

Article No. : 6SL4113-0JA20-2FF0



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...415V / 440...500V (~-20+10 %)	
Line frequency	50/60 Hz (47 ... 63 Hz)	
<b>Voltage range (voltage class)</b>	<b>380 ... 415 V (400V IEC)</b>	<b>440 ... 500 V (480V NEC)</b>
Rated current	38.0 A	32.0 A

#### Output

Number of phases	3 AC	
<b>Voltage range (voltage class)</b>	<b>380 ... 415 V (400V IEC)</b>	<b>440 ... 500 V (480V NEC)</b>
Rated power (LO)	18.50 kW	25.00 hp
Rated power (HO)	15.00 kW	20.00 hp
Rated current (LO)	40.0 A	34.0 A
Rated current (HO)	34.0 A	27.0 A
Rated current (IN)	41.1 A	34.9 A
Rated Current (SRM)	43.0 A	

Max. output current 68.0 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  $\lambda$  (typical)

Displacement factor  $\cos \phi$  (typical) 0.98

Efficiency  $\eta$  0.98

Sound pressure level (1m) 70 dB

Filter class (integrated) RFI suppression filter for Category C2

### Communication

Communication PROFINET, Modbus TCP, EtherNet/IP

### 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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### Analog outputs

Number	1 (Non-isolated output)
<b>Operating mode</b>	
Voltage unipolar	0 ... 10 V
Current	0 ... 20 mA
Current monitored	4 ... 20 mA

### Motor temperature interface

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

### PTC interface

CU: short-circuit monitoring < 20 ohms, overtemperature > 1650 ohms, OM-SMT: type A, in accordance with IEC 60947-8, in accordance with EN 50495

### KTY84 interface

Short-circuit monitoring < 500ohm; wire breakage>21200hm; measurement current 2mA

### PTC1000 interface

Short-circuit monitoring < 6030hm; wire breakage>21200hm; measurement current 2mA

### 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 Yes

Encoderless torque control Yes

Torque control, with encoder Yes

### Ambient conditions

Cooling Air cooling using an integrated fan

Cooling air requirement 0.038 m³/s (1.342 ft³/s)

Installation altitude (without derating) 1,000 m (3,281 ft)

Max. ambient temperature with derating 50 °C

Ambient temperature with high overload (without derating) 45 °C

Ambient temperature with low overload (without derating) 40 °C

### Relative humidity during

Max. operation 95 %

### Environmental conditions

#### Chemically active substances

Operation Class 3C2, according to IEC 60721-3-3: 2002

Transport Class 2C2 according to IEC 60721-3-2:1997 in marine- and weather-resistant transport packaging

Storage Class 1C2 according to IEC 60721-3-1: 2002 in the transport packaging

#### Biologically active substances

Operation Class 3B1 according to IEC 60721-3-3: 2002

Transport Class 2B1 according to IEC 60721-3-2:1997 in the transport packaging

Storage Class 1B1 according to IEC 60721-3-1:1997 in the transport packaging

#### Mechanically active substances

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

#### Climatic environmental conditions

Operation Class 3K3 according to IEC 60721-3-3 Ed. 2.2: 2002

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)

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

#### Mechanical environmental conditions

Operation Class 3M1 according to IEC 60721-3-3 Ed. 2.2: 2002

Transport Class 2M3 according to IEC 60721-3-2:1997 in the transport packaging

Storage Class 1M2 according to IEC 60721-3-1:1997 in the transport packaging

### Integrated Safety functions

Safety function "Safe Torque Off" Yes

Safe Stop 1 (SS1) Yes

Safe Motor Temperature (SMT) Yes

Extended software functions can be enabled with a license using an SD card.

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### Connections

#### Signal cable

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

#### Line side

Type	screw terminal
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#### Conductor cross-section

for single-core cables	16.00 ... 35.00 mm <sup>2</sup> (6 ... 2 AWG)
for multi-core cables	16.00 ... 35.00 mm <sup>2</sup> (6 ... 2 AWG)

#### Motor end

Type	screw terminal
Conductor cross-section	6.00 ... 35.00 mm <sup>2</sup> (10 ... 2 AWG)

#### DC link

Type	screw terminal
Conductor cross-section	6.00 ... 35.00 mm <sup>2</sup> (10 ... 2 AWG)

#### PE connection

Type	M8, screw terminal
Conductor cross-section	6.00 ... 35.00 mm <sup>2</sup> (10 ... 2 AWG)
Type	stud terminal, M6
Conductor cross-section	6.00 ... 50.00 mm <sup>2</sup> (10 ... 1/0 AWG)

