

SINUMERIK CNC controls

SINUMERIK 828D

PPU 281.3/PPU 280.3

Overview



SINUMERIK 828D PPU 281.3, horizontal



SINUMERIK 828D PPU 280.3, vertical

The SINUMERIK 828D is an operator-panel CNC which combines all the components of a CNC in one unit:

- CNC, PLC, HMI
- 10.4" TFT color display
- Full CNC keyboard
- Closed-loop control for 6 drives

The motors can easily be connected to the digital drive system via DRIVE-CLiQ. In combination with the modular structure of the SINAMICS S120 drive system, this design is conceived to ensure very simple and rugged installation with minimum wiring overhead.

The performance range of the CNC has been precisely selected to meet the requirements of standard turning, milling and grinding machines – from one-off production runs to industrial scale manufacture. Thanks to the technology-specific variants for turning, milling and grinding, the system parameters are optimized for the machine, making the commissioning process much quicker and easier.

The operator-panel CNC is mounted from the rear using special clamps included in the scope of supply.

Benefits

Benefits for the machine operator

- High-quality, rugged, magnesium die-cast operator panels with degree of protection IP65
- Maintenance-free operator panel front, e.g. no fan, battery or hard disk
- Extremely user-friendly operation through integrated QWERTY keyboard with short-stroke keys
- Easy data exchange thanks to USB and Ethernet interfaces on the operator panel front
- Simple operation using ShopTurn and ShopMill software
- Advanced Surface and Top Surface: Innovative, high-performance CNC functions provide top quality of workpiece surface with minimum machining times
- Unique spectrum of technology cycles – ranging from the machining of any turning and milling contour with residual material detection to in-process measurements and balance cutting
- G-Tech is a grinding package with an extensive scope of CNC functions ranging from the low-cost entry-level model up to highly productive machines
- Animated Elements: Optimum operator guidance thanks to CNC input screens with animated elements
- Easy input via CNC direct keys on the CNC keyboard
- SINUMERIK Integrate for production
Access MyMachine /Ethernet permits remote diagnostics from anywhere in the world
- Easy Message: Integrated mobile radio modem for optimum process monitoring and maximum machine availability via text messages (SMS)
- Easy Extend: Flexible handling of machine units, e.g. an A axis/parts machine
- Maintenance scheduler: Signaling of pending maintenance tasks in accordance with specified maintenance intervals

Benefits for the machine manufacturer

- High system quality through reduction in hardware interfaces
- Drive-based Safety Integrated for compliance with the machinery directive
- Less complex system thanks to technology-specific system software
- Faster, easier commissioning thanks to preset system parameters
- Automatic system configuration by means of single PLC I/Os
- Service Planner: Integrated planner for machine maintenance intervals
- Easy Archive: Integrated archiving procedure for optimum handling of commissioning updates
- Easy Extend: Integrated wizard for optional machine units
- Simple PLC programming with symbols and comments on the CNC
- No outlay required by dealers and machine manufacturers thanks to free PLC programming tool
- Faults will be remedied for a period of 24 months following 2nd commissioning for all system components in accordance with the OSS service description for 36 months

Function

- Operator-panel CNC with dedicated system software variants for turning, milling and grinding technologies
- Proximity/clearance sensor for smart display control
- Operator panel variants for horizontal or vertical operator panel housings
- Integrated QWERTY full CNC keyboard with short-stroke keys
- CompactFlash card, USB and Ethernet interfaces on the operator panel front
- Additional Ethernet interface at the rear of the CNC for connection to factory network
- Additional USB interface at the rear of the CNC for machine control panel
- Integrated PLC based on the SIMATIC S7-200 command set with ladder logic programming
- I/O interface based on PROFINET for the connection of PLC I/O devices and a machine control panel
- Connection of a GSM/GPRS modem: Easy Message (option)
- Integrated PLC editor in SINUMERIK Operate makes it possible to edit the PLC program quickly without any additional PC tools
- CNC options subject to license
- Up to 6 axes/spindles
- Up to 8 axes/spindles with SW 28x and SINAMICS NX10.3
- Up to 10 axes/spindles with SW 28xA and SINAMICS NX15.3 for turning advanced and G-Tech advanced
- 1 analog spindle
- 1 machining channel, 2 machining channels with SW 28xA for turning advanced (basic scope) and G-Tech advanced
- 1 mode group, 2 mode groups with SW 28xA for turning advanced
- EES function – unlimited expansion of CNC memory
- Integrated tool management with tool life monitoring
- Graphical machining step programming ShopTurn/ShopMill (option)
- Top Surface
- User interface SINUMERIK Operate – same look and feel as SINUMERIK 840D sl
- Configurable user screens with SINUMERIK Integrate for engineering Run MyScreens (Easy Screen)
- SINUMERIK Integrate for engineering Run MyRobot /EasyConnect for simple interfacing of robots and handling systems
- Integrated data archiving procedure for simple data updates

