

Data sheet for SINAMICS G120X

Article No. : 6SL3220-3YE48-1AF0



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 ... 480 V +10 % -20 % | |
| Line frequency | 47 ... 63 Hz | |
| Rated voltage | 400V IEC | 480V NEC |
| Rated current (LO) | 241.00 A | 232.00 A |
| Rated current (HO) | 218.00 A | 191.00 A |

Output

| | | |
|-------------------------------------|-----------------|-------------------------------|
| Number of phases | 3 AC | |
| Rated voltage | 400V IEC | 480V NEC ¹⁾ |
| Rated power (LO) | 132.00 kW | 200.00 hp |
| Rated power (HO) | 110.00 kW | 150.00 hp |
| Rated current (LO) | 250.00 A | 240.00 A |
| Rated current (HO) | 205.00 A | 180.00 A |
| Rated current (IN) | 256.00 A | |
| Max. output current | 338.00 A | |
| Pulse frequency | 2 kHz | |
| Output frequency for vector control | 0 ... 200 Hz | |
| Output frequency for V/f control | 0 ... 550 Hz | |

Overload capability

Low Overload (LO)
110% base load current IL for 60 s in a 300 s cycle time

High Overload (HO)
150% x base load current IH for 60 s within a 600 s cycle time

General tech. specifications

| | |
|-----------------------------------|---|
| Power factor λ | 0.90 ... 0.95 |
| Offset factor $\cos \phi$ | 0.99 |
| Efficiency η | 0.98 |
| Sound pressure level (1m) | 72 dB |
| Power loss ³⁾ | 3.160 kW |
| Filter class (integrated) | RFI suppression filter for Category C2 |
| EMC category (with accessories) | Category C2 |
| Safety function "Safe Torque Off" | without SIRIUS device (e.g. via S7-1500F) |

Communication

Communication PROFINET, EtherNet/IP

Inputs / outputs

Standard digital inputs

| | |
|------------------------|-------|
| Number | 6 |
| Switching level: 0 → 1 | 11 V |
| Switching level: 1 → 0 | 5 V |
| Max. inrush current | 15 mA |

Fail-safe digital inputs

| | |
|--------|---|
| Number | 1 |
|--------|---|

Digital outputs

| | |
|------------------------------------|----------------|
| Number as relay changeover contact | 2 |
| Output (resistive load) | DC 30 V, 5.0 A |
| Number as transistor | 0 |

Analog / digital inputs

| | |
|------------|------------------------|
| Number | 2 (Differential input) |
| Resolution | 10 bit |

Switching threshold as digital input

| | |
|-------|-------|
| 0 → 1 | 4 V |
| 1 → 0 | 1.6 V |

Analog outputs

| | |
|--------|-------------------------|
| Number | 1 (Non-isolated output) |
|--------|-------------------------|

PTC/ KTY interface

1 motor temperature sensor input, sensors that can be connected PTC, KTY and Thermo-Click, accuracy ± 5 °C

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 | No |
| Encoderless torque control | No |
| Torque control, with encoder | No |

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Ambient conditions

| | |
|-----------------------------|--|
| Standard board coating type | Class 3C2, according to IEC 60721-3-3: 2002 |
| Cooling | Air cooling using an integrated fan |
| Cooling air requirement | 0.153 m ³ /s (5.403 ft ³ /s) |
| Installation altitude | 1,000 m (3,280.84 ft) |
| Ambient temperature | |
| Operation | -20 ... 45 °C (-4 ... 113 °F) |
| Transport | -40 ... 70 °C (-40 ... 158 °F) |
| Storage | -25 ... 55 °C (-13 ... 131 °F) |
| Relative humidity | |
| Max. operation | 95 % At 40 °C (104 °F), condensation and icing not permissible |

Connections

| | |
|---------------------------------------|---|
| Signal cable | |
| Conductor cross-section | 0.15 ... 1.50 mm ² (AWG 24 ... AWG 16) |
| Line side | |
| Version | M10 screw |
| Conductor cross-section | 35.00 ... 2 x 120.00 mm ² (AWG 1 ... AWG 2 x 4/0) |
| Motor end | |
| Version | M10 screw |
| Conductor cross-section | 35.00 ... 2 x 120.00 mm ² (AWG 1 ... AWG 2 x 4/0) |
| DC link (for braking resistor) | |
| PE connection | M10 screw |
| Max. motor cable length | |
| Shielded | 150 m (492.13 ft) |

