# SIEMENS

Data sheet for SINAMICS G120X

### Article No. :

### 6SL3220-1YH52-0CB0



Figure similar

Client order no.
Order no. :
Offer no. :
Remarks :

Rated data		
Input		
Number of phases	3 AC	
Line voltage	500 690 V +10 °	% -20 %
Line frequency	47 63 Hz	
Rated voltage	690V IEC	600V NEC
Rated current (LO)	205.00 A	205.00 A
Rated current (HO)	185.10 A	185.10 A
Output		
Number of phases	3 AC	
Rated voltage	690V IEC	600V NEC <sup>1)</sup>
Rated power (LO)	200.00 kW	200.00 hp
Rated power (HO)	160.00 kW	150.00 hp
Rated current (LO)	208.00 A	208.00 A
Rated current (HO)	171.00 A	171.00 A
Rated current (IN)	213.00 A	
Max. output current	281.00 A	
Pulse frequency	2 kHz	
Output frequency for vector control	0 200 Hz	
Output frequency for V/f control	0 550 Hz	
Overload canability		

#### Overload capability

Low Overload (LO)

110% base load current IL for 60 s in a 300 s cycle time

High Overload (HO)

150% x base load current IH for 60 s within a 600 s cycle time

General tech. specifications		
Power factor $\lambda$	0.90 0.95	
Offset factor $\cos \phi$	0.99	
Efficiency η	0.98	
Sound pressure level (1m)	74 dB	
Power loss <sup>3)</sup>	3.700 kW	
Filter class (integrated)	RFI suppression filter for Category C3	
EMC category (with accessories)	Category C3	
Safety function "Safe Torque Off"	without SIRIUS device (e.g. via S7- 1500F)	
Communication		

Communication

USS, Modbus RTU, BACnet MS/TP

ltem no. : Consignment no. : Project :

Inputs / outputs	
Standard digital inputs	
Number	6
Switching level: $0 \rightarrow 1$	11 V
Switching level: $1 \rightarrow 0$	5 V
Max. inrush current	15 mA
Fail-safe digital inputs	
Number	1
Digital outputs	
Number as relay changeover contact	2
Output (resistive load)	DC 30 V, 5.0 A
Number as transistor	0
Analog / digital inputs	
Number	2 (Differential input)
Resolution	10 bit
Switching threshold as digital input	
0 → 1	4 V
1 → 0	1.6 V
Analog outputs	
Number	1 (Non-isolated output)
PTC/ KTY interface	
1 motor temperature sensor input, sensors that can be connected PTC, KTY and Thermo-Click, accuracy $\pm 5~^\circ\mathrm{C}$	

Closed-loop control techniques		
V/f linear / square-law / parameterizable	Yes	
V/f with flux current control (FCC)	Yes	
V/f ECO linear / square-law	Yes	
Sensorless vector control	Yes	
Vector control, with sensor	No	
Encoderless torque control	No	
Torque control, with encoder	No	

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Ambient conditions		
Allible		
Standard board coating type	Class 3C2, according to IEC 60721-3-3: 2002	
Cooling	Air cooling using an integrated fan	
Cooling air requirement	0.210 m³/s (7.416 ft³/s)	
Installation altitude	1,000 m (3,280.84 ft)	
Ambient temperature		
Operation	-20 45 °C (-4 113 °F)	
Transport	-40 70 °C (-40 158 °F)	
Storage	-25 55 °C (-13 131 °F)	
Relative humidity		
Max. operation	95 % At 40 °C (104 °F), condensation and icing not permissible	
Connections		
Signal cable		
Conductor cross-section	0.15 1.50 mm² (AWG 24 AWG 16)	
Line side		
Version	M10 screw	
Conductor cross-section	35.00 2 x 185.00 mm <sup>2</sup> (AWG 1 MCM 2 x 350)	
Motor end		
Version	M10 screw	
Conductor cross-section	35.00 2 x 185.00 mm <sup>2</sup> (AWG 1 MCM 2 x 350)	
DC link (for braking resistor)		
PE connection	M10 screw	
Max. motor cable length		
Shielded	150 m (492.13 ft)	