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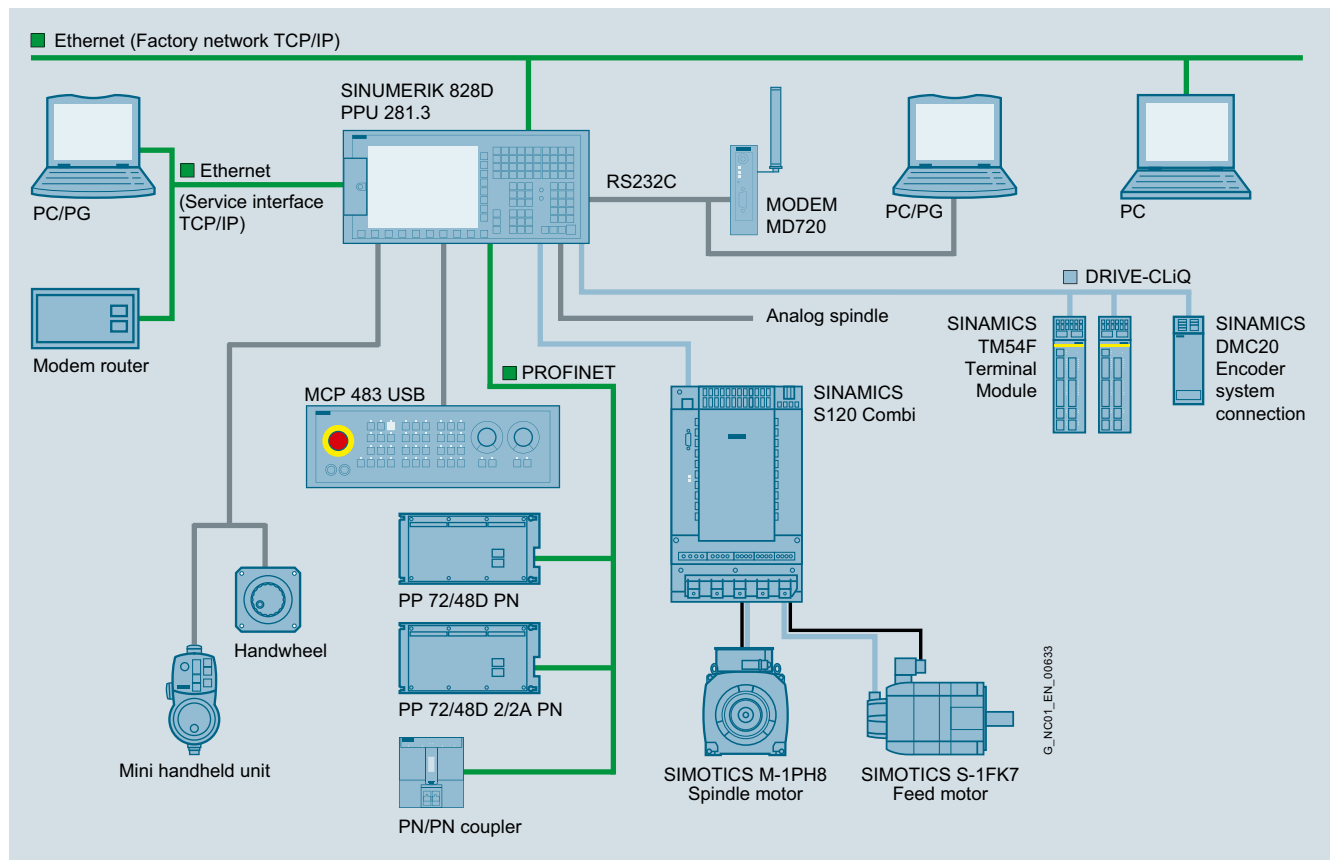
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Integration

The following components can be connected to the SINUMERIK 828D PPU 28x.3:

- 2 electronic handwheels¹⁾
- Mini handheld unit with handwheel
- 3 to 5 PP 72/48D PN or PP 72/48D 2/2A PN I/O modules
- SINUMERIK MCP 310 USB or MCP 483 USB machine control panels
- SINUMERIK MCP Interface PN
- GSM/GPRS modem
- SENTRON PAC power monitoring devices
- SINAMICS S120 drive system via DRIVE-CLiQ
- SINAMICS Numeric Control Extension NX10.3 (not with SW 26x for turning and G-Tech)
- SINAMICS Numeric Control Extension NX15.3 (only with SW 28x for turning advanced and G-Tech advanced)
- Expansion of the SINUMERIK 828D system by additional auxiliary axes for loading axes, parts catchers or other auxiliary modules



SINUMERIK 828D PPU 281.3 configuration example with SINAMICS S120 Combi

¹⁾ Third handwheel can be connected via MCP Interface PN.
Use: Manual machine.

