

Article No. : 6SL4113-0CA12-2AF0

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                 | 7.3 A                              | 6.1 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)                    | 3.00 kW                     | 4.00 hp                     |
| Rated power (HO)                    | 2.20 kW                     | 3.00 hp                     |
| Rated current (LO)                  | 8.5 A                       | 6.2 A                       |
| Rated current (HO)                  | 6.5 A                       | 4.8 A                       |
| Rated current (IN)                  | 8.8 A                       | 6.4 A                       |
| Rated Current (SRM)                 | 8.5 A                       |                             |
| Max. output current                 | 13.0 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 |  |

|                                |                        |
|--------------------------------|------------------------|
| <b>Electronic power supply</b> |                        |
| Voltage                        | 24 V (20.4 ... 28.8 V) |
| Current demand, max.           | 2.00 A                 |

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| <b>General tech. specifications</b> |                                        |
| Power factor λ (typical)            | 0.90                                   |
| Displacement factor cos φ (typical) | 0.98                                   |
| Efficiency η                        | 0.97                                   |
| Sound pressure level (1m)           | 55 dB                                  |
| Filter class (integrated)           | RFI suppression filter for Category C2 |

|                      |                                   |
|----------------------|-----------------------------------|
| <b>Communication</b> |                                   |
| 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) |
| 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 < 603Ωm; wire breakage>2120Ωm; 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                                   | 0.010 m³/s (0.353 ft³/s)            |
| Installation altitude (without derating)                  | 1,000 m (3,281 ft)                  |
| Max. ambient temperature with derating                    | 60 °C                               |
| Ambient temperature with high overload (without derating) | 50 °C                               |
| Ambient temperature with low overload (without derating)  | 45 °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 3S1 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)                                                | 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 mm² (24 ... 12 AWG) |
| Line side               |                                   |
| Type                    | screw terminal                    |
| Conductor cross-section |                                   |
| for single-core cables  | 1.50 ... 4.00 mm² (16 ... 12 AWG) |
| for multi-core cables   | 1.50 ... 4.00 mm² (16 ... 12 AWG) |
| Motor end               |                                   |
| Type                    | screw terminal                    |
| Conductor cross-section | 1.50 ... 4.00 mm² (16 ... 12 AWG) |
| DC link                 |                                   |
| Type                    | screw terminal                    |
| Conductor cross-section | 1.50 ... 4.00 mm² (16 ... 12 AWG) |
| PE connection           |                                   |
| Type                    | M4, screw terminal                |
| Conductor cross-section | 1.50 ... 4.00 mm² (16 ... 12 AWG) |
| Max. motor cable length |                                   |
| Shielded                | 200 m (656 ft)                    |
| Unshielded              | 300 m (984 ft)                    |
| with EMC category C2    |                                   |
| Shielded                | 150 m (492 ft)                    |

| Mechanical data      |                     |
|----------------------|---------------------|
| Degree of protection | IP20 / UL open type |
| Frame size           | FSA                 |
| Net weight           | 4.5 kg (9.92 lb)    |
| Dimensions           |                     |
| Width                | 73 mm (2.87 in)     |
| Height               | 250 mm (9.84 in)    |
| Depth                | 208 mm (8.19 in)    |

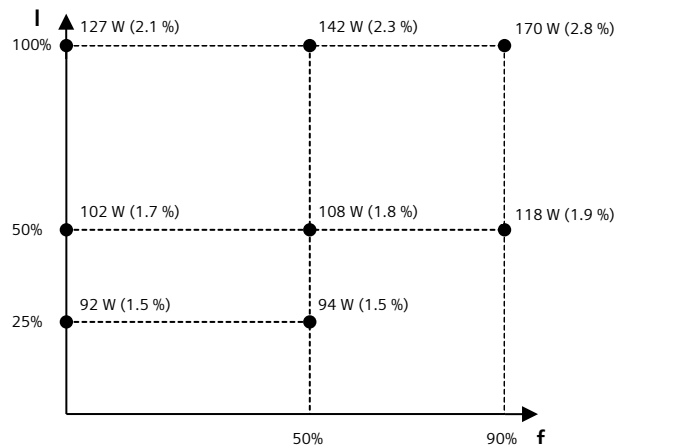
| Memory card        |                          |
|--------------------|--------------------------|
| 1 slot for SD card | SINAMICS SD card, 8GByte |

| Certificates                                                                                                                        |                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Certificate of suitability                                                                                                          | CE, KC, 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  | 6.1 kVA                                                 |
| Power loss in standby | 14.3 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  | 5.3 kVA                                                 |
| Power loss in standby | 14.3 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

