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Data sheet for SINAMICS G120X

Article No. : 6SL3220-3YE12-1AF0



Figure similar

Client order no. :
Order no. :
Offer no. :
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	
Rated voltage	**400V IEC**	**480V NEC**
Rated current (LO)	2.80 A	2.70 A
Rated current (HO)	2.10 A	2.00 A

Output

Number of phases	3 AC	
Rated voltage	**400V IEC**	**480V NEC** [1]
Rated power (LO)	1.10 kW	1.50 hp
Rated power (HO)	0.75 kW	1.00 hp
Rated current (LO)	3.10 A	3.00 A
Rated current (HO)	2.20 A	2.10 A
Rated current (IN)	3.20 A	
Max. output current	3.40 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 λ	0.70 ... 0.85
Offset factor cos φ	0.96
Efficiency η	0.97
Sound pressure level (1m)	55 dB
Power loss [3]	0.055 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

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

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	0.005 m³/s (0.177 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	1.50 ... 2.50 mm² (AWG 16 ... AWG 14)
Motor end	
Version	Screw-type terminals
Conductor cross-section	1.50 ... 2.50 mm² (AWG 16 ... AWG 14)
DC link (for braking resistor)	
PE connection	On housing with M4 screw
Max. motor cable length	
Shielded	150 m (492.13 ft)

Mechanical data

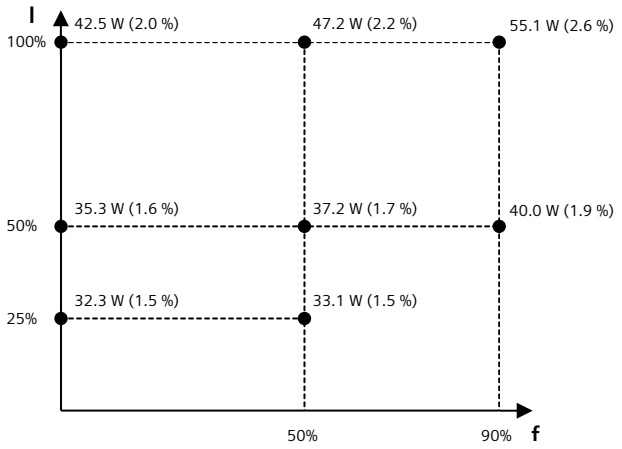
Degree of protection	IP20 / UL open type
Frame size	FSA
Net weight	3.4 kg (7.50 lb)
Dimensions	
Width	73 mm (2.87 in)
Height	232 mm (9.13 in)
Depth	218 mm (8.58 in)

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%)	31.3 %



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

[1] The output current and HP ratings are valid for the voltage range 440V-480V

[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 mm² (AWG 21 ... AWG 16) Alternatively 2 x 0.5 mm²
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 mm² (AWG 16)
Output current [2]	2 A

Analog inputs

Number of analog inputs [3]	2
Conductor cross-section	0.5 ... 1.5 mm² (AWG 21 ... AWG 16) alternatively 2*0.5 mm²
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 mm² (AWG 21 ... AWG 16) Alternatively 2 x 0.5 mm²
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