

Article No. : 6SL3220-1YH46-1UP0

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

Item no. :  
Consignment no. :  
Project :



Figure similar

Rated data

|                    |                           |          |
|--------------------|---------------------------|----------|
| Input              |                           |          |
| Number of phases   | 3 AC                      |          |
| Line voltage       | 500 ... 690 V +10 % -20 % |          |
| Line frequency     | 47 ... 63 Hz              |          |
| Rated voltage      | 690V IEC                  | 600V NEC |
| Rated current (LO) | 121.00 A                  | 121.00 A |
| Rated current (HO) | 106.30 A                  | 106.30 A |

|                                     |              |                        |
|-------------------------------------|--------------|------------------------|
| Output                              |              |                        |
| Number of phases                    | 3 AC         |                        |
| Rated voltage                       | 690V IEC     | 600V NEC <sup>1)</sup> |
| Rated power (LO)                    | 110.00 kW    | 125.00 hp              |
| Rated power (HO)                    | 90.00 kW     | 100.00 hp              |
| Rated current (LO)                  | 125.00 A     | 125.00 A               |
| Rated current (HO)                  | 100.00 A     | 100.00 A               |
| Rated current (IN)                  | 128.00 A     |                        |
| Max. output current                 | 169.00 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 φ               | 0.99                                      |
| Efficiency η                      | 0.98                                      |
| Sound pressure level (1m)         | 72 dB                                     |
| Power loss <sup>3)</sup>          | 2.240 kW                                  |
| Filter class (integrated)         | Unfiltered                                |
| EMC category (with accessories)   | without                                   |
| Safety function "Safe Torque Off" | without SIRIUS device (e.g. via S7-1500F) |

|               |             |
|---------------|-------------|
| Communication |             |
| Communication | PROFIBUS DP |

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  |

Data sheet for SINAMICS G120X

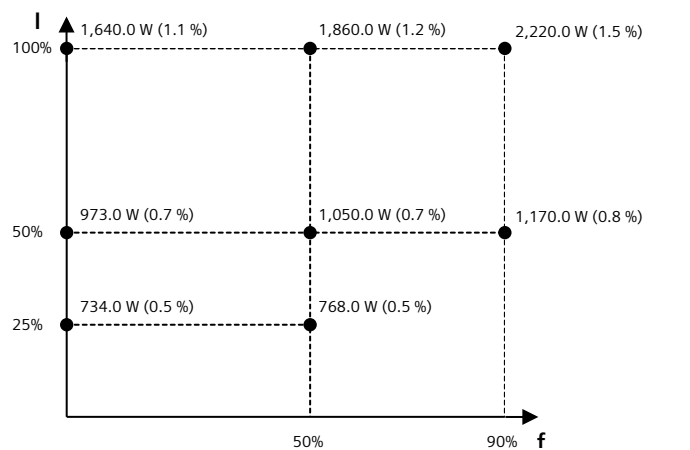
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| Ambient conditions          |                                                                |
|-----------------------------|----------------------------------------------------------------|
| Standard board coating type | Class 3C2, according to IEC 60721-3-3: 2002                    |
| Cooling                     | Air cooling using an integrated fan                            |
| Cooling air requirement     | 0.153 m³/s (5.403 ft³/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 mm² (AWG 24 ... AWG 16)            |
| Line side                      |                                                  |
| Version                        | M10 screw                                        |
| Conductor cross-section        | 35.00 ... 2 x 120.00 mm² (AWG 1 ... AWG 2 x 4/0) |
| Motor end                      |                                                  |
| Version                        | M10 screw                                        |
| Conductor cross-section        | 35.00 ... 2 x 120.00 mm² (AWG 1 ... AWG 2 x 4/0) |
| DC link (for braking resistor) |                                                  |
| PE connection                  | M10 screw                                        |
| Max. motor cable length        |                                                  |
| Shielded                       | 300 m (984.25 ft)                                |
| Unshielded                     | 450 m (1,476.38 ft)                              |

| Mechanical data           |                                                             |
|---------------------------|-------------------------------------------------------------|
| Degree of protection      | IP20 / UL open type                                         |
| Frame size                | FSF                                                         |
| Net weight                | 66.5 kg (146.61 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%) | 36.3 % |



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

<sup>1)</sup>The output current and HP ratings are valid for the voltage range 550V-600V  
<sup>3)</sup>Typical value. More information can be found in the element group "Converter losses to IEC 61800-9-2" in this datasheet.

## Data sheet for SINAMICS G120X

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| I/O Extension Module                   |                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------|
| Inputs / outputs                       | Mechanical data                                                                          |
| <b>Digital inputs</b>                  | <b>Dimensions</b>                                                                        |
| Number of digital inputs <sup>1)</sup> | 2                                                                                        |
| Conductor cross-section                | 0.5 ... 1.5 mm <sup>2</sup> (AWG 21 ... AWG 16)<br>Alternatively 2 x 0.5 mm <sup>2</sup> |
| Input voltage (0→1)                    | 11 V                                                                                     |
| Input voltage (1→0)                    | 5 V                                                                                      |
| Input voltage, max.                    | 30 V                                                                                     |
| <b>Digital outputs</b>                 |                                                                                          |
| Number of digital outputs              | 4                                                                                        |
| Conductor cross-section                | 1.5 mm <sup>2</sup> (AWG 16)                                                             |
| Output current <sup>2)</sup>           | 2 A                                                                                      |
| <b>Analog inputs</b>                   |                                                                                          |
| Number of analog inputs <sup>3)</sup>  | 2                                                                                        |
| Conductor cross-section                | 0.5 ... 1.5 mm <sup>2</sup> (AWG 21 ... AWG 16)<br>alternatively 2*0.5 mm <sup>2</sup>   |
| Current                                | 0 ... 20 mA                                                                              |
| <b>Analog outputs</b>                  |                                                                                          |
| Number of analog outputs               | 2                                                                                        |
| Type of analog outputs <sup>4)</sup>   | Non-isolated output                                                                      |
| Conductor cross-section                | 0.5 ... 1.5 mm <sup>2</sup> (AWG 21 ... AWG 16)<br>Alternatively 2 x 0.5 mm <sup>2</sup> |
| Output voltage                         | 0 ... 10 V                                                                               |
| Output current                         | 0 ... 20 mA                                                                              |

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

<sup>2)</sup>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.

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

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