SINAMICS G120D

The distributed frequency inverter with high degree of protection compact, safe, and capable of energy recovery

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SINAMICS Drives

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SIEMENS

SINAMICS G120D

Optimal mechanical design and capable of energy recovery

Applications: Conveyor systems

SINAMICS G120D has been specifically designed for sophisticated conveyor-related applications in the industrial environment where a distributed, communications-capable drive is required. This frequency inverter has been specifically tailored to assembly lines in the automobile sector.

It is also suitable for many other high-performance applications, e.g. in airports, in the food and beverage industry (without tensides), and in distribution logistics (e.g. electric suspended mono-rails).

It is a perfect fit in distributed architectures

The distributed SINAMICS G120D frequency inverter offers many advantages as a result of its extremely low profile, an identical drill pattern across power ratings and a high degree of protection.

It offers safety functions that are absolutely unique in its class. Due to its capability of line-commutated energy recovery, braking resistors are not required in the generating mode, which contributes to considerable energy savings. And of course, it goes without saying that the frequency inverter is communications-capable.

SINAMICS G120D is the frequency inverter that sets new standards in distributed architectures. It has a modular design: It comprises a Power Module and a Control Unit and covers an especially wide range of powers from 0.75 kW up to 7.5 kW.

Highlights

Mechanical system
- Low-profile design
- Can be exchanged/replaced thanks to the identical drill pattern
- Rugged metal enclosure
- High IP65 degree of protection
- As a result of its modularity only a low stock inventory required

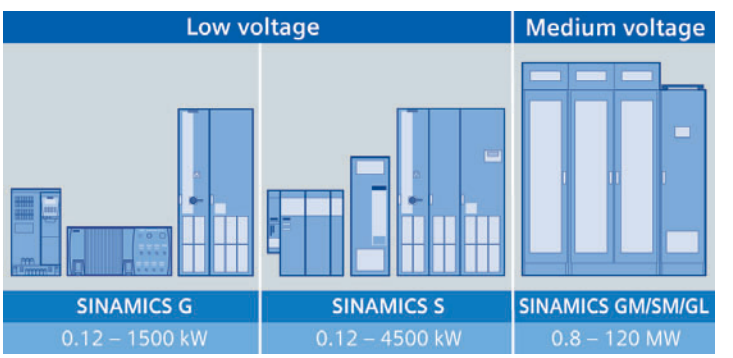
Electronics
- Energy recovery, low harmonics are fed back into the line supply, energy saving, no braking resistors required
- Safety Integrated (STO, SS1, SLS) without encoder
- Interchangeable MMC memory card

Communication
- PROFIBUS, PROFINET, PROFIsafe
- Integrated in Totally Integrated Automation

SINAMICS G120D is part of the SINAMICS drive family for innovative and leading-edge drive solutions

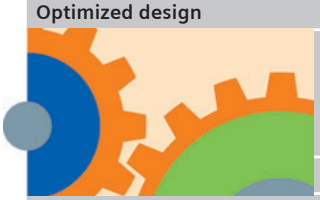
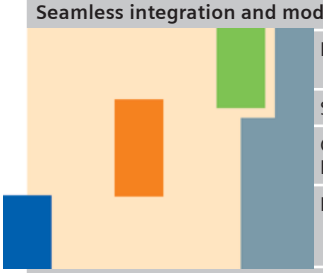
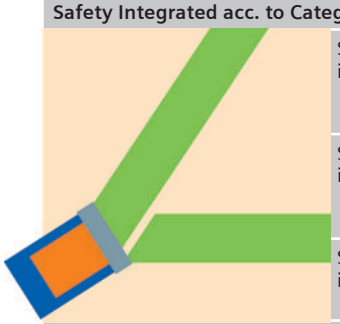
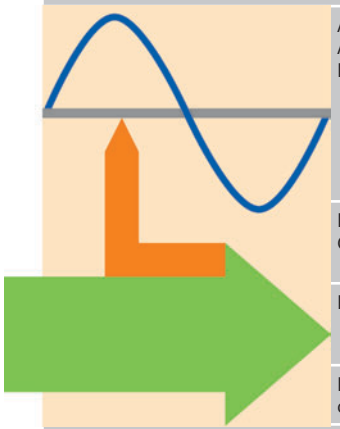
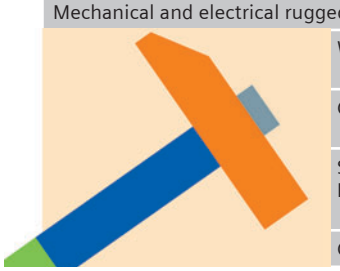
- Wide range of power ratings from 0.12 kW to 120 MW
- Both in low-voltage as well as in medium-voltage versions
- Seamless, integrated functionality by using common hardware and software platforms
- One standard engineering for all drives
  – SIZER for engineering
  – STARTER for parameterizing and commissioning
- High degree of flexibility and the ability to be combined