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Technical specifications

Article No.		6FC5370-7AA30-0AA1	6FC5370-8AA30-0AA1
Product brand name		SINUMERIK	SINUMERIK
Product type designation		828D	828D
Short product code		PPU 281.3	PPU 280.3
Product designation		Numerical control	Numerical control
Screen diagonal	in	10.4	10.4
Design of display		TFT color	TFT color
Display resolution	Pixels	800 × 600	800 × 600
Design of operator panel		Horizontal	Vertical
Mounting position of operator panel		Vertical	Vertical
Supply voltage at DC	V	24	24
• Relative negative tolerance at 24 V	%	15	15
• Relative positive tolerance at 24 V	%	20	20
Consumed active power maximum	W	60	60
Buffering time in the event of power failure	ms	3	3
• Note		20 ms with SITOP smart power supply	20 ms with SITOP smart power supply
Environmental category acc. to IEC 60721-3-3		Condensation and icing excluded. Low air temperature 0 °C.	Condensation and icing excluded. Low air temperature 0 °C.
Degree of protection			
• front		IP65	IP65
- Note		With the front cover closed	With the front cover closed
• rear		IP20	IP20
Relative humidity at 25 °C, during			
• storage	%	10 ... 100	10 ... 100
• transport	%	5 ... 95	5 ... 95
• operation	%	5 ... 90	5 ... 90
Ambient temperature, during			
• storage	°C	-25 ... +55	-25 ... +55
• transport	°C	-20 ... +60	-20 ... +60
• operation			
- front	°C	0 ... 45	0 ... 45
- rear	°C	0 ... 55	0 ... 55
Width	mm	483	310
Height	mm	220	380
Depth	mm	105	105
Net weight	kg	4.5	4.5
Certificate of suitability		CE, cULus, EAC	CE, cULus, EAC

Selection and ordering data

Description	Article No.
Hardware components	
SINUMERIK 828D PPU 281.3 horizontal¹⁾ Without system software	6FC5370-7AA30-0AA1
SINUMERIK 828D PPU 280.3 vertical¹⁾ Without system software	6FC5370-8AA30-0AA1
Software components	
System software SW 26x¹⁾ On CompactFlash card with license software version 4.7 SP3, Export	
• Turning	6FC5834-1GY40-4YA0
• Milling	6FC5834-2GY40-4YA0
• G-Tech Cylindrical/G-Tech Surface	6FC5834-3GY40-4YA0
System software SW 28x¹⁾ On CompactFlash card with license software version 4.7 SP3, Export	
• Turning	6FC5833-1GY40-4YA0
• Milling	6FC5833-2GY40-4YA0
System software SW 28xA¹⁾ On CompactFlash card with license software version 4.7 SP3, Export	
• Turning advanced	6FC5836-1GY40-4YA0
• Milling advanced	6FC5836-2GY40-4YA0
• G-Tech Cylindrical advanced/ G-Tech Surface advanced	6FC5836-3GY40-4YA0
SINUMERIK 828D toolbox On DVD-ROM	6FC5830-0CY40-0YA8
SINUMERIK Integrate for engineering Access MyMachine /P2P For PC/PG on CD-ROM current software version	6FC5860-7YC00-0YA0
Language extensions On DVD-ROM without license	6FC5860-0YC40-0YA8
• For SINUMERIK 828D up to software version 4.5	
• For SINUMERIK Operate up to software version 2.7	
SIZER for Siemens Drives engineering tool For SINAMICS and MICROMASTER on DVD-ROM Languages: English, French, German, Italian	6SL3070-0AA00-0AG0

Description	Article No.
Additional hardware components	
SINAMICS Numeric Control Extension	
• NX10.3	6SL3040-1NC00-0AA0
• NX15.3	6SL3040-1NB00-0AA0
SINAMICS S120 TM54F Terminal Module	6SL3055-0AA00-3BA0
SIMATIC DP PN/PN coupler Coupling module for connecting 2 PROFINET networks	6ES7158-3AD01-0XA0
DRIVE-CLiQ signal cable, pre-assembled For PROFINET connection	
• In fixed lengths ²⁾ Connector degree of protection IP20	6SL3060-4A..0-0AA0
• In precise decimeter lengths ²⁾ - Connector degree of protection IP20 - Connector degree of protection IP67	6FX2002-1DC00-.... 6FX2002-1DC20-....
Accessories	
CompactFlash card, 2 GB, empty To expand user memory and replace a defective system CompactFlash card	6FC5313-5AG00-0AA2
Front cover for PPU With fixture (included in scope of delivery)	6FC5348-2AA00-0AA0

More information

The following hardware components are only available in a package and cannot be ordered individually:

- SINUMERIK 828D PPU 281.3/ PPU 280.3

When the package is delivered, the CompactFlash card containing the system software is already installed in the SINUMERIK.

For more information, please contact your Siemens branch.

¹⁾ Not available individually, see More information.

²⁾ For complete Article No. and length code, refer to MOTION-CONNECT connection systems.