

Article No. : 6SL4113-0JP13-0FF0

Client order no. :  
Order no. :  
Offer no. :  
Remarks :

Item no. :  
Consignment no. :  
Project :

Figure similar



### Rated data

|                               |                                     |                             |
|-------------------------------|-------------------------------------|-----------------------------|
| <b>Input</b>                  |                                     |                             |
| 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<br>(400V IEC)         | 440 ... 500 V<br>(480V NEC) |
| Rated current                 | 10.0 A                              | 7.0 A                       |

|                                     |                             |                             |
|-------------------------------------|-----------------------------|-----------------------------|
| <b>Output</b>                       |                             |                             |
| Number of phases                    | 3 AC                        |                             |
| Voltage range (voltage class)       | 380 ... 415 V<br>(400V IEC) | 440 ... 500 V<br>(480V NEC) |
| Rated power (LO)                    | 4.00 kW                     | 5.00 hp                     |
| Rated power (HO)                    | 3.00 kW                     | 4.00 hp                     |
| Rated current (LO)                  | 11.0 A                      | 7.6 A                       |
| Rated current (HO)                  | 8.5 A                       | 6.2 A                       |
| Rated current (IN)                  | 11.3 A                      | 7.8 A                       |
| Rated Current (SRM)                 | 11.0 A                      |                             |
| Max. output current                 | 17.0 A                      |                             |
| Pulse frequency (factory setting)   | 4 kHz                       |                             |
| Output frequency for vector control | 0 ... 480 Hz                |                             |
| Output frequency for V/f control    | 0 ... 550 Hz                |                             |

|                                                                                                     |  |
|-----------------------------------------------------------------------------------------------------|--|
| <b>Overload capability</b>                                                                          |  |
| 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                        | 0.97       |
| Sound pressure level (1m)           | 63 dB      |
| Filter class (integrated)           | Unfiltered |

### Communication

|               |                                   |
|---------------|-----------------------------------|
| Communication | PROFINET, Modbus TCP, EtherNet/IP |
|---------------|-----------------------------------|

### SINAMICS SDI Standard Operator Panel

|                          |                                                        |
|--------------------------|--------------------------------------------------------|
| <b>User interface</b>    |                                                        |
| 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

|                                |                                            |
|--------------------------------|--------------------------------------------|
| <b>Standard digital inputs</b> |                                            |
| 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)                                    |

|                                 |                                             |
|---------------------------------|---------------------------------------------|
| <b>Fail-safe digital inputs</b> |                                             |
| Number                          | 1 (additionally 4 DI configurable as 2 FDI) |

|                                    |                     |
|------------------------------------|---------------------|
| <b>Digital outputs</b>             |                     |
| 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 |

|                      |                        |
|----------------------|------------------------|
| <b>Analog inputs</b> |                        |
| Number               | 2 (Differential input) |
| Resolution           | 16 bit                 |

|                       |              |
|-----------------------|--------------|
| <b>Operating mode</b> |              |
| Voltage bipolar       | -10 ... 10 V |
| Voltage unipolar      | 0 ... 10 V   |
| Current               | 0 ... 20 mA  |
| Current monitored     | 4 ... 20 mA  |

|                                             |      |
|---------------------------------------------|------|
| <b>Switching threshold as digital input</b> |      |
| 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 < 500hm; 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                                   | 0.050 m³/s (1.766 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                               |
| <b>Relative humidity during</b>                           |                                     |
| Max. operation                                            | 95 %                                |

| Environmental conditions                                                    |                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Chemically active substances</b>                                         |                                                                                                                                                                                                                                                              |
| 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                                                                                                                                                                                        |
| <b>Biologically active substances</b>                                       |                                                                                                                                                                                                                                                              |
| 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                                                                                                                                                                                         |
| <b>Mechanically active substances</b>                                       |                                                                                                                                                                                                                                                              |
| Operation                                                                   | Class 3S2 according to IEC 60721-3-3: Ed. 2.2 2002 (Conductive dusts are not permitted.)                                                                                                                                                                     |
| <b>Climatic environmental conditions</b>                                    |                                                                                                                                                                                                                                                              |
| 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 |
| <b>Mechanical environmental conditions</b>                                  |                                                                                                                                                                                                                                                              |
| 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                                                                                                                                                                                         |
| <b>Integrated Safety functions</b>                                          |                                                                                                                                                                                                                                                              |
| 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. |                                                                                                                                                                                                                                                              |

