SIEMENS

SINAMICS G120P

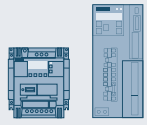
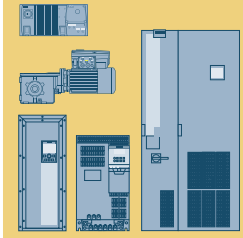
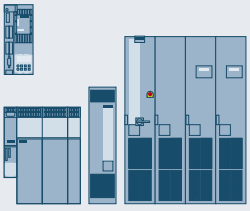
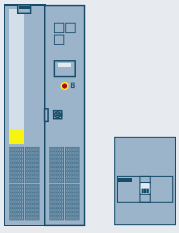
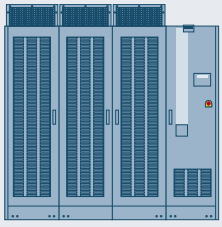
The specialist for pumps, fans and compressors

Frequency converter

siemens.com/sinamics-g120p

SINAMICS – the optimum drive for every application

SINAMICS G120P is a member of the SINAMICS family

Low voltage AC			DC voltage DC	Medium voltage AC
Basic Performance	General Performance	High Performance	DC applications	For applications with high power ratings
				
V-series	G-series	S-series	DCM	Medium voltage series
0.12 – 30 kW	0.37 – 6.600 kW	0.15 – 5.700 kW	6 kW – 3 MW	0.15 – 85 MW
When it comes to the hardware as well as the functionality, SINAMICS V converters concentrate on the essentials. This results in a high degree of ruggedness with low associated investment costs.	The functionality of SINAMICS G converters makes them the perfect choice when addressing basic and medium requirements relating to the control dynamic performance.	SINAMICS S converters are predestined for demanding single-axis and multi-axis applications in plant and machinery construction – as well as for the widest range of motion control tasks.	In addition to the highest power ratings, SINAMICS DC converters also offer the maximum degree of availability.	Our seamless and integrated range – which is unique worldwide – encompasses all dynamic response and performance levels in voltage classes 2.3 to 11 kV.

SINAMICS offers the optimum drive for every drive application – and all drives can be engineered, parameterized, commissioned and operated in the same standard fashion.

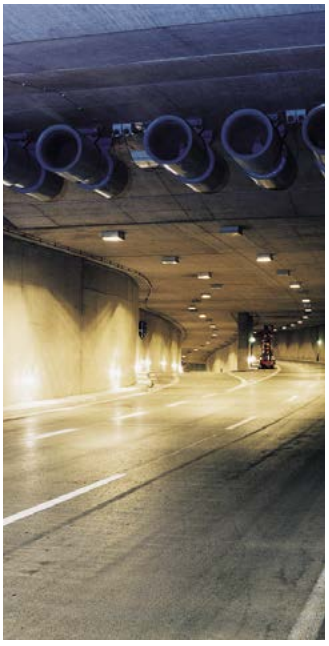
SINAMICS is the drive family for future-proof drive solutions.

Advantages of the SINAMICS family – an overview:

- Wide range of power ratings from 0.12 kW to 85 MW
- In low-voltage, medium voltage and also DC versions
- High degree of flexibility and combinability
- Simple connection to SIMATIC control systems and seamless integration into the automation environment as well as a part of Totally Integrated Automation
- Higher-level, standard safety concept – Safety Integrated
- A common engineering for all drives
  - SIZER engineering
  - STARTER / SINAMICS Startdrive for parameterizing and commissioning

Reliable. Cost-effective. Energy-efficient.

SINAMICS G120P fulfills the highest requirements



SINAMICS G120P series of inverters and SINAMICS G120P Cabinet units

SINAMICS G120P inverters cover a power range from 0.37 to 400 kW, and are specifically tailored to address pump, fan and compressor applications in municipal and industrial environments. Built-in units, wall-mounting units and cabinets are available [1].

SINAMICS G120P is used for basic variable-speed control as well as complex control tasks in building technology, the water and process industries. SINAMICS G120P sets itself apart as a result of the standard operation as well as identical selection and commissioning tools.

