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# Data sheet for SINAMICS G220

## Article No. : 6SL4113-0KP24-0FF0



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) | |
| **Voltage range (voltage class)** | **380 ... 415 V (400V IEC)** | **440 ... 500 V (480V NEC)** |
| Rated current | 73.0 A | 60.0 A |

### Output

| | | |
|---|---|---|
| Number of phases | 3 AC | |
| **Voltage range (voltage class)** | **380 ... 415 V (400V IEC)** | **440 ... 500 V (480V NEC)** |
| Rated power (LO) | 37.00 kW | 50.00 hp |
| Rated power (HO) | 30.00 kW | 40.00 hp |
| Rated current (LO) | 75.0 A | 65.0 A |
| Rated current (HO) | 63.0 A | 52.0 A |
| Rated current (IN) | 77.0 A | 66.7 A |
| Rated Current (SRM) | 85.0 A | |
| Max. output current | 126.0 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) | |
| Displacement factor cos φ (typical) | 0.98 |
| Efficiency η | 0.98 |
| Sound pressure level (1m) | 70 dB |
| Filter class (integrated) | Unfiltered |

## 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) |

### 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) |
| **Operating mode** | |
| 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 < 50Ohm; wire breakage>2120Ohm; measurement current 2mA | |
| **PTC1000 interface** | |
| Short-circuit monitoring < 603Ohm; wire breakage>2120Ohm; 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 | 0.058 m³/s (2.048 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 3C3, according to IEC 60721-3-3: 2002 |
| Transport | Class 2C2 according to IEC 60721-3-2:1997<br>in marine- and weather-resistant transport packaging |
| Storage | Class 1C2 according to IEC 60721-3-1: 2002<br>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<br>in the transport packaging |
| Storage | Class 1B1 according to IEC 60721-3-1:1997<br>in the transport packaging |
| **Mechanically active substances** | |
| Operation | Class 3S2 according to IEC 60721-3-3: Ed. 2.2 2002<br>(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<br>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<br>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<br>in the transport packaging |
| Storage | Class 1M2 according to IEC 60721-3-1:1997<br>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 mm² (24 ... 12 AWG) |
| **Line side** | |
| Type | screw terminal |
| **Conductor cross-section** | |
| for single-core cables | 16.00 ... 50.00 mm² (6 ... 1/0 AWG) |
| for multi-core cables | 16.00 ... 50.00 mm² (6 ... 1/0 AWG) |
| **Motor end** | |
| Type | screw terminal |
| Conductor cross-section | 10.00 ... 50.00 mm² (8 ... 1/0 AWG) |
| **DC link** | |
| Type | screw terminal |
| Conductor cross-section | 10.00 ... 50.00 mm² (8 ... 1/0 AWG) |
| **PE connection** | |
| Type | M8, screw terminal |
| Conductor cross-section | 10.00 ... 50.00 mm² (8 ... 1/0 AWG) |
| Type | stud terminal, M6 |
| Conductor cross-section | 10.00 ... 50.00 mm² (8 ... 1/0 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 | FSD2 |
| Net weight | 34.7 kg (76.5 lb) |
| **Dimensions** | |
| Width | 270 mm (10.63 in) |
| Height | 650 mm (25.59 in) |
| Depth | 283 mm (11.14 in) |

## Memory card

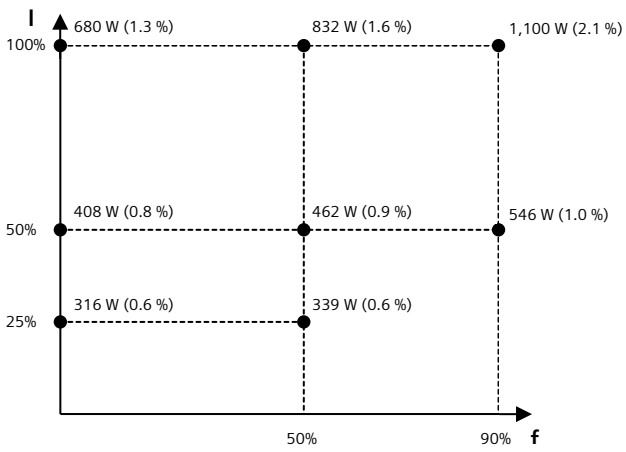
| | |
|---|---|
| 1 slot for SD card | SINAMICS SD card, 8GByte |

## Certificates

| | |
|---|---|
| Certificate of suitability | CE, cULus (UL 61800-5-1, CSA 22.2 No. 274) , EAC, UKCA |
| 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 |
| Environmental compatibility | RoHS II, REACH, Green Passport |
| Explosion protection | according to ATEX Directive 2014/34/EU |
| shipbuilding approval | No |

## 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,<br>4 kHz Space-vector modulation |
| Rated apparent power | 53.3 kVA |
| Power loss in standby | 35.2 W (0.1%) |






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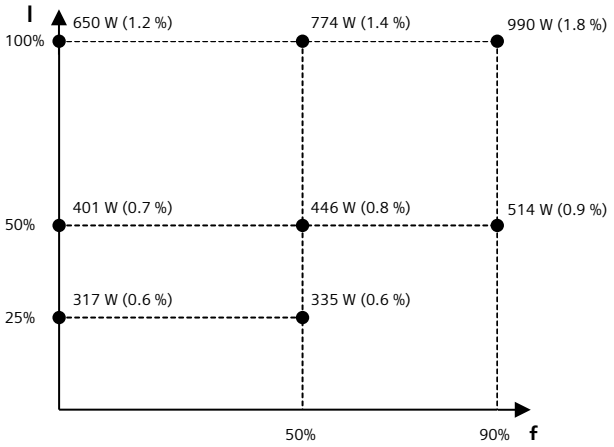
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## Data sheet for SINAMICS G220

**Article No. :** **6SL4113-0KP24-0FF0**

**NEC power loss data based on**

| | |
|---|---|
| Input | 3 AC 480 V, 60 Hz |
| Output | 3 AC 0 - 480 V, 60 Hz,<br>4 kHz Space-vector modulation |
| Rated apparent power | 55.5 kVA |
| Power loss in standby | 35.2 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



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## Data sheet for SINAMICS G220

**Article No. :** **6SL4113-0KP24-0FF0**

### 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 % |

#### Connections

**Signal cable**

| | |
|---|---|
| Version | Push-in connection |
| Conductor cross-section | 0.5 ... 2.5 mm² |

#### 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 |



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