Frame size FSG Net weight 113 kg (249.12 lb) Dimensions Width 305 mm (12.01 in) Height 999 mm (39.33 in) Depth 369 mm (14.53 in) Extandards Compliance with standards UL, cUL, CE, C-Tick (RCM), EAC, KCC, SEMI F47, REACH CE marking EMC Directive 2004/108/EC, Low- Voltage Directive 2006/95/EC Converter losses to IEC61800-9-2* Efficiency class IE2 Comparison with the reference converter (90% / 100%) 36.6 % 1,510.0 W (0.6 %) 1,640.0 W (0.7 %) 1,840.0 W (0.7 %) 1,070.0 W (0.4 %) 1,120.0 W (0.5 %)	Me	echanical data
Net weight   113 kg (249.12 lb)     Dimensions   305 mm (12.01 in)     Height   999 mm (39.33 in)     Depth   369 mm (14.53 in)     Standards     UL, cUL, CE, C-Tick (RCM), EAC, KCC, SEMI F47, REACH     Compliance with standards     Converter losses     IEC61800-9-2*     Efficiency class     IE2     Converter losses     Jacco w (1.1 %)     100%   2,730.0 W (1.1 %)   3,090.0 W (1.2 %)   3,700.0 W (1.5 %)     1,510.0 W (0.6 %)     1,510.0 W (0.6 %)   1,640.0 W (0.7 %)   1,840.0 W (0.7 %)	Degree of protection	IP20 / UL open type
Dimensions     Width   305 mm (12.01 in)     Height   999 mm (39.33 in)     Depth   369 mm (14.53 in)     Standards     UL, cUL, CE, C-Tick (RCM), EAC, KCC, SEMI F47, REACH     Compliance with standards     UL, cUL, CE, C-Tick (RCM), EAC, KCC, SEMI F47, REACH     Comverter losses to IEC61800-9-2*     Efficiency class     IE2     Comparison with the reference converter (90% / 100%)     100%   2,730.0 W (1.1 %)   3,090.0 W (1.2 %)   3,700.0 W (1.5 %)     50%   1,510.0 W (0.6 %)   1,640.0 W (0.7 %)   1,840.0 W (0.7 %)   1,840.0 W (0.7 %)	Frame size	FSG
Width   305 mm (12.01 in)     Height   999 mm (39.33 in)     Depth   369 mm (14.53 in)     Standards     Compliance with standards     COnverter Iosses     EMC Directive 2004/108/EC, Low- Voltage Directive 2006/95/EC     Efficiency class     IE2     Converter Iosses to IEC61800-9-2*     Efficiency class     100%   2,730.0 W (1.1 %)   3,090.0 W (1.2 %)   3,700.0 W (1.5 %)     50%   1,510.0 W (0.6 %)   1,640.0 W (0.7 %)   1,840.0 W (0.7 %)   1,840.0 W (0.7 %)	Net weight	113 kg (249.12 lb)
Height   999 mm (39.33 in)     Depth   369 mm (14.53 in)     StanLand     Compliance with standards   UL, CUL, CE, C-Tick (RCM), EAC, KCC, SEMI F47, REACH     Comperter losses to EC61800-9-2*     Converter losses to EC61800-9-2*     Efficiency class   IE2     Comparison with the reference converter (90% / 100%)   36.6 %     1,510.0 W (0.6 %)     1,510.0 W (0.6 %)   1,640.0 W (0.7 %)   1,840.0 W (0.7 %)	Dimensions	
Depth   369 mm (14.53 in)     Standards     Compliance with standards   UL, CUL, CE, C-Tick (RCM), EAC, KCC, SEMI F47, REACH     Comparison with standards   EMC Directive 2004/108/EC, Low-Voltage Directive 2006/95/EC     Converter losses to IEC61800-9-2*     Efficiency class   IE2     Comparison with the reference converter (90% / 100%)   36.6 %     100%   2,730.0 W (1.1 %)   3,090.0 W (1.2 %)   3,700.0 W (1.5 %)     50%   1,510.0 W (0.6 %)   1,640.0 W (0.7 %)   1,840.0 W (0.7 %)	Width	305 mm (12.01 in)