Mechanical data

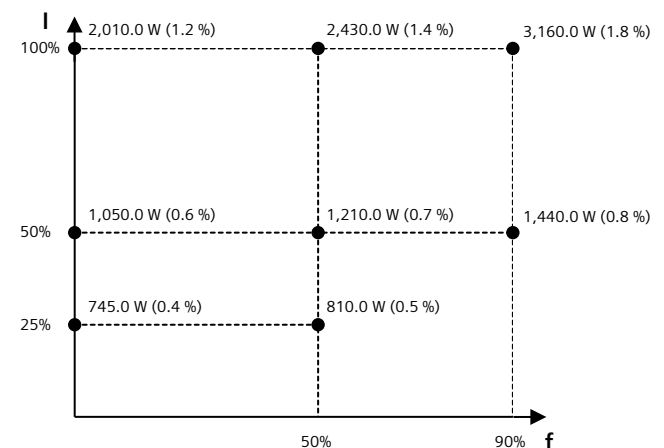
| | |
|----------------------|---------------------|
| Degree of protection | IP20 / UL open type |
| Frame size | FSF |
| Net weight | 71 kg (156.53 lb) |
| Dimensions | |
| Width | 305 mm (12.01 in) |
| Height | 709 mm (27.91 in) |
| Depth | 369 mm (14.53 in) |

Standards

| | |
|---------------------------|---|
| Compliance with standards | UL, cUL, CE, C-Tick (RCM), EAC, KCC, SEMI F47, REACH |
| CE marking | EMC Directive 2004/108/EC, Low-Voltage Directive 2006/95/EC |

Converter losses to IEC61800-9-2*

| | |
|--|--------|
| Efficiency class | IE2 |
| Comparison with the reference converter (90% / 100%) | 44.6 % |



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.

*converted values

¹⁾The output current and HP ratings are valid for the voltage range 440V-480V

³⁾Typical value. More information can be found in the element group "Converter losses to IEC 61800-9-2" in this datasheet.

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Operator panel: Intelligent Operator Panel (IOP-2)

Screen

| | |
|-------------------|-----------------|
| Display design | LCD color |
| Screen resolution | 320 x 240 Pixel |

Mechanical data

| | |
|----------------------|--------------------|
| Degree of protection | IP55 / UL type 12 |
| Net weight | 0.134 kg (0.30 lb) |

Dimensions

| | |
|--------|---------------------|
| Width | 70.00 mm (2.76 in) |
| Height | 106.85 mm (4.21 in) |
| Depth | 19.65 mm (0.77 in) |

Ambient conditions

Ambient temperature

| | |
|-----------|--|
| Operation | 0 ... 50 °C (32 ... 122 °F) 55 °C only with door installation kit |
| Storage | -40 ... 70 °C (-40 ... 158 °F) |
| Transport | -40 ... 70 °C (-40 ... 158 °F) |

Relative humidity at 25°C during

| | |
|----------------|------|
| Max. operation | 95 % |
|----------------|------|

Approvals

| | |
|----------------------------|--------------------------|
| Certificate of suitability | CE, cULus, EAC, KCC, RCM |
|----------------------------|--------------------------|

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I/O Extension Module

Inputs / outputs

Digital inputs

| | |
|--|--|
| Number of digital inputs ¹⁾ | 2 |
| Conductor cross-section | 0.5 ... 1.5 mm ² (AWG 21 ... AWG 16) Alternatively 2 x 0.5 mm ² |
| Input voltage (0→1) | 11 V |
| Input voltage (1→0) | 5 V |
| Input voltage, max. | 30 V |

Digital outputs

| | |
|------------------------------|------------------------------|
| Number of digital outputs | 4 |
| Conductor cross-section | 1.5 mm ² (AWG 16) |
| Output current ²⁾ | 2 A |

Analog inputs

| | |
|---------------------------------------|--|
| Number of analog inputs ³⁾ | 2 |
| Conductor cross-section | 0.5 ... 1.5 mm ² (AWG 21 ... AWG 16) alternatively 2*0.5 mm ² |
| Current | 0 ... 20 mA |

Analog outputs

| | |
|--------------------------------------|--|
| Number of analog outputs | 2 |
| Type of analog outputs ⁴⁾ | Non-isolated output |
| Conductor cross-section | 0.5 ... 1.5 mm ² (AWG 21 ... AWG 16) Alternatively 2 x 0.5 mm ² |
| Output voltage | 0 ... 10 V |
| Output current | 0 ... 20 mA |

Mechanical data

Dimensions

| | |
|--------|------------------|
| Width | 71 mm (2.80 in) |
| Height | 117 mm (4.61 in) |
| Depth | 27 mm (1.06 in) |

¹⁾DI 6: digital input; DI 7: P or M switch; DI COM: Input for Control Unit interface (24 V out, max. 250 mA)

²⁾The max. current depends on the temperature and the size of the connected converted. It varies between 2 A and 3 A at 30 V DC.

³⁾2 analog inputs for the connection of Pt1000/Ni1000 temperature sensors. One of which can be optionally used as analog input.

⁴⁾Switchable between voltage (0 ... 10 V) and current (0 ... 20 mA) using a parameter