

Data sheet for SINAMICS G220

Article No. : 6SL4112-0KQ16-0AF0



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	200...240V (-20+10 %)	
Line frequency	50/60 Hz (47 ... 63 Hz)	
Voltage range (voltage class)	200 ... 240 V (230V IEC)	200 ... 240 V (240V NEC)
Rated current	29.5 A	26.6 A

Output

Number of phases	3 AC	
Voltage range (voltage class)	200 ... 240 V (230V IEC)	200 ... 240 V (240V NEC)
Rated power (LO)	7.50 kW	10.00 hp
Rated power (HO)	5.50 kW	7.50 hp
Rated current (LO)	34.0 A	28.0 A
Rated current (HO)	27.0 A	22.0 A
Rated current (IN)	34.9 A	28.8 A
Max. output current	54.0 A	
Pulse frequency (factory setting)	4 kHz	
Output frequency for vector control	0 ... 480 Hz	
Output frequency for V/f control	0 ... 550 Hz	

Overload capability

Low Overload (LO)
150% rated current (LO) for 3 s, followed by 110% rated current (LO) for 57 s in a 300 s cycle time
High Overload (HO)
200% rated current (HO) for 3 s, followed by 150% rated current (HO) for 57 s in a 300 s cycle time

Electronic power supply

Voltage	24 V (20.4 ... 28.8 V)
Current demand, max.	2.00 A

General tech. specifications

Power factor λ (typical)	0.90
Displacement factor $\cos \phi$ (typical)	0.98
Efficiency η	0.96
Sound pressure level (1m)	67 dB
Filter class (integrated)	Unfiltered

Communication

Communication	PROFINET, Modbus TCP, EtherNet/IP
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SINAMICS SDI Standard Operator Panel

User interface

Operator element version	Integrated SDI standard for monitoring and diagnostics
Interface design	RJ45 with 100 MBit/s Ethernet
Display design	1.4" graphic display
Screen resolution	128 x 160 Pixel

Inputs / outputs

Standard digital inputs

Number	6 (additionally 2 AI configurable as 2 DI)
Switching level: 0 → 1	11 V
Switching level: 1 → 0	5 V
Max. inrush current	4 mA
Number as rapid input	1 (DI5)

Fail-safe digital inputs

Number	1 (additionally 4 DI configurable as 2 FDI)
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Digital outputs

Number as relay changeover contact	2
Output (resistive load)	DC 30 V, max. 0.5 A
Number as transistor	1
Output (resistive load)	DC 30 V, max. 0.4 A

Analog inputs

Number	2 (Differential input)
Resolution	16 bit

Operating mode

Voltage bipolar	-10 ... 10 V
Voltage unipolar	0 ... 10 V
Current	0 ... 20 mA
Current monitored	4 ... 20 mA

Switching threshold as digital input

0 → 1	11 V
1 → 0	5 V

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Article No. : 6SL4112-0KQ16-0AF0

Analog outputs

Number	1 (Non-isolated output)
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Operating mode

Voltage unipolar	0 ... 10 V
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Current	0 ... 20 mA
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Current monitored	4 ... 20 mA
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Motor temperature interface

1 input for motor temperature, connectable PTC, KTY 84, PT1000, and bimetal temperature switch

PTC interface

Short-circuit monitoring < 200Ωm, overtemperature>1650Ωm

KTY84 interface

Short-circuit monitoring < 500Ωm; wire breakage>2120Ωm; measurement current 2mA

PTC1000 interface

Short-circuit monitoring < 603Ωm; wire breakage>2120Ωm; measurement current 2mA

Closed-loop control techniques

V/f linear / square-law / parameterizable	Yes
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V/f with flux current control (FCC)	Yes
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V/f ECO linear / square-law	Yes
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Sensorless vector control	Yes
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Vector control, with sensor	Yes
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Encoderless torque control	Yes
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Torque control, with encoder	Yes
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Ambient conditions

Cooling	Air cooling using an integrated fan
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Cooling air requirement	0.036 m³/s (1.259 ft³/s)
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Installation altitude (without derating)	1,000 m (3,281 ft)
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Max. ambient temperature with derating	50 °C
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Ambient temperature with high overload (without derating)	45 °C
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Ambient temperature with low overload (without derating)	40 °C
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Relative humidity during

Max. operation	95 %
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Environmental conditions

Chemically active substances

Operation	Class 3C3, according to IEC 60721-3-3: 2002
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Transport	Class 2C2 according to IEC 60721-3-2:1997 in marine- and weather-resistant transport packaging
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Storage	Class 1C2 according to IEC 60721-3-1: 2002 in the transport packaging
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Biologically active substances

Operation	Class 3B1 according to IEC 60721-3-3: 2002
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Transport	Class 2B1 according to IEC 60721-3-2:1997 in the transport packaging
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Storage	Class 1B1 according to IEC 60721-3-1:1997 in the transport packaging
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Mechanically active substances