## Data sheet for SINAMICS G220

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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  | 2.00 ... 6.00 mm² (16 ... 10 AWG) |
| for multi-core cables   | 2.00 ... 6.00 mm² (16 ... 10 AWG) |
| Motor end               |                                   |
| Type                    | screw terminal                    |
| Conductor cross-section | 2.50 ... 6.00 mm² (14 ... 10 AWG) |
| DC link                 |                                   |
| Type                    | screw terminal                    |
| Conductor cross-section | 2.00 ... 6.00 mm² (14 ... 10 AWG) |
| PE connection           |                                   |
| Type                    | M5, screw terminal                |
| Conductor cross-section | 2.00 ... 6.00 mm² (14 ... 10 AWG) |
| Type                    | screw terminal, M4                |
| Conductor cross-section | 2.00 ... 6.00 mm² (14 ... 10 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           | FSB                |
| Net weight           | 16.8 kg (37.04 lb) |
| Dimensions           |                    |
| Width                | 220 mm (8.66 in)   |
| Height               | 415 mm (16.34 in)  |
| Depth                | 225 mm (8.86 in)   |

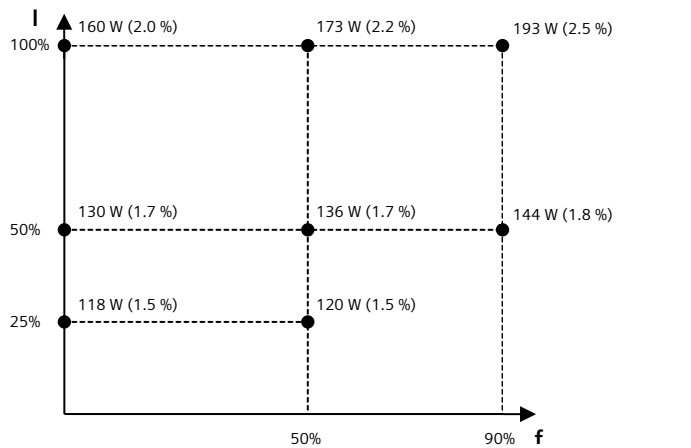
| Memory card        |                          |
|--------------------|--------------------------|
| 1 slot for SD card | SINAMICS SD card, 8GByte |

| 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  | 7.8 kVA                                                 |
| Power loss in standby | 23.1 W (0.3%)                                           |



## Data sheet for SINAMICS G220

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NEC power loss data based on

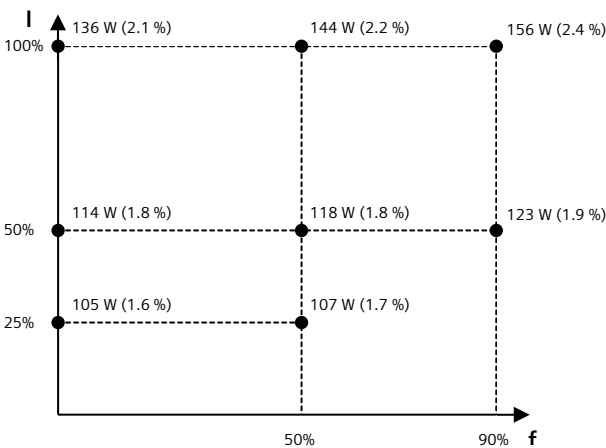
|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Input                 | 3 AC 480 V, 60 Hz                                       |
| Output                | 3 AC 0 - 480 V, 60 Hz,<br>4 kHz Space-vector modulation |
| Rated apparent power  | 6.5 kVA                                                 |
| Power loss in standby | 23.1 W (0.4%)                                           |

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                                                                                                                                                                                                           | Ambient conditions         |
| Operating voltage (DC)                                                                                                                                                                                                    | Ambient temperature during |
|                                                                                                                                                                                                                           |                            |
|                                                                                                                                                                                                                           |                            |
| Current demand, max.                                                                                                                                                                                                      | Operation                  |
| Power loss                                                                                                                                                                                                                | Transport                  |
|                                                                                                                                                                                                                           | Storage                    |
| Inputs / outputs                                                                                                                                                                                                          | Relative humidity          |
| PTC interface                                                                                                                                                                                                             | without condensation       |
| 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                                                                                                                                                                                                           | Connections                |
| Degree of protection                                                                                                                                                                                                      | Signal cable               |
| Net weight                                                                                                                                                                                                                |                            |
| Dimensions                                                                                                                                                                                                                | Version                    |
| Width                                                                                                                                                                                                                     | Conductor cross-section    |
| Height                                                                                                                                                                                                                    |                            |
| Depth                                                                                                                                                                                                                     | Certificates               |
|                                                                                                                                                                                                                           | Certificate of suitability |
|                                                                                                                                                                                                                           | Explosion protection       |