SINAMICS highlights

Ruggedness

- Ambient temperatures from -10 °C to 60 °C
- Degree of protection IP20, IP20 push-through, IP55
- Coated modules

Communication

- Integrated in the building automation through Modbus RTU, BACnet MS/TP, Siemens FLN P1
- Embedded in Totally Integrated Automation through PROFINET and PROFIBUS

Energy saving using innovative technology

- Lower line harmonics, higher power factor λ = 0.94 =|P|/S for PM230
- Efficiency > 98 % for the PM330
- Flux reduction in the partial load range
- Hibernation mode

Special functions for building technology

- Control of flaps, heating and cooling valves using additional PID controller
- Closed-loop control of pressure, temperature and air quality in up to three zones
- Essential Service Mode for maximum operating time of the drive in the case of fire

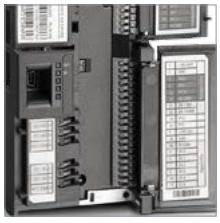
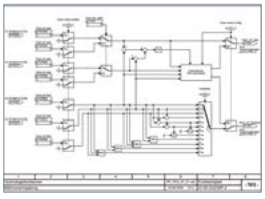
EPLAN data can be downloaded in the DT Configurator at no charge

www.siemens.com/dt-configurator

[1] You can obtain more detailed information about SINAMICS G120P Cabinet and download the SINAMICS G120P Cabinet brochure at:
www.siemens.com/sinamics-g120p-cabinet

Innovations for drive technology

Your advantages at a glance

	Function	Customer benefits
Use on public grids and in industry		
	■ Built-in units from 0.37 kW to 400 kW	■ 8 frame sizes cover a wide power range
	■ Units for wall-mounting from 0.37 kW to 90 kW with Class A and B line filters	■ Inverters can be connected locally directly to public grids
	■ Optional output filter	■ Adaptation to different installations and plants
User-friendly handling		
	■ Pluggable operator panels	■ Fast commissioning without requiring expert knowledge ■ Display with user-friendly plain text (IOP) or two lines (BOP-2)
	■ Application support using wizards in the IOP and macros in STARTER	■ Prompted commissioning for applications in building technology as well as the water and process industries
	■ SINAMICS SD card	■ Data backup by simply replacing
Expanded inputs/outputs		
	■ Isolated digital inputs (own potential group)	■ Avoidance of parasitic voltages
	■ Isolated analog inputs	■ EMC-compliant installation without requiring additional components
	■ Two resistance thermometers can be directly connected LG-Ni1000/ PT1000	■ Temperature sensors can be connected without requiring a separate evaluation
	■ Motor temperature monitoring	■ Motor protection by directly connecting thermistors or bimetallic sensors
	■ Digital outputs with 230 V relay	■ Auxiliary units and actuator drives can be directly controlled
Innovative functions		
	■ Automatic restart	■ Automatic acknowledgment of the fault after a power failure and automatic restart
	■ Flying restart	■ Inverter can be synchronized to a motor that is still rotating
	■ Skip frequencies	■ System-resonant frequencies can be skipped
	■ Load torque monitoring	■ Drive is equipped with dry running protection, locked rotor protection and broken belt monitoring
	■ Real-time clock	■ Precise time stamp for fault and alarm logging buffer time up to 5 days
	■ 3 freely programmable digital timers	■ Three selectable events can be controlled as a function of the day of the week/hour/minute
	■ Free function blocks	■ Flexible use of integrated functions for optimum use in building technology, additional external components can be eliminated
	■ PID controller	■ The drive speed is controlled depending on process variables such as temperature/pressure/flow/air quality
	■ Cascading drives	■ Flow rate can be adapted in an energy-efficient way by switching in or switching out up to three fixed-speed drives
Communication interfaces – simple and direct integration into the automation environment		
	■ Different communication interfaces: PROFINET, PROFIBUS DP, EtherNET/IP, USS / Modbus RTU, CANopen, BACnet MS/T P, Siemens FLN P1	■ Simple integration into building control, process control and automation systems