Operation	Class 3S2 according to IEC 60721-3-3: Ed. 2.2 2002 (Conductive dusts are not permitted.)
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Climatic environmental conditions

Operation	Class 3K3 according to IEC 60721-3-3 Ed. 2.2: 2002
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Transport	Class 2K4 according to IEC 60721-3-2:1997 in the transport packaging; temperature -40 ... +70 °C; relative atmospheric humidity 5..95% (without condensation)
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Storage	Class 1K4 according to IEC 60721-3-1:1997 in the transport packaging; temperature -25 ... +55 °C; relative atmospheric humidity 5..95% (without condensation), storage altitude <=4000m; condensation, spray water, ice formation, salt mist not permissible
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Mechanical environmental conditions

Operation	Class 3M1 according to IEC 60721-3-3 Ed. 2.2: 2002
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Transport	Class 2M3 according to IEC 60721-3-2:1997 in the transport packaging
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Storage	Class 1M2 according to IEC 60721-3-1:1997 in the transport packaging
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Integrated Safety functions

Safety function "Safe Torque Off"	Yes
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Safe Stop 1 (SS1)	Yes
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Safe Motor Temperature (SMT)	No
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Extended software functions can be enabled with a license using an SD card.

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Article No. : 6SL4112-0KQ16-0AFO

Connections

Signal cable

Type	Push-in connection
Conductor cross-section	0.20 ... 2.50 mm ² (24 ... 12 AWG)

Line side

Type	screw terminal
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Conductor cross-section

for single-core cables	2.50 ... 16.00 mm ² (14 ... 6 AWG)
for multi-core cables	2.50 ... 16.00 mm ² (14 ... 6 AWG)

Motor end

Type	screw terminal
Conductor cross-section	2.50 ... 16.00 mm ² (14 ... 6 AWG)

DC link

Type	screw terminal
Conductor cross-section	2.50 ... 16.00 mm ² (14 ... 6 AWG)

PE connection

Type	M4, screw terminal
Conductor cross-section	2.50 ... 16.00 mm ² (14 ... 6 AWG)
Type	screw terminal, M4
Conductor cross-section	2.50 ... 16.00 mm ² (14 ... 6 AWG)

Max. motor cable length

Shielded	200 m (656 ft)
Unshielded	300 m (984 ft)

Mechanical data

Degree of protection	IP55 / UL type 12
Frame size	FSC
Net weight	21.1 kg (46.517482 lb)

Dimensions

Width	245 mm (9.65 in)
Height	460 mm (18.11 in)
Depth	250 mm (9.84 in)

Memory card

1 slot for SD card	SINAMICS SD card, 8GByte
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Certificates

Certificate of suitability	CE, cULus (UL 61800-5-1, CSA 22.2 No. 274) , EAC, UKCA
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CE marking

EMC directive 2014/30/EU; Low Voltage Directive 2014/35/EU; RoHS Directive 2011/65/EU; energy efficiency and eco design 2009/125/EU

Verification of suitability for fail-safety	SIL 3 according to IEC 61508 and IEC 61800-5-2, PL e according to ISO 13849-1, Category 4 according to ISO 13849-1
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Environmental compatibility	RoHS II, REACH, Green Passport
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Explosion protection	-
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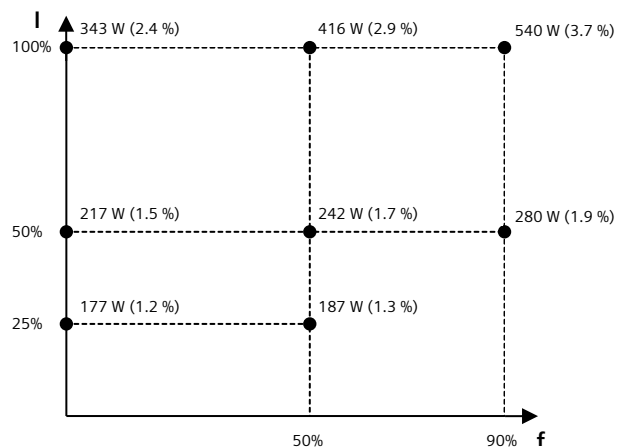
shipbuilding approval	No
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Converter losses to IEC61800-9-2*

Efficiency class	IE2
In scope of Ecodesign Directive	No (in the valid range)
Reason of exception	no exception

IEC power loss data based on

Input	3 AC 230 V, 50 Hz
Output	3 AC 0 - 230 V, 50 Hz, 4 kHz Space-vector modulation
Rated apparent power	13.9 kVA
Power loss in standby	31.2 W (0.2%)



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Article No. : 6SL4112-0KQ16-0AF0

NEC power loss data based on

Input	3 AC 240 V, 60 Hz
Output	3 AC 0 - 240 V, 60 Hz, 4 kHz Space-vector modulation
Rated apparent power	12 kVA
Power loss in standby	31.2 W (0.3%)

the absolute power losses for motor voltages according to NEC (AC 230 V, AC 460 V, AC 575 V) are approximately 2 % lower

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

