <li>Language switchover online</li> </ul>		✓	✓	✓	✓
<ul style="list-style-type: none"> <li>Additional languages, use of language extensions</li> </ul>		In preparation	In preparation	In preparation	In preparation
<b>Monitoring functions</b>					
Working area limitation		✓	✓	✓	✓
Limit switch monitoring		✓	✓	✓	✓
Software and hardware limit switches		✓	✓	✓	✓
Position monitoring		✓	✓	✓	✓
Standstill (zero-speed) monitoring		✓	✓	✓	✓
Clamping monitoring		✓	✓	✓	✓
Contour monitoring		✓	✓	✓	✓
Axis limitation from the PLC		✓	✓	✓	✓
Spindle speed limitation		✓	✓	✓	✓
<b>Compensations</b>					
Backlash compensation		✓	✓	✓	✓
Leadscrew error compensation		✓	✓	✓	✓
Bidirectional leadscrew error compensation	<b>6FC5800-0AM54-0YB0</b>	–	–	○	○

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### PLC area

✓ Basic version O Option – Not available	Article No.	SINUMERIK 808D PPU 141.1		SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2	
	Instructions	Turning	Milling	Turning	Milling
<b>PLC area</b>					
Integrated PLC		✓	✓	✓	✓
Style of PLC program:					
• Prepared and ready to run PLC program on board		✓	✓	✓	✓
• Fully customized PLC programs by offline PLC programming tool		✓	✓	✓	✓
Fixed cycle time for PLC		12 ms	12 ms	12 ms	12 ms
Maximum number of ladder steps		6000	6000	6000	6000
PLC programming language:					
• LAD ladder diagram		✓	✓	✓	✓
Offline PLC programming tool	<b>6FC5811-0CY00-0YA8</b> On toolbox DVD-ROM	O	O	O	O
PLC Ladder Viewer on PPU		✓	✓	✓	✓
PLC I/O:					
• On-board digital PLC	Connection via screw-clamp connector on PPU.				
- Inputs 24 V		24	24	24	24
- Outputs 24 V, 0.2 A		16	16	16	16
• On-board digital PLC	Connection via 50-pole ribbon cable connector.				
- Inputs 24 V		48	48	48	48
- Outputs 24 V, 0.2 A		32	32	32	32
Connection via 50-pole ribbon cable connector to PPU					
• Terminal strip converter	<b>6EP5406-5AA00</b>	O	O	O	O
• Cable set	<b>6EP5306-5BG00</b>	O	O	O	O
PLC alarms/messages, max. number		128	128	128	128
Bit memories, number		256 bytes	256 bytes	256 bytes	256 bytes
Timers, number		64	64	64	64
Counters, number		64	64	64	64
Subroutines		64	64	64	64
User machine data for configuring the PLC user program		✓	✓	✓	✓

# Overview of functions

## SINUMERIK 808D family

### Commissioning and serial production/Diagnostic functions/ Service and maintenance/Training and offline programming

✓ Basic version ○ Option – Not available	Article No.	SINUMERIK 808D PPU 141.1		SINUMERIK 808D ADVANCED PPU 160.2/PPU 161.2	
	Instructions	Turning	Milling	Turning	Milling
<b>Commissioning and serial production</b>					
SINUMERIK 808D startGUIDE		✓	✓	✓	✓
<ul style="list-style-type: none"> <li>Startup assistant Built-in graphical interactive assistant for 1st commissioning of machines with SINUMERIK 808D family</li> </ul>		✓	✓	✓	✓
<ul style="list-style-type: none"> <li>Series startup assistant Built-in graphical interactive assistant for the series production of machines with SINUMERIK 808D family</li> </ul>		✓	✓	✓	✓
Backup/restore of system software via USB memory stick		✓	✓	✓	✓
Cloning of serial startup files for serial production via USB memory stick		✓	✓	✓	✓
SINUMERIK 808D family Toolbox with:	<b>6FC5811-0CY00-0YA8</b> On toolbox DVD-ROM.	○	○	○	○
<ul style="list-style-type: none"> <li>Offline PLC programming tool</li> </ul>		○	○	○	○
<ul style="list-style-type: none"> <li>Sample PLC program</li> </ul>		○	○	○	○
<ul style="list-style-type: none"> <li>MCP strip template</li> </ul>		○	○	○	○
<ul style="list-style-type: none"> <li>MCP icon library</li> </ul>		○	○	○	○
<ul style="list-style-type: none"> <li>User manuals</li> </ul>		○	○	○	○
<ul style="list-style-type: none"> <li>Access My Machine (AMM)</li> </ul>		✓	✓	✓	✓
<b>Diagnostic functions</b>					
Alarms and messages		✓	✓	✓	✓
Action log can be activated for diagnostic purposes		✓	✓	✓	✓
PLC status		✓	✓	✓	✓
LAD display		✓	✓	✓	✓
<b>Service and maintenance</b>					
Integrated service planner for monitoring of service intervals		✓	✓	✓	✓
One touch system backup (Ctrl + S)		✓	✓	✓	✓
CNC memory buffering via battery		✓	✓	✓	✓
<b>Training and offline programming</b>					
SINUMERIK 808D on PC	<b>6FC5548-0YC20-0YA0</b> Free download of trial version from: <a href="http://www.cnc4you.com">www.cnc4you.com</a>	○	○	○	○