#### Max. motor cable length

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

#### with EMC category C2

Shielded	150 m (492 ft)
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### Mechanical data

Degree of protection	IP55 / UL type 12
Frame size	FSD1
Net weight	26.9 kg (59.3 lb)

#### Dimensions

Width	209 mm (8.23 in)
Height	571 mm (22.48 in)
Depth	284 mm (11.18 in)

### Memory card

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

Certificate of suitability	CE, KC, 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	according to ATEX Directive 2014/34/EU
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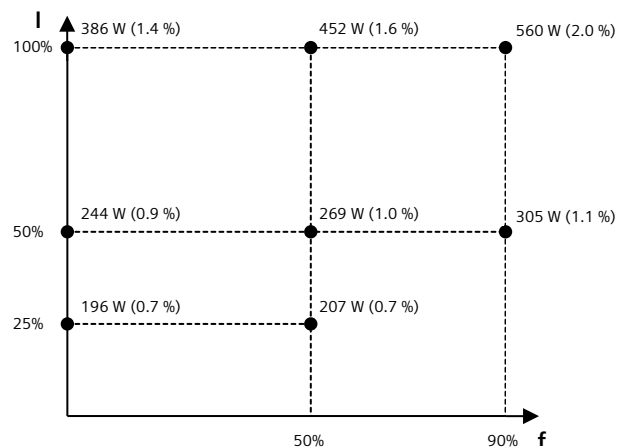
shipbuilding approval	No
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### Converter losses to IEC61800-9-2\*

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 400 V, 50 Hz
Output	3 AC 0 - 400 V, 50 Hz, 4 kHz Space-vector modulation
Rated apparent power	28.5 kVA
Power loss in standby	29.7 W (0.1%)



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### NEC power loss data based on

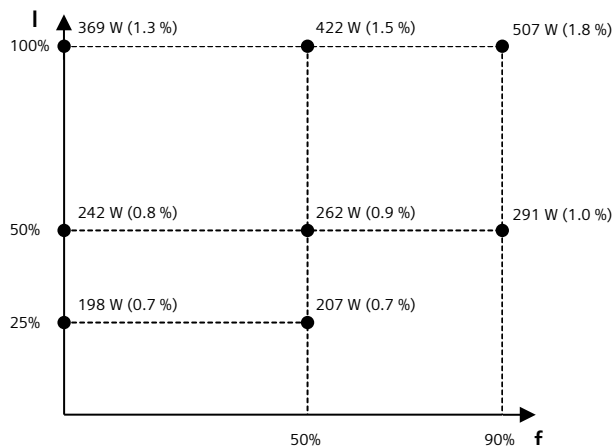
Input	3 AC 480 V, 60 Hz
Output	3 AC 0 - 480 V, 60 Hz, 4 kHz Space-vector modulation
Rated apparent power	29 kVA
Power loss in standby	29.7 W (0.1%)

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



## Data sheet for SINAMICS G220

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### Data sheet for Option Module OM-SMT (Safe Motor Temperature)

#### Electrical data

Operating voltage (DC)	24.0 V (20.4 ... 28.8 V) from internal 24 V supply
Current demand, max.	0.15 A
Power loss	2.4 W

#### Inputs / outputs

##### PTC interface

Type A, according to IEC 60947-8; short-circuit detection <10 Ohm; no short-circuit >20 Ohm; overtemperature >2100 Ohm; no overtemperature <1100 Ohm; measuring current 1.5 mA; 1x PTC warning; 1x PTC shutdown (safety).

#### Mechanical data

Degree of protection	IP20 / UL open type
Net weight	81.6 g (2.88 oz)

#### Dimensions

Width	65.2 mm (2.57 in)
Height	67.4 mm (2.65 in)
Depth	53.6 mm (2.11 in)

#### Ambient conditions

##### Ambient temperature during

Operation	-20 ... 60 °C (-4 ... 140 °F)
Transport	-40 ... 70 °C (-40 ... 158 °F)
Storage	-25 ... 55 °C (-13 ... 131 °F)

##### Relative humidity

without condensation	95 %
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#### Connections

##### Signal cable

Version	Push-in connection
Conductor cross-section	0.5 ... 2.5 mm <sup>2</sup>

#### Certificates

Certificate of suitability	CU, cULus (UL 61800-5-1, CSA 22.2 No. 274), EAC, RoHS II, REACH, safety according to EC 61800-5-2 and ISO 13849-1, Green Passport
Explosion protection	according to ATEX Directive 2014/34/EU