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Data sheet for SINAMICS G120X

Article No. :   6SL3230-3YE12-1UP0

Client order no. :   Item no. :
Order no. :   Consignment no. :
Offer no. :   Project :
Remarks :

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)	Unfiltered
EMC category (with accessories)	without
Safety function "Safe Torque Off"	without SIRIUS device (e.g. via S7-1500F)

Communication	
Communication	PROFIBUS DP

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 ℃	

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 3C3, 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)
Unshielded	300 m (984.25 ft)

Mechanical data

Degree of protection	IP20 / UL open type
Frame size	FSA
Net weight	3.2 kg (7.05 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%)	31.1 %
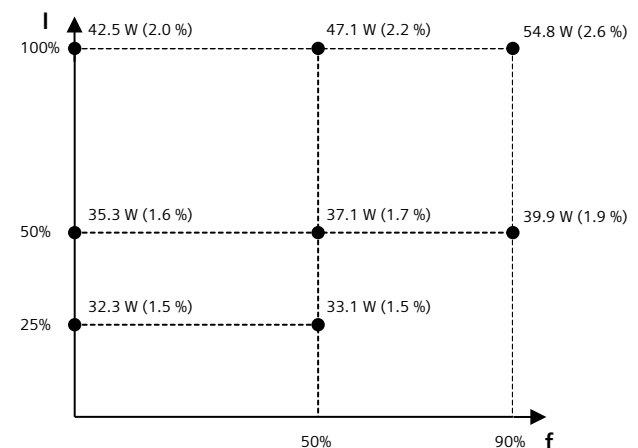
The percentage values show the losses in relation to the rated apparent power of the converter.

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 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 ℃ (32 ... 122 °F)
	55 ℃ only with door installation kit
Storage	-40 ... 70 ℃ (-40 ... 158 °F)
Transport	-40 ... 70 ℃ (-40 ... 158 °F)

Relative humidity at 25℃ 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