

SINAMICS S120

Now also for stand-alone applications



sinamics

S120 AC DRIVE

SIEMENS

SINAMICS S120 AC Drive

SINAMICS S120 AC Drives – a building block for integrated drive solutions

SINAMICS S120 is a modular drive system with Servo and Vector Control and is the SINAMICS product most suitable for demanding drive applications. The stand-alone SINAMICS S120 AC Drives complement the DC/AC units, which use a common infeed and controller designed especially for multi-axis applications. Optimally tailored, integrated solutions can be designed for any type of application based on this building block system.

The ready-to-connect SINAMICS single drive

SINAMICS S120 AC Drives are designed for single-axis applications but can also be used for multi-axis applications. Positioning tasks can be reliably executed as well as synchronous movements and motion control tasks. In multi-axis applications with spatially distributed drives, distributed solutions based on SINAMICS S120 AC Drives offer a practical alternative to a central drives line-up.

Universally implementable

SINAMICS S120 AC Drives can easily be implemented in conjunction with higher-level automation systems using field bus interfaces and the standardized PROFIdrive profile. Solutions to standard positioning tasks – especially in the SIMATIC PLC environment – can therefore be found using SINAMICS S120 AC Drives even without in-depth knowledge of drives.

Because it is so easy to combine SINAMICS S120 AC Drives with other SINAMICS S120 units, multi-axis groupings can be extended comfortably and economically. Modular machine components can thus be adapted to high levels of integration and flexibility in line to varying customer requirements.

Flexibility through modularity

Every SINAMICS S120 AC Drive is a combination of a Power Module and a selectable Control Unit or Control Unit Adapter. An optional filter can also be integrated.

If the AC Drive is operated as a stand-alone single-axis drive, a Control Unit (e.g. CU310 DP) is added to the Power Module. It contains the entire control intelligence for the drive, including positioning functions and the field bus interface.

If the AC Drive is combined with other SINAMICS S120 units to build an integrated multi-axis drive solution, a CUA31 Control Unit Adapter is added to the Power Module in order to connect the AC Drive to a central Control Unit (e.g. CU320 or SIMOTION D) via the DRIVE-CLiQ interface in accordance with the SINAMICS S120 system architecture.

With SINAMICS S120 the modular expansion of your machines is never limited. Cost-optimized and specific solutions are ensured since only the components and functions required for a perfect fit solution are used.

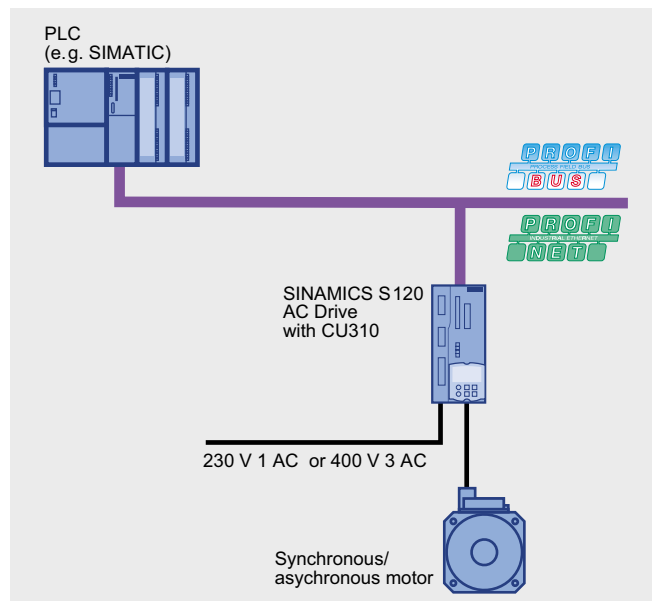


Figure 1: SINAMICS S120 AC Drive connected to a higher-level control

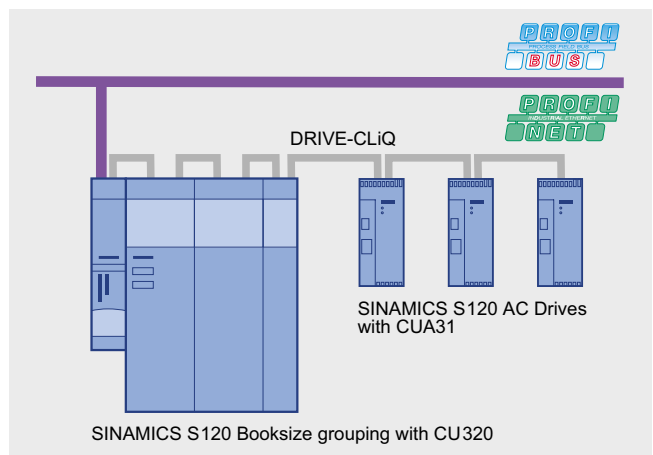


Figure 2: 3 SINAMICS S120 AC Drives connected to a SINAMICS S120 multi-axis grouping

SINAMICS S120 AC Drive

CU310 Control Unit

The use of a SINAMICS S120 AC Drive in a single-axis application connected to a higher-level control is illustrated in Figure 1. Each of the AC Drives is equipped with a CU310 Control Unit. This unit contains the field bus interface for connecting to the higher-level control. CU310 DP with a PROFIBUS DP connection or CU310 PN with an integrated PROFINET interface can be selected. In both cases communication between the control and the drive takes place in accordance with the standardized PROFIdrive profile.

