

Article No. : 6SL4112-0KP12-0BF0



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 | 200...240V (-20+10 %) | |
| Line frequency | 50/60 Hz (47 ... 63 Hz) | |
| Voltage range (voltage class) | 200 ... 240 V (230V IEC) | 200 ... 240 V (240V NEC) |
| Rated current | 13.0 A | 12.0 A |

Output

| | | |
|--------------------------------------|-------------------------------------|-------------------------------------|
| Number of phases | 3 AC | |
| Voltage range (voltage class) | 200 ... 240 V (230V IEC) | 200 ... 240 V (240V NEC) |
| Rated power (LO) | 3.00 kW | 4.00 hp |
| Rated power (HO) | 2.20 kW | 3.00 hp |
| Rated current (LO) | 14.5 A | 12.4 A |
| Rated current (HO) | 11.0 A | 9.6 A |
| Rated current (IN) | 14.9 A | 12.8 A |
| Max. output current | 22.0 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. | 3.00 A |

General tech. specifications

| | |
|---|------------|
| Power factor λ (typical) | |
| Displacement factor $\cos \phi$ (typical) | 0.98 |
| Efficiency η | 0.96 |
| Sound pressure level (1m) | 63 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 | 0.050 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 |

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 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) | No |
| 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 ² (24 ... 12 AWG) |

Line side

| | |
|------|----------------|
| Type | screw terminal |
|------|----------------|

Conductor cross-section

| | |
|------------------------|---|
| for single-core cables | 2.00 ... 6.00 mm ² (16 ... 10 AWG) |
| for multi-core cables | 2.00 ... 6.00 mm ² (16 ... 10 AWG) |

Motor end

| | |
|-------------------------|---|
| Type | screw terminal |
| Conductor cross-section | 2.50 ... 6.00 mm ² (14 ... 10 AWG) |

DC link

| | |
|-------------------------|---|
| Type | screw terminal |
| Conductor cross-section | 2.00 ... 6.00 mm ² (14 ... 10 AWG) |

PE connection

| | |
|-------------------------|---|
| Type | M5, screw terminal |
| Conductor cross-section | 2.00 ... 6.00 mm ² (14 ... 10 AWG) |
| Type | screw terminal, M4 |
| Conductor cross-section | 2.00 ... 6.00 mm ² (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 | 17.4 kg (38.36 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 | - |
|----------------------|---|

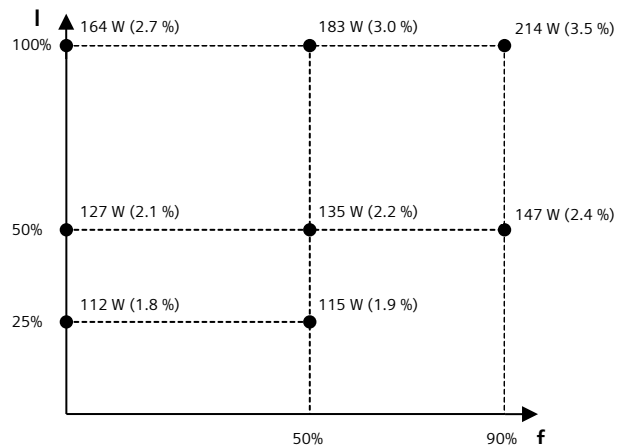
| | |
|-----------------------|----|
| shipbuilding approval | No |
|-----------------------|----|

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 230 V, 50 Hz |
| Output | 3 AC 0 - 230 V, 50 Hz, 4 kHz Space-vector modulation |
| Rated apparent power | 5.9 kVA |
| Power loss in standby | 25.2 W (0.4%) |



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NEC power loss data based on

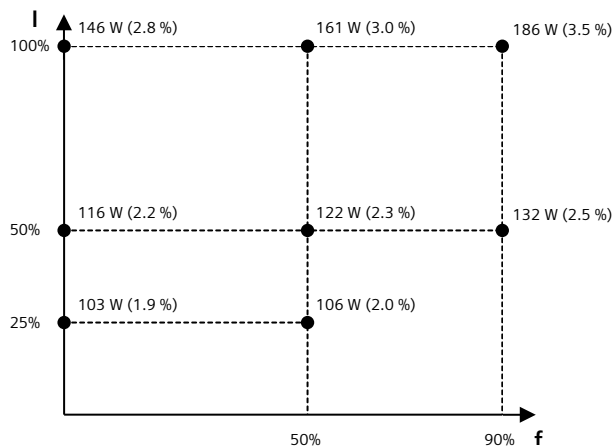
| | |
|-----------------------|---|
| Input | 3 AC 240 V, 60 Hz |
| Output | 3 AC 0 - 240 V, 60 Hz, 4 kHz Space-vector modulation |
| Rated apparent power | 5.3 kVA |
| Power loss in standby | 25.2 W (0.5%) |

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 Option Module OM-DQ (Drive CLiQ)

Electrical data

| | |
|------------------------|---|
| Operating voltage (DC) | 24.0 V (20.4 ... 28.8 V) |
| | External 24 V power supply required if 24 V supply via DRIVE-CLiQ |
| Current demand, max. | 0.70 A |
| Power loss | 2.4 W |

Inputs / outputs

DRIVE-CLiQ interface

| | |
|--------|-----------------|
| Number | 2 |
| | RJ45, 100Mbit/s |

Mechanical data

| | |
|----------------------|---------------------|
| Degree of protection | IP20 / UL open type |
| Net weight | 71.8 g (2.53 oz) |

Dimensions

| | |
|--------|-------------------|
| Width | 65.2 mm (2.57 in) |
| Height | 44.8 mm (1.76 in) |
| Depth | 38.3 mm (1.51 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 % |
|----------------------|------|

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

| | |
|-----------------------------|--------------------------------|
| Environmental compatibility | RoHS II, REACH, Green Passport |
|-----------------------------|--------------------------------|