Technical data

SINAMICS G120P in detail

Power Modules	PM230	PM240	PM330	PM230
Mechanical data				
Format	Built-in unit			Walll-mounting
Degree of protection	IP20 / UL Open Type			Max. IP55 / UL Type 12
Operating temperature	0 °C to +40 °C, to +60 °C with power derating		0 C° to +40 °C, to +50 °C with power derating	0 °C to +40 °C, to +60 °C with power derating
Electrical data				
Power rating (low overload LO) Rated output current (low overload LO)	0.37 ... 75 kW 1.3 ...145 A	90 ... 132 kW 178 ... 250 A	160 ... 400 kW 300 ...735 A	0.37 ... 90 kW 1.3 ... 178 A
Line voltage	3-ph. 380 ... 480 V AC ±10 %			
Line frequency	47 ... 63 Hz			
Overload capability (Low overload LO)	**0.37 to 18.5 kW:** 150 % for 3 s *plus* 110 % for 57 s within a cycle of 300 s **22 to 75kW:** 110 % for 60 s within a cycle of 300 s	**90 kW:** 150 % for 3 s *plus* 110 % for 57 s within a cycle of 300 s **110 to 132 kW:** 150 % for 1 s plus 110 % for 59 s within a cycle of 300 s	**160 to 400 kW:** 135 % for 3 s *or* 110 % for 60 s within a cycle of 300 s	**0.37 to 18.5 kW:** 150 % for 3 s *plus* 110 % for 57 s within a cycle of 300 s **22 to 90 kW:** 110 % for 60 s within a cycle of 300 s
Output frequency – U/f control mode – vector control mode	0 ... 550 Hz 0 ... 200 Hz		0 ... 100 Hz 0 ... 100 Hz	0 ... 550 Hz 0 ... 200 Hz
Pulse frequency	4 kHz Higher pulse frequencies up to 16 kHz with derating	90 kW: 4 kHz 110 to 132 kW: 2 kHz higher pulse frequencies up to 16 kHz with derating	4 kHz	4 kHz higher pulse frequencies up to 16 kHz with derating
Motor cable lengths	FSA to FSC: 25 m[1] / 100 m[2] FSC to FSF: 25 m[1] / 200 m[2]	50 m[1] / 200 m[2]	100 m[1] / 300 m[2]	FSA to FSC: 25 m[1] / 100 m[2] FSC to FSF: 25 m[1] / 200 m[2]
Control Unit	**CU230P-2**			
Communication				
Digital/analog inputs and outputs	6DI / 3DO / 4AI / 2 AO, 1x KTY / PTC / Thermo-Click sensor, 2 x Ni1000-in / PT1000-in (part of the 4AI)			
Integrated interface	PROFINET, PROFIBUS DP, EtherNET/IP, USS / Modbus RTU, CANopen, BACnet MS / TP, Siemens FLN P1			
Functions				
Open-loop/closed-loop control modes	V/f (linear, square law, FCC, ECO) Vector control without encoder (SLVC)		Sensorless vector control (SLVC)	V/f (linear, square-law, FCC, ECO), sensorless vector control (SLVC)
Protection functions	Undervoltage, overvoltage, overcontrol/overload, ground fault, short circuit, stall protection, locked rotor protection, motor overtemperature, inverter overtemperature, parameter interlocking			
Brake functions	DC brake	DC braking, dynamic braking with integrated braking chopper	DC braking, dynamic braking with optional braking chopper	DC brake
Motors that can be connected	3-phase induction motors and 3-phase synchronous motors			
Commissioning				
Operator panel	IOP and BOP-2 with Wizard for fast commissioning			
Operating software	STARTER and Startdrive for PC-based commissioning			
Additional information				
Conformance with standards	UL, CE, C-Tick SEMI F 47	UL, cUL CE, C-Tick SEMI F 47	cULus, CE, C-Tick GHOST-R, KC	UL, CE, C-Tick SEMI F 47
Electromagnetic compatibility (EMC)	• Devices with integrated Class A line filter to comply with EMC values according to EN 61800-3 Categories C2 and C3 • Devices with external Class B line filter to comply with EMC limit values for cable-conducted interference voltages according to EN 61800-3 Category C1	• Devices with integrated or external Class A line filter for installations in compliance with EN 61800-3 Category C3 • Devices with integrated or external Class A line filter to comply with EMC limit values for cable-conducted interference voltages and field-conducted disturbances according to EN 61800-3 Category C2	• Devices with integrated line filter for installations according to EN 61800-3 Category C3 • Additional line filter to comply with EMC limit values according to EN 61800-3 Category C2	• Devices with integrated Class A line filter to comply with EMC limit values according to EN 61800-3 Category C2 • Devices with integrated Class B line filter to comply with EMC limit values for cable-conducted interference voltages according to EN 61800 -3 Category C1

[1] Compliance with EN 61800-3 Category C2 / [2] Maximum shielded cable length

SINAMICS G120P configuration

This is how you obtain your drive solution in four simple steps

1. Power Modules

Step 1:
Select the Power Module as built-in unit in degree of protection IP20, IP20 push-through for wall-mounting in degree of protection IP55

2 . Control Unit

Step 2:
Select the CU230P-2 Control Unit in the required communication version (PROFINET, PROFIBUS DP, EtherNET/IP, HVAC, CANopen)

3. Operator Panel

Step 3:
Select an operator panel BOP-2 or IOP (optional)

4. EMC components

Step 4:
Select the required reactors and filters to comply with the electromagnetic compatibility (EMC) according to IEC 61800-3

The SINAMICS G120P inverter comprises the PM230, PM240, PM330 Power Modules, the CU230P-2 Control Unit as well as an operator panel (IOP or BOP-2) or optional blanking cover. When ordering, an article number is specified for each component. The article numbers are listed in the table opposite.

