

## Data sheet for SINAMICS G120X

Article No. : 6SL3220-1YE38-1AB0



Figure similar

Client order no. :  
Order no. :  
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Remarks :

Item no. :  
Consignment no. :  
Project :

### Rated data

#### Input

Number of phases	3 AC	
Line voltage	380 ... 480 V +10 % -20 %	
Line frequency	47 ... 63 Hz	
<b>Rated voltage</b>	<b>400V IEC</b>	<b>480V NEC</b>
Rated current (LO)	86.00 A	74.00 A
Rated current (HO)	78.00 A	69.00 A

#### Output

Number of phases	3 AC	
<b>Rated voltage</b>	<b>400V IEC</b>	<b>480V NEC <sup>1)</sup></b>
Rated power (LO)	45.00 kW	60.00 hp
Rated power (HO)	37.00 kW	50.00 hp
Rated current (LO)	90.00 A	77.00 A
Rated current (HO)	75.00 A	65.00 A
Rated current (IN)	93.00 A	
Max. output current	122.00 A	
Pulse frequency	4 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 $\lambda$	0.90 ... 0.95
Offset factor $\cos \phi$	0.99
Efficiency $\eta$	0.97
Sound pressure level (1m)	70 dB
Power loss <sup>3)</sup>	1.340 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 USS, Modbus RTU, BACnet MS/TP

### Inputs / outputs

#### 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
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#### 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)
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#### PTC/ KTY interface

1 motor temperature sensor input, sensors that can be connected PTC, KTY and Thermo-Click, accuracy  $\pm 5$  °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

Standard board coating type	Class 3C2, according to IEC 60721-3-3: 2002
Cooling	Air cooling using an integrated fan
Cooling air requirement	0.083 m <sup>3</sup> /s (2.931 ft <sup>3</sup> /s)
Installation altitude	1,000 m (3,280.84 ft)
<b>Ambient temperature</b>	
Operation	-20 ... 45 °C (-4 ... 113 °F)
Transport	-40 ... 70 °C (-40 ... 158 °F)
Storage	-25 ... 55 °C (-13 ... 131 °F)
<b>Relative humidity</b>	
Max. operation	95 % At 40 °C (104 °F), condensation and icing not permissible

### Connections

<b>Signal cable</b>	
Conductor cross-section	0.15 ... 1.50 mm <sup>2</sup> (AWG 24 ... AWG 16)
<b>Line side</b>	
Version	screw-type terminal
Conductor cross-section	25.00 ... 70.00 mm <sup>2</sup> (AWG 6 ... AWG 3/0)
<b>Motor end</b>	
Version	Screw-type terminals
Conductor cross-section	25.00 ... 70.00 mm <sup>2</sup> (AWG 6 ... AWG 3/0)
<b>DC link (for braking resistor)</b>	
PE connection	Screw-type terminals
<b>Max. motor cable length</b>	
Shielded	150 m (492.13 ft)

### Mechanical data

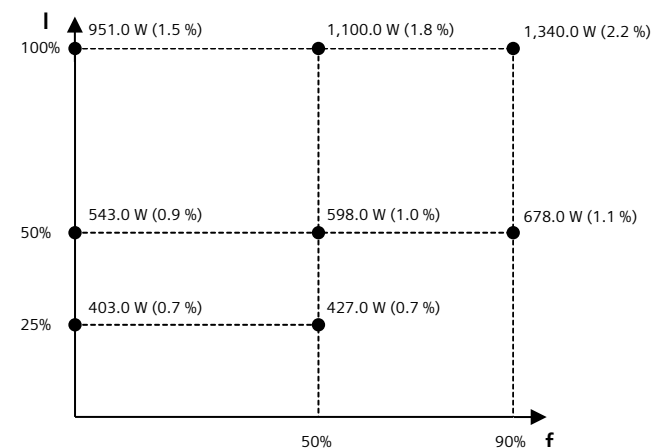
Degree of protection	IP20 / UL open type
Frame size	FSE
Net weight	29 kg (63.93 lb)
<b>Dimensions</b>	
Width	275 mm (10.83 in)
Height	551 mm (21.69 in)
Depth	248 mm (9.76 in)

### 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%)	45.5 %



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.

\*calculated values

<sup>1)</sup>The output current and HP ratings are valid for the voltage range 440V-480V

<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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### I/O Extension Module

#### Inputs / outputs

##### Digital inputs

Number of digital inputs <sup>1)</sup>	2
Conductor cross-section	0.5 ... 1.5 mm <sup>2</sup> (AWG 21 ... AWG 16) Alternatively 2 x 0.5 mm <sup>2</sup>
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 <sup>2</sup> (AWG 16)
Output current <sup>2)</sup>	2 A

##### Analog inputs

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

##### Analog outputs

Number of analog outputs	2
Type of analog outputs <sup>4)</sup>	Non-isolated output
Conductor cross-section	0.5 ... 1.5 mm <sup>2</sup> (AWG 21 ... AWG 16) Alternatively 2 x 0.5 mm <sup>2</sup>
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)

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

<sup>2)</sup>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.

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

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