Standards     Standards     Compliance with standards   UL, CUL, CE, C-Tick (RCM), EAC, KCC, SEMI F47, REACH     CE marking   EMC Directive 2004/108/EC, Low-Voltage Directive 2006/95/EC     Converter losses   EEC61800-9-2*     Efficiency class   IE2     Comparison with the reference converter (90% / 100%)   3.6.6 %     1,510.0 W (0.6 %)   1,640.0 W (0.7 %)   3,700.0 W (1.5 %)     50%   1,510.0 W (0.6 %)   1,640.0 W (0.7 %)   1,840.0 W (0.7 %)	Height	999 mm (39.33 in)
Compliance with standards   UL, CUL, CE, C-Tick (RCM), EAC, KCC, SEMI F47, REACH     CE marking   EMC Directive 2004/108/EC, Low-Voltage Directive 2006/95/EC     EMC Directive 2004/108/EC, Low-Voltage Directive 2006/95/EC     Converter losses to IEC61800-9-2*     Efficiency class   IE2     Comparison with the reference converter (90% / 100%)   36.6 %     100%   2,730.0 W (1.1 %)     100%   1,510.0 W (0.6 %)     1,510.0 W (0.6 %)   1,640.0 W (0.7 %)     1,070.0 W (0.4 %)   1,120.0 W (0.5 %)	Depth	369 mm (14.53 in)
Compliance with standards   SEMI F47, REACH     CE marking   EMC Directive 2004/108/EC, Low-Voltage Directive 2006/95/EC     Converter losses to IEC61800-9-2*     Efficiency class   IE2     Comparison with the reference converter (90% / 100%)   36.6 %     Quite 2,730.0 W (1.1 %)   3,090.0 W (1.2 %)   3,700.0 W (1.5 %)     50%   1,510.0 W (0.6 %)   1,640.0 W (0.7 %)   1,840.0 W (0.7 %)		Standards
Certaining     Voltage Directive 2006/95/EC       Converter losses to IEC61800-9-2*       Efficiency class     IE2       Comparison with the reference converter (90% / 100%)     36.6 %       100%     2,730.0 W (1.1 %)       100%     1,510.0 W (0.6 %)       1,510.0 W (0.6 %)     1,640.0 W (0.7 %)       1,070.0 W (0.4 %)     1,120.0 W (0.5 %)	Compliance with standards	
Efficiency class IE2 Comparison with the reference converter (90% / 100%) 36.6 % 2,730.0 W (1.1 %) 3,090.0 W (1.2 %) 3,700.0 W (1.5 %) 1,510.0 W (0.6 %) 1,640.0 W (0.7 %) 1,840.0 W (0.7 %) 1,070.0 W (0.4 %) 1,120.0 W (0.5 %)		
Comparison with the reference converter (90% / 100%) 36.6 % 2,730.0 W (1.1 %) 3,090.0 W (1.2 %) 3,700.0 W (1.5 %) 100% 1,510.0 W (0.6 %) 1,640.0 W (0.7 %) 1,840.0 W (0.7 %) 1,070.0 W (0.4 %) 1,120.0 W (0.5 %)	Converter lo	osses to IEC61800-9-2*
100% 2,730.0 W (1.1 %) 3,090.0 W (1.2 %) 3,700.0 W (1.5 %)   100% 1,510.0 W (0.6 %) 1,640.0 W (0.7 %) 1,840.0 W (0.7 %)   1,070.0 W (0.4 %) 1,120.0 W (0.5 %) 1,200 W (0.5 %)	Efficiency class	IE2
1,510.0 W (0.6 %) 1,070.0 W (0.4 %) 1,070.0 W (0.4 %) 1,070.0 W (0.4 %) 1,070.0 W (0.4 %) 1,120.0 W (0.5 %) 1,070.0 W (0.4 %)		36.6 %
50% •	• <b>4</b> 2,730.0 W (1.1 %)	3,090.0 W (1.2 %) 3,700.0 W (1.5 %)
50% •		
		1,640.0 W (0.7 %) 1,840.0 W (0.7 %)
		1,120.0 W (0.5 %)

The percentage values show the losses in relation to the rated apparent power of the converter.

The diagram shows the losses for the points (as per standard IEC61800-9-2) of the relative torque generating current (I) over the relative motor stator frequency (f). The values are valid for the basic version of the converter without options/components.

\*converted values

<sup>1)</sup>The output current and HP ratings are valid for the voltage range 550V-600V

<sup>3)</sup>Typical value. More information can be found in the element group "Converter losses to IEC 61800-9-2" in this datasheet.

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