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



SINAMICS G120D

Innovations for distributed drive technology

	Function	Benefits
Optimized design		
	Identical drill pattern for all power ratings from 0.75 kw to 7.5 kw	Easy to exchange/replace, also with other power ratings System engineering is independent of the power required from the inverter Compact size for high power ratings
	Extremely low-profile design	Low space requirement
Seamless integration and modularity		
	Power ratings from 0.75 kW to 7.5 kW	Seamlessly covers all requirement of conveyer technology
	Same power unit for standard and safety versions	Optimized Asset Management
	Control Unit can be operated independently of the Power Module	Bus communication is not interrupted when the Power Module is replaced (Hot Swapping)
	Plug-in connection system	High degree of system availability Can be quickly and simply replaced when a fault develops
Safety Integrated acc. to Category 3 of EN 954-1 and to SIL 2 of IEC 61508		
	Safe Torque Off (STO) in compliance with EN 60204	Prevents the drive from accidentally starting Drive is safety brought into a no-torque condition Preventing restarting does not require electrical isolation between the motor and frequency inverter
	SafeStop 1 (SS1) in compliance with EN 60204	Drive stopping is quickly and safely monitored Independent and continuous monitoring guarantees the shortest response times when a fault develops An encoder is not required
	Safely Limited Speed (SLS) in compliance with EN 60204	The drive speed is reduced and monitored Independent and continuous monitoring An encoder is not required
Energy recovery for all power ratings		
	A braking resistor is not required A braking chopper is not required Energy saving	Significantly lower space requirement Simple securing of higher degree of protection Less wiring costs Shorter installation times Reduced spare parts stocking (of supplementary components) High application flexibility Significant cost saving
	Low harmonics fed back into the line supply Compensation of inductive reactive power	A line reactor is not required Lower costs for reactive power compensation Reduced energy costs
	Power factor 0.9 (normally approx. 0.7)	A cost saving (up to 20%) over comparable frequency inverters can be achieved thanks to the reduced input current and lower cross-section of the feeder cable
	Less apparent power as for conventional frequency converters	Reduced power costs Lower connection power required
Mechanical and electrical ruggedness		
	Wide voltage range from 380 V to 480 V ±10%	Rugged with respect to voltage fluctuations High plant availability
	Completely metal housing	High lifetime High plant availability
	Short-circuit-proof inputs and outputs PTC/KTY separated with respect to 24 V	Increased ruggedness and availability Protected with respect to other parts of the plant or system
	Coated electronic boards/modules	Extremely long operating life

SINAMICS G120D

Technical data

Control Unit	CU240D DP, CU240 PN	CU240D DP-F, CU240 PN-F
Degree of protection	IP65	
Mounitng dimensions (W x H x D)	150 x 210 x 40 mm 5.91 x 8.27 x 1.57 in	
Communication		
Bus interface	PROFIBUS DP, PROFINET I/O	PROFIBUS DP, PROFINET I/O, PROFIsafe
Safety functions		
Integrated safety functions acc. to Category 3 of EN 954-1 and to SIL 2 of IEC 61508	–	Safe Torque Off (STO) Safe Stop 1 (SS1) Safely Limited Speed (SLS)
Electrical data		
Power supply voltage	24 V DC	
Frequency range that can be shipped	4, programmable	
Fixed frequencies	15, programmable	
Digital inputs	6, parameterizable, electrically isolated	
Digitial outputs	2, parameterizable, 0.5 A, supplied through switched 24 V	
Electromagnetic compatibility	EMC standard EN 61800-3	
Functions		
Open-loop/closed loop technique	Vector with/without encoder, V/F, FCC	
Operational functions	• Local pre-processing of digital input signals • Positioning down ramp • Automatic restart • Flying restart • Slip compensation • Motor temperature monitoring • Jog operation – and many more	
Protective functions	• Motor temperature monitoring with and without temperature sensor (PTC/KTY) • Load duty cycle monitoring • Power module monitoring • Plant/system protective functions	
Standards		
Compliance with standards	UL, cUL, CE, c-tick	
Commissioning software		
	STARTER	
Accessories		
	• MMC memory card • LPC connecting cable	

Power Module	PM250D FSA, FSB, FSC	
Power ratings	0.75 . . . 7.5 kw / 1 . . . 10 hp	
Rated input current (at 40˚C ambient temperature)	2.1 . . . 17.7 A (high overload HO)	
Rated output current (at 40˚C ambient temperature)	2.2 . . . 19 A (high overload HO)	
Degree of protection	IP65	
Mounting dimensions Power Module plus Control Unit (W x H x D)	FSA, 0.75 . . . 1.5 kW: 1 . . . 2 hp: FSB, 3 kW: 4 hp: FSC, 4 . . . 7.5 kW: 5 . . . 10 hp:	450 x 210 x 110 mm 17.72 x 8.27 x 4.33 in 450 x 210 x 180 mm 17.72 x 8.27 x 7.09 in 450 x 210 x 220 mm 17.72 x 8.27 x 8.66 in
Electrical data		
Line voltage	380 . . . 480 V 3 AC 10%	
Line frequency	47 . . . 63 Hz	
Overload capacity (high overload HO)	Average max. rated output current during a cycle time of 300 s • 1.5 x rated output current (i.e. 150% overload) during 60 s for a cycle time of 300 s • 2 x rated output current (i.e. 200% overload) during 3 s for a cycle time of 300 s	
Output frequency	0 . . . 650 Hz	
Pulse frequency	4 kHz (standard) 4 . . . 16 kHz (in 2-kHz-steps) with automation reduction	
Electromagnetic compatibility	Filtered acc. to EMC standard EN 61800-3	
Functions		
Braking functions	• Integrated control for a motor holding brake/ operating braking • Electronic braking through regenerative feedback into the line supply	
Connectable motors	3-phase synchronous and induction motors	
Standards		
Protective functions	• Motor temperature monitoring with and without temperature sensor (PTC/KTY) • Load duty cycle monitoring • Power module monitoring • Plant/system protective functions	
Standards		
Compliance with standards	UL, cUL, CE, c-tick	
Accessories		
	• Connector sets • Pre-fabricated cables	

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Subject to change without notice
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