Selection and ordering data

Built-in units with PM230, PM240, PM330 Power Modules in IP20
Wall-mounting units with PM230 Power Module in IP55

Select the Power Module ...				Built-in units
Degree of protection				**IP20 / IP20 push-through**
PM230	Unfiltered			6SL3210-1NE__-_U L0
	Class A filter [2]			6SL3210-1NE__-_A L0
	Class B filter [3]			
Rated power			**Size**	**Article No.**
kW	**hp**	**A**		
0.37	0.50	1.3	FSA	6SL3210-1NE11-3□L1
0.55	0.75	1.7	FSA	6SL3210-1NE11-7□L1
0.75	1.0	2.2	FSA	6SL3210-1NE12-2□L1
1.1	1.5	3.1	FSA	6SL3210-1NE13-1□L1
1.5	2.0	4.1	FSA	6SL3210-1NE14-1□L1
2.2	3.0	5.9	FSA	6SL3210-1NE15-8□L1
3	4.0	7.7	FSA	6SL321■-1NE17-7□L1
4	5.0	10.2	FSB	6SL3210-1NE21-0□L1
5.5	7.5	13.2	FSB	6SL3210-1NE21-3□L1
7.5	10	18	FSB	6SL321■-1NE21-8□L1
11	15	26	FSC	6SL3210-1NE22-6□L1
15	20	32	FSC	6SL3210-1NE23-2□L1
18.5	25	38	FSC	6SL321■-1NE23-8□L1
18.5	25	38	FSD	–
22	30	45	FSD	6SL3210-1NE24-5□L0
30	40	60	FSD	6SL3210-1NE26-0□L0
37	50	75	FSE	6SL3210-1NE27-5□L0
45	60	90	FSE	6SL3210-1NE28-8□L0
55	75	110	FSF	6SL3210-1NE31-1□L0
75	100	145	FSF	6SL3210-1NE31-5□L0
90	125	178	FSF	–
■ Heat sink version: 0 = Standard 1 = Push-through				
EMC (electromagnetic compatibility)				
U = unfiltered				□ = U
A = integrated Class A EMC filter				□ = A
PM240	Unfiltered			6SL3224-0BE__-_U A0
	Class A filter [5]			6SL3224-0BE__-_A A0
PM330	Unfiltered [6]			6SL3310-1PE3_-_A A0
Rated power			**Size**	**Article No.**
90	125	178	FSF	6SL3224-0BE37-5□A0
110	150	205	FSF	6SL3224-0BE38-8UA0
132	200	250	FSF	6SL3224-0BE41-1UA0
160	200	300	GX	6SL3310-1PE33-0AA0
200	250	370	GX	6SL3310-1PE33-7AA0
250	300	460	GX	6SL3310-1PE34-6AA0
315	400	585	HX	6SL3310-1PE35-8AA0
355	450	655	HX	6SL3310-1PE36-6AA0
400	500	735	HX	6SL3310-1PE37-4AA0

You can find additional technical data on the SINAMICS G120P as well as the SINAMICS G120P Cabinet units in Catalog D.35
www.siemens.com/drives/infocenter

