

Article No. : 6SL4113-0JP17-0AF0



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                         | 380...415V / 440...500V (~±20+10 %) |                                     |
| Line frequency                       | 50/60 Hz (47 ... 63 Hz)             |                                     |
| <b>Voltage range (voltage class)</b> | <b>380 ... 415 V<br/>(400V IEC)</b> | <b>440 ... 500 V<br/>(480V NEC)</b> |
| Rated current                        | 23.0 A                              | 20.0 A                              |

#### Output

|                                      |                                     |                                     |
|--------------------------------------|-------------------------------------|-------------------------------------|
| Number of phases                     | 3 AC                                |                                     |
| <b>Voltage range (voltage class)</b> | <b>380 ... 415 V<br/>(400V IEC)</b> | <b>440 ... 500 V<br/>(480V NEC)</b> |
| Rated power (LO)                     | 11.00 kW                            | 15.00 hp                            |
| Rated power (HO)                     | 7.50 kW                             | 10.00 hp                            |
| Rated current (LO)                   | 27.0 A                              | 21.0 A                              |
| Rated current (HO)                   | 19.0 A                              | 14.0 A                              |
| Rated current (IN)                   | 27.7 A                              | 21.6 A                              |
| Rated Current (SRM)                  | 27.0 A                              |                                     |

Max. output current 40.5 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  $\eta$  0.97

Sound pressure level (1m) 67 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

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

### KTY84 interface

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

### PTC1000 interface

Short-circuit monitoring < 6030Ωm; wire breakage>21200Ωm; 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                                   | 0.036 m³/s (1.259 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<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)  | No  |
| Extended software functions can be enabled with a license using an SD card. |     |

## Data sheet for SINAMICS G220

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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 |
|------|----------------|

#### Conductor cross-section

|                        |   |
|------------------------|---|
| for single-core cables | 2.00 ... 16.00 mm <sup>2</sup> (14 ... 6 AWG) |
| for multi-core cables  | 2.00 ... 16.00 mm <sup>2</sup> (14 ... 6 AWG) |

#### Motor end

|                         |   |
|-------------------------|---|
| Type                    | screw terminal                                |
| Conductor cross-section | 2.50 ... 16.00 mm <sup>2</sup> (14 ... 6 AWG) |

#### DC link

|                         |   |
|-------------------------|---|
| Type                    | screw terminal                                |
| Conductor cross-section | 2.00 ... 16.00 mm <sup>2</sup> (14 ... 6 AWG) |

#### PE connection

|                         |   |
|-------------------------|---|
| Type                    | M4, screw terminal                            |
| Conductor cross-section | 2.00 ... 16.00 mm <sup>2</sup> (14 ... 6 AWG) |
| Type                    | screw terminal, M4                            |
| Conductor cross-section | 2.00 ... 16.00 mm <sup>2</sup> (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           | 21.5 kg (47.4 lb) |

#### Dimensions

|        |                   |
|--------|-------------------|
| Width  | 240 mm (9.45 in)  |
| Height | 460 mm (18.11 in) |
| Depth  | 250 mm (9.84 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 | - |
|----------------------|---|

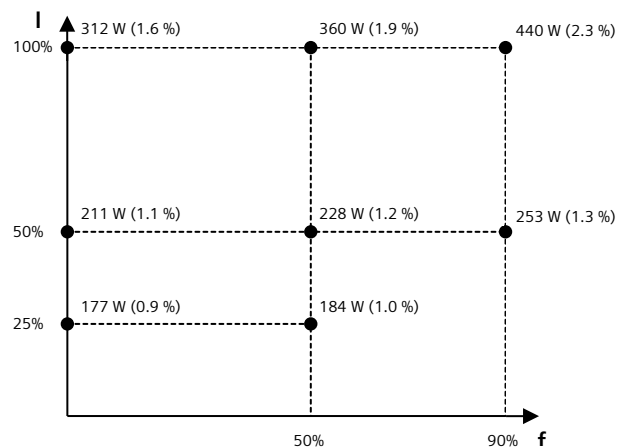
|                       |    |
|-----------------------|----|
| shipbuilding approval | No |
|-----------------------|----|

### 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  | 19.2 kVA  |
| Power loss in standby | 28.6 W (0.2%)   |



## Data sheet for SINAMICS G220

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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,<br>4 kHz Space-vector modulation |
| Rated apparent power  | 18 kVA  |
| Power loss in standby | 28.6 W (0.2%)   |

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