CU310 offers functions ranging from the simple speed controller to full positioning functionality. Drive-related inputs/outputs can easily be linked in the CU by means of BICO technology. This permits the greatest possible options for drive and higher-level control.

Drive-related inputs/outputs can be linked via the integrated I/O interface. An integrated TTL/HTL interface and a DRIVE-CLiQ interface are available as encoder interface. For a version with an integrated motor this encoder interface features the advantage of an electronic rating plate.

It is easy to implement safety systems using the currently available integrated safety functions such as "Safe standstill" (STO), "Safe brake control" (SBC) and "Safe stopping" (SS1).

CUA31 Control Unit adapter

It is also possible to use SINAMICS S120 AC Drives in multi-axis applications. The drive is connected to a CU320 Control Unit via the DRIVE-CLiQ interface using the CUA31 Control Unit Adapter. The CU320 Control Unit then takes over the drive functions for the AC drive. SIMOTION D modules can be used as a Control Unit for motion control applications which go beyond the scope of positioning tasks. SINAMICS S120 AC Drives can also be used in hybrid operation with SINAMICS S120 multi-axis units in this configuration (Figure 2). This provides maximum flexibility for the use of SINAMICS S120 units.



CU310 Control Unit (left)
CUA31 Control Unit Adapter (right)

Standardized, comfortable engineering with SIZER and STARTER

As with all SINAMICS drives, the SIZER configuring tool helps you to select the optimal drive configuration for your application. Graphical support and wizards efficiently guide you through the selection of necessary components based on your application.


SINAMICS S120 AC Drives are commissioned using STARTER, the commissioning tool for the SINAMICS family. Electronic rating plates ensure automatic and error-free preconfiguration of the drive system. Automatic optimization is a simple way of optimizing the control response. It ensures fast and reliable commissioning of the drives.

SINAMICS S120 Power Modules

SINAMICS AC Drives differentiate between Blocksize format and Chassis format, which are available in various frame sizes.

SINAMICS S120 AC Drive – Power Modules								
	Blocksize format						Chassis format	
Frame size	A	B	C	D	E	F	FX	GX
230 V 1 AC in kW (HP)	0.12 ... 0.75 (0.16 ... 1.01)	–	–	–	–	–	–	–
400 V 3 AC in kW (HP)	0.37 ... 1.5 (0.5 ... 2)	2.2 ... 4 (3 ... 5)	7.5 ... 15 (10 ... 20)	18.5 ... 30 (25 ... 40)	37 ... 45 (50 ... 60)	55 ... 90 (74 ... 120)	110 ... 132 (150 ... 175)	160 ... 250 (200 ... 335)

SINAMICS S120 AC Drive – Technical Data ²⁾

SINAMICS S120 AC Drive		
Modular drive system for demanding single/multi-axis applications		
Blocksize format		Chassis format
		
Drive type	AC/AC unit, modular	
Degree of protection	IP20	
Supply voltages V_{supply} /Power ratings • 230 V 1 AC • 380 ... 480 V 3 AC	0.12 ... 0.75 kW (0.16 ... 1.01 HP) 0.37 ... 90 kW (0.5 ... 120 HP)	– 110 ... 250 kW (150 ... 335 HP)
Technological functions	Flying restart, restart, kinetic buffering, positioning ¹⁾ , BICO technology, Motion Control (in connection with SIMOTION)	
Safety functions	Safe standstill (STO), Safe stopping (SS1) Safe brake control (SBC)	Safe standstill (STO)
Tools	SIZER for configuring, STARTER for commissioning	
Typical application technologies	High-performance single drives Positioning ¹⁾ , continuous motion control; continuous material webs; setpoint cascades; coordinated, highly dynamic motion control of several axes via position; cross-axis motion control functionality using SIMOTION (synchronism, electronic cam disks, ...) Numerical control in machine tools in conjunction with SINUMERIK solution line	
Communication interface	PROFIBUS DP, PROFINET ¹⁾	
Line frequency	47 ... 63 Hz	
Output voltage	0 ... V_{supply}	
Output frequency	V/f control: 0 ... 400 Hz ³⁾ Vector Control: 0 ... 300 Hz ³⁾ Servo Control: 0 ... 650 Hz ³⁾	0 ... 200 Hz ⁴⁾ 0 ... 160 Hz ⁴⁾ 0 ... 300 Hz ⁴⁾
Control principle • V/f control • Vector Control • Servo Control	Yes Yes Yes	
Motors • Asynchronous • Synchronous • Torque • Linear	Yes Yes Yes Yes	
Control dynamics • Rise time of speed control	Vector Control: 8 ... 10 ms ³⁾ Servo Control: 2 ... 3 ms ³⁾	11 ... 15 ms ⁴⁾ 5 ... 7 ms ⁴⁾
• Rise time of torque control	Vector Control: 1 ... 2 ms ³⁾ Servo Control: 0.5 ... 1 ms ³⁾	2 ... 3 ms ⁴⁾ 1 ... 2 ms ⁴⁾

1) On request.

2) As of June 2006.

3) Pulse frequency 4 kHz.

4) Pulse frequency 2 kHz.

For further information on SINAMICS S120, go to:

www.siemens.com/sinamics-S120

Siemens AG
Automation and Drives
Motion Control Systems
Postfach 31 80, 91050 ERLANGEN
GERMANY

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