Wall-mounting units	... and the line-side EMC[1] components
IP55	
	External Class B filter[4]
6SL3223-0DE__-_A A0	
6SL3223-0DE__-_B A0	
Article No.	**Article No.**
6SL3223-0DE13-7□A1	6SL3203-0BE17-7BA0
6SL3223-0DE15-5□A1	6SL3203-0BE17-7BA0
6SL3223-0DE17-5□A1	6SL3203-0BE17-7BA0
6SL3223-0DE21-1□A1	6SL3203-0BE17-7BA0
6SL3223-0DE21-5□A1	6SL3203-0BE17-7BA0
6SL3223-0DE22-2□A1	6SL3203-0BE17-7BA0
6SL3223-0DE23-0□A1	6SL3203-0BE17-7BA0
6SL3223-0DE24-0□A1	6SL3203-0BE21-8BA0
6SL3223-0DE25-5□A1	6SL3203-0BE21-8BA0
6SL3223-0DE27-5□A1	6SL3203-0BE21-8BA0
6SL3223-0DE31-1□A1	6SL3203-0BE23-8BA0
6SL3223-0DE31-5□A1	6SL3203-0BE23-8BA0
6SL3223-0DE31-8 A A1	6SL3203-0BE23-8BA0
6SL3223-0DE31-8 B A0	6SL3203-0BE27-5BA0
6SL3223-0DE32-2□A0	6SL3203-0BE27-5BA0
6SL3223-0DE33-0□A0	6SL3203-0BE27-5BA0
6SL3223-0DE33-7□A0	6SL3203-0BE31-1BA0
6SL3223-0DE34-5□A0	6SL3203-0BE31-1BA0
6SL3223-0DE35-5□A0	6SL3203-0BE31-8BA0
6SL3223-0DE37-5□A0	6SL3203-0BE31-8BA0
6SL3223-0DE38-8□A0	–

Select a Control Unit

Designation	Communication	Article No.
CU230P-2 PN	• PROFINET (PROFIdrive, PROFIenergy)	6SL3243-0BB30-1FA0
	• Ethernet/IP (ODVA AC/AC Drive, SINAMICS Profile)	
CU230P-2 DP	• PROFIBUS DP (PROFIdrive)	6SL3243-0BB30-1PA3
CU230P-2 HVAC	• USS / Modbus RTU / BACnet MS/TP / P1 protocol	6SL3243-0BB30-1HA3
CU230P-2 CAN	• CANopen	6SL3243-0BB30-1CA3

Select an operator panel and the required accessories

Designation	Article No.	Designation	Article No.
Basic Operator Panel (BOP-2)	6SL3255-0AA00-4CA1	**SINAMICS SD card – 512 MB**	6SL3054-4AG00-2AA0
Intelligent Operator Panel (IOP)	6SL3255-0AA00-4JA1	**PC inverter connection kit 2**	6SL3255-0AA00-2CA0
IOP Handheld	6SL3255-0AA00-4HA0	**Shield connection kit 1 for CU230P-2 HVAC/DP/CAN**	6SL3264-1EA00-0FA0
IOP/BOP-2 door mounting kit	6SL3256-0AP00-0JA0	**Shield connection kit 3 for CU230P-2 PN**	6SL3264-1EA00-0HB0

1) Electromagnetic compatibility
2) PM230 Power Modules with integrated Class A filter comply with EN 61800-3 Categories C2 and C3
3) PM230 Power Modules with integrated Class B filter comply with EN 61800-3 Category C1 for cable-conducted interference voltages
4) PM230 Power Modules (unfiltered) with external Class B filter comply with EN 61800-3 Category C1 for cable-conducted interference voltages
5) PM240 Power Modules with integrated and external Class A filter comply with EN 61800-3 Category C3
6) PM330 Power Modules in the basic version comply with EN 61800-3 Category C3
7) PM330 Power Modules with external Class A filter comply with EN 61800-3 Category C2
8) Line reactors are mandatory for PM330 Power Modules

External Class A filter[5]	
External Class A filter[7]	Line reactor[8]
Article No.	**Article No.**
–	
6SL3203-0BE32-5AA0	–
6SL3203-0BE32-5AA0	–
6SL3000-0BE33-1AA0	6SL3000-0CE33-3AA0
6SL3000-0BE33-1AA0	6SL3000-0CE35-1AA0
6SL3000-0BE35-0AA0	6SL3000-0CE35-1AA0
6SL3760-0MR00-0AA0	6SL3000-0CE36-3AA0
6SL3760-0MR00-0AA0	6SL3000-0CE37-7AA0
6SL3760-0MR00-0AA0	6SL3000-0CE37-7AA0

EMC (electromagnetic compatibility)

A ..... A = integrated Class A EMC filter
B ..... B = integrated Class B EMC filter

SINAMICS SELECTOR App – to quickly and simply find the Article Numbers

Scan the QR code and download the SINAMICS SELECTOR App at no charge

SINAMICS G120P are coordinated and harmonized for operation with SIMOTICS GP and SIMOTICS SD motors belonging to the VSD10 line as well as SIMOTICS FD motors. An outstanding degree of cost effectiveness is achieved as a result of the optimum interaction of the components as Integrated Drive System (IDS).
siemens.com/iec-motors

Find out more:

siemens.com/ids

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