

# SINAMICS G120D

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

Brochure · February 2008



## SINAMICS Drives

[www.siemens.com/sinamics-g120d](http://www.siemens.com/sinamics-g120d)

**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 & 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

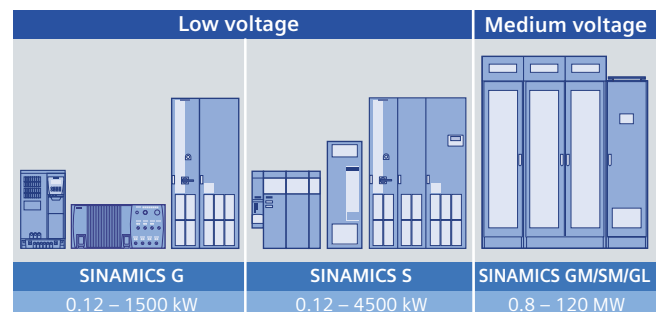
- PROFIBUS, PROFINET, PROFIsafe
- Integrated in Totally Integrated Automation



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



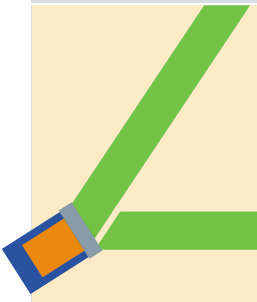
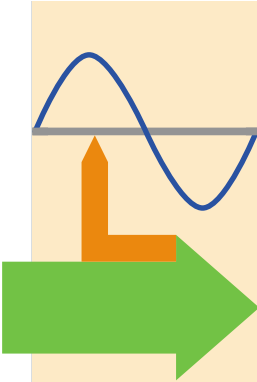
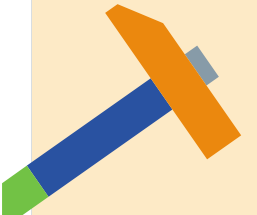
- Wide range of power ratings from 0.12 kW to 120 MW
- Both in low-voltage as well as in medium-voltage versions
- Seamless, integrated functionality by using common hardware and software platforms
- One standard engineering for all drives
  - SIZER for engineering
  - STARTER for parameterizing and 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
<b>Optimized design</b>		
	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
<b>Seamless integration &amp; modularity</b>		
	Power ratings from 0.75 kW to 7.5 kW	Seamlessly covers all requirements of conveyor 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) High degree of system availability Can be quickly and simply replaced when a fault develops
	Plug-in connection system	High degree of system availability Can be quickly and simply replaced when a fault develops
<b>Safety Integrated acc. to Category 3 of EN 954-1 and to SIL 2 of IEC 61508</b>		
	Safe Torque Off (STO) in compliance with EN 60204	Prevents the drive from accidentally starting Drive is safely brought into a no-torque condition Preventing restarting does not require electrical isolation between the motor and frequency inverter
	Safe Stop 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
<b>Energy recovery for all power ratings</b>		
	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) Lower current consumption (approx. 80 %) than for comparable frequency converters Less apparent power as for conventional frequency converters	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
		Reduced power costs Lower connection power required
<b>Mechanical and electrical ruggedness</b>		
	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	
Mounting dimensions (W x H x D)	150 x 210 x 40 mm 5.91 x 8.27 x 1.57 in	
<b>Communication</b>		
Bus interface	PROFIBUS DP, PROFINET I/O	PROFIBUS DP, PROFINET I/O, PROFIsafe
<b>Safety functions</b>		
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)
<b>Electrical data</b>		
Power supply voltage	24 V DC	
Frequency range that can be skipped	4, programmable	
Fixed frequencies	15, programmable	
Digital inputs	6, parameterizable, electrically isolated	
Digital outputs	2, parameterizable, 0.5 A, supplied through switched 24 V	
Electromagnetic compatibility	EMC standard EN 61800-3	
<b>Functions</b>		
Open-loop/ closed-loop technique	Vector with/without encoder, V/f, FCC	
Operational functions	<ul style="list-style-type: none"> <li>Local pre-processing of digital input signals</li> <li>Positioning down ramp</li> <li>Automatic restart</li> <li>Flying restart</li> <li>Slip compensation</li> <li>Motor temperature monitoring</li> <li>Jog operation – and many more</li> </ul>	
Protective functions	<ul style="list-style-type: none"> <li>Motor temperature monitoring with and without temperature sensor (PTC/KTY)</li> <li>Load duty cycle monitoring</li> <li>Power module monitoring</li> <li>Plant/system protective functions</li> </ul>	
<b>Standards</b>		
Compliance with standards	UL, cUL, CE, c-tick	
<b>Commissioning software</b>		
	STARTER	
<b>Accessories</b>		
	<ul style="list-style-type: none"> <li>MMC memory card</li> <li>PC connecting cable</li> </ul>	

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: 450 x 210 x 110 mm 1 ... 2 hp: 17.72 x 8.27 x 4.33 in FSB, 3 kW: 450 x 210 x 180 mm 4 hp: 17.72 x 8.27 x 7.09 in FSC, 4 ... 7.5 kW: 450 x 210 x 220 mm 5 ... 10 hp: 17.72 x 8.27 x 8.66 in
<b>Electrical data</b>	
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 <ul style="list-style-type: none"> <li>1.5 x rated output current (i.e. 150 % overload) during 60 s for a cycle time of 300 s</li> <li>2 x rated output current (i.e. 200 % overload) during 3 s for a cycle time of 300 s</li> </ul>
Output frequency	0 ... 650 Hz
Pulse frequency	4 kHz (standard) 4 ... 16 kHz (in 2-kHz-steps) with automatic reduction
Electromagnetic compatibility	Filtered acc. to EMC standard EN 61800-3
<b>Functions</b>	
Braking functions	<ul style="list-style-type: none"> <li>Integrated control for a motor holding brake/operating braking</li> <li>Electronic braking through regenerative feedback into the line supply</li> </ul>
Connectable motors	3-phase synchronous and induction motors
<b>Standards</b>	
Compliance with standards	UL, cUL, CE, c-tick
<b>Accessories</b>	
	<ul style="list-style-type: none"> <li>Connector sets</li> <li>Pre-fabricated cables</li> </ul>

Siemens AG  
Industry Sector  
Drive Technologies  
Standard Drives

Subject to change  
Order No. 6ZB5471-0AJ02-0BA1  
Dispo 18404  
BR 0308 5.0 VOG 4 En / 822199  
Printed in Germany  
© Siemens AG 2008

[www.siemens.com/sinamics-g120d](http://www.siemens.com/sinamics-g120d)

The information provided in this brochure contains descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract. Availability and technical specifications are subject to change without notice.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.