

Data sheet for SINAMICS G120X

Article No. : 6SL3220-3YH20-1AF0

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



Figure similar

Rated data		
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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)	6.00 A	6.00 A
Rated current (HO)	5.20 A	5.20 A

Output		
Number of phases	3 AC	
Rated voltage	690V IEC	600V NEC ¹⁾
Rated power (LO)	4.00 kW	5.00 hp
Rated power (HO)	3.00 kW	4.00 hp
Rated current (LO)	6.30 A	6.30 A
Rated current (HO)	5.00 A	5.00 A
Rated current (IN)	7.00 A	
Max. output current	9.00 A	
Pulse frequency	2 kHz	
Output frequency for vector control	0 ... 200 Hz	
Output frequency for V/f control	0 ... 550 Hz	

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 λ	0.90 ... 0.95
Offset factor cos φ	0.99
Efficiency η	0.97
Sound pressure level (1m)	70 dB
Power loss ³⁾	0.191 kW
Filter class (integrated)	RFI suppression filter for Category C2
EMC category (with accessories)	Category C2
Safety function "Safe Torque Off"	without SIRIUS device (e.g. via S7-1500F)

Communication	
Communication	PROFINET, EtherNet/IP

Inputs / outputs	
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Standard digital inputs	
Number	6
Switching level: 0 → 1	11 V
Switching level: 1 → 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 ±5 °C	

Closed-loop control techniques	
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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	
Standard board coating type	Class 3C2, according to IEC 60721-3-3: 2002
Cooling	Air cooling using an integrated fan
Cooling air requirement	0.055 m³/s (1.942 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	screw-type terminal
Conductor cross-section	10.00 ... 35.00 mm² (AWG 8 ... AWG 2)
Motor end	
Version	Screw-type terminals
Conductor cross-section	10.00 ... 35.00 mm² (AWG 8 ... AWG 2)
DC link (for braking resistor)	
PE connection	Screw-type terminals
Max. motor cable length	
Shielded	100 m (328.08 ft)

Mechanical data	
Degree of protection	IP20 / UL open type
Frame size	FSD
Net weight	18.3 kg (40.34 lb)
Dimensions	
Width	200 mm (7.87 in)
Height	472 mm (18.58 in)
Depth	248 mm (9.76 in)
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 to IEC61800-9-2*	
Efficiency class	IE2
Comparison with the reference converter (90% / 100%)	42.1 %



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

¹⁾The output current and HP ratings are valid for the voltage range 550V-600V
³⁾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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Operator panel: Intelligent Operator Panel (IOP-2)	
Screen	
Display design	LCD color
Screen resolution	320 x 240 Pixel
Mechanical data	
Degree of protection	IP55 / UL type 12
Net weight	0.134 kg (0.30 lb)
Dimensions	
Width	70.00 mm (2.76 in)
Height	106.85 mm (4.21 in)
Depth	19.65 mm (0.77 in)
Ambient conditions	
Ambient temperature	
Operation	0 ... 50 °C (32 ... 122 °F) 55 °C only with door installation kit
Storage	-40 ... 70 °C (-40 ... 158 °F)
Transport	-40 ... 70 °C (-40 ... 158 °F)
Relative humidity at 25°C during	
Max. operation	95 %
Approvals	
Certificate of suitability	CE, cULus, EAC, KCC, RCM

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I/O Extension Module

Inputs / outputs

Digital inputs

Number of digital inputs ¹⁾	2
Conductor cross-section	0.5 ... 1.5 mm ² (AWG 21 ... AWG 16) Alternatively 2 x 0.5 mm ²
Input voltage (0→1)	11 V
Input voltage (1→0)	5 V
Input voltage, max.	30 V

Digital outputs

Number of digital outputs	4
Conductor cross-section	1.5 mm ² (AWG 16)
Output current ²⁾	2 A

Analog inputs

Number of analog inputs ³⁾	2
Conductor cross-section	0.5 ... 1.5 mm ² (AWG 21 ... AWG 16) alternatively 2*0.5 mm ²
Current	0 ... 20 mA

Analog outputs

Number of analog outputs	2
Type of analog outputs ⁴⁾	Non-isolated output
Conductor cross-section	0.5 ... 1.5 mm ² (AWG 21 ... AWG 16) Alternatively 2 x 0.5 mm ²
Output voltage	0 ... 10 V
Output current	0 ... 20 mA

Mechanical data

Dimensions

Width	71 mm (2.80 in)
Height	117 mm (4.61 in)
Depth	27 mm (1.06 in)

¹⁾DI 6: digital input; DI 7: P or M switch; DI COM: Input for Control Unit interface (24 V out, max. 250 mA)

²⁾The max. current depends on the temperature and the size of the connected converted. It varies between 2 A and 3 A at 30 V DC.

³⁾2 analog inputs for the connection of Pt1000/Ni1000 temperature sensors. One of which can be optionally used as analog input.

⁴⁾Switchable between voltage (0 ... 10 V) and current (0 ... 20 mA) using a parameter