

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



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 dry areas of the food & beverage industry 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. It can help to save a lot of energy as it can regenerate into the line supply. 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.



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 28 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.



Highlights

Mechanical system

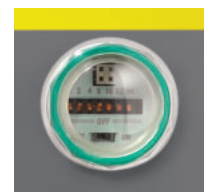
- Low-profile design
- Can be exchanged/replaced thanks to the identical drill pattern
- Rugged metal enclosure
- High IP65 degree of protection
- As a result of its modularity only a low stock inventory required

Electronics

- Energy recovery, low harmonics are fed back into the line supply, energy saving
- Safety Integrated (STO, SS1, SLS) without encoder
- Interchangeable MMC memory card

Communication

- PROFIBUS, PROFIsafe
- Integrated in Totally Integrated Automation



SINAMICS G120D

Innovations for distributed drive technology

Function	Benefits
Optimized design	
 <p>Identical drill pattern for all power ratings from 0.75 kW to 7.5 kW</p>	<p>Easy to exchange/replace, also with other power ratings</p> <p>System engineering is independent of the power required from the inverter</p> <p>Compact size for high power ratings</p>
<p>Extremely low-profile design</p>	<p>Low space requirement</p>
Seamless integration and modularity	
 <p>Power ratings from 0.75 kW to 7.5 kW</p>	<p>Seamlessly covers all requirements of conveyor technology</p>
<p>Same power unit for standard and safety versions</p>	<p>Optimized Asset Management</p>
<p>Control Unit can be operated independently of the Power Module</p>	<p>Bus communication is not interrupted when the Power Module is replaced (Hot Swapping)</p> <p>High degree of system availability</p> <p>Can be quickly and simply replaced when a fault develops</p>
<p>Plug-in connection system</p>	<p>Can be quickly and simply replaced when a fault develops</p> <p>High degree of system availability</p>
Safety Integrated acc. to Category 3 of EN 954-1 and to SIL 2 of IEC 61508	
 <p>Safe Torque Off in compliance with EN 60204</p>	<p>Prevents the drive from accidentally starting</p> <p>Drive is safety brought into a no-torque condition</p> <p>Preventing restarting does not require electrical isolation between the motor and frequency inverter</p>
<p>Safe Stop 1 in compliance with EN 60204</p>	<p>Drive stopping is quickly and safely monitored</p> <p>Independent and continuous monitoring guarantees the shortest response times when a fault develops</p> <p>An encoder is not required</p>
<p>Safely Limited Speed in compliance with EN 60204</p>	<p>The drive speed is reduced and monitored</p> <p>Independent and continuous monitoring</p> <p>An encoder is not required</p>
Energy recovery for all power ratings	
 <p>A braking resistor is not required</p> <p>A braking chopper is not required</p> <p>No additional cabinet cooling is required</p> <p>Energy saving</p>	<p>Significantly lower space requirement</p> <p>Less wiring costs</p> <p>Shorter installation times</p> <p>Reduced spare parts stocking (of supplementary components)</p> <p>High application flexibility</p> <p>Significant cost saving</p>
<p>Low harmonics fed back into the line supply</p> <p>Reactive power compensation of up to 25%</p>	<p>A line commutating reactor is not required</p> <p>Lower costs for reactive power compensation</p> <p>Lower power costs</p>
<p>Power factor 0.9 (instead of normally 0.7)</p> <p>Lower line current required (approx. 80%) than that for comparable frequency converters</p>	<p>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</p>
<p>Less apparent power as for conventional frequency converters</p>	<p>Reduced power costs</p> <p>Lower connection power</p>
Mechanical and electrical ruggedness	
 <p>Wide voltage range from 380 V to 480 V $\pm 10\%$</p>	<p>Rugged with respect to voltage fluctuations</p> <p>High plant availability</p>
<p>Completely metal housing</p>	<p>High lifetime</p> <p>High plant availability</p>
<p>Short-circuit-proof inputs and outputs</p> <p>PTC/KTY safely separated with respect to 24 V</p>	<p>Increased ruggedness and availability</p> <p>Protected with respect to other parts of the plant or system</p>
<p>Coated electronic boards/modules</p>	<p>Extremely long operating life</p>

SINAMICS G120D – technical data

Control Unit	CU240D DP	CU240D DP-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	
Communication		
Bus interface	PROFIBUS DP	PROFIBUS DP, 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 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	
Functions		
Open-loop/closed-loop technique	Vector with/without encoder, V/f, FCC	
Operational functions	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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		
	<ul style="list-style-type: none"> MMC memory card PC connecting cable 	

Power Module	PM250D FSA, FSB, FSC (400 V) filtered
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
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 type of 300 s <ul style="list-style-type: none"> 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) temperature-dependent automatic reduction
Electromagnetic compatibility	EMC standard EN 61800-3
Functions	
Braking functions	<ul style="list-style-type: none"> 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	
Compliance with standards	UL, cUL, CE, c-tick
Accessories	
	<ul style="list-style-type: none"> Connector sets Pre-fabricated cables

www.siemens.com/sinamics-g120d

Siemens AG
Automation and Drives
Standard Drives

www.siemens.com/drives

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.