



Article No. : 6SL4113-2KQ20-2AF0

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)	
<b>Voltage range (voltage class)</b>	380 ... 415 V (400V IEC)	440 ... 500 V (480V NEC)
Rated current	34.0 A	28.0 A
<b>Output</b>		
Number of phases	3 AC	
<b>Voltage range (voltage class)</b>	380 ... 415 V (400V IEC)	440 ... 500 V (480V NEC)
Rated power (LO)	18.50 kW	25.00 hp
Rated power (HO)	15.00 kW	20.00 hp
Rated current (LO)	40.0 A	34.0 A
Rated current (HO)	34.0 A	27.0 A
Rated current (IN)	41.1 A	34.9 A
Rated Current (SRM)	43.0 A	
Max. output current	68.0 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 $\lambda$ (typical)		
Displacement factor $\cos \phi$ (typical)	0.98	
Efficiency $\eta$	0.97	
Sound pressure level (1m)	70 dB	
Filter class (integrated)	RFI suppression filter for Category C2	
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			

Article No. : 6SL4113-2KQ20-2AF0

### 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

Short-circuit monitoring < 200Ohm, overtemperature > 1650Ohm
--

### KTY84 interface

Short-circuit monitoring < 500Ohm; wire breakage > 2120Ohm; measurement current 2mA
---

### PTC1000 interface

Short-circuit monitoring < 603Ohm; wire breakage > 2120Ohm; 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	0.038 m <sup>3</sup> /s (1.342 ft <sup>3</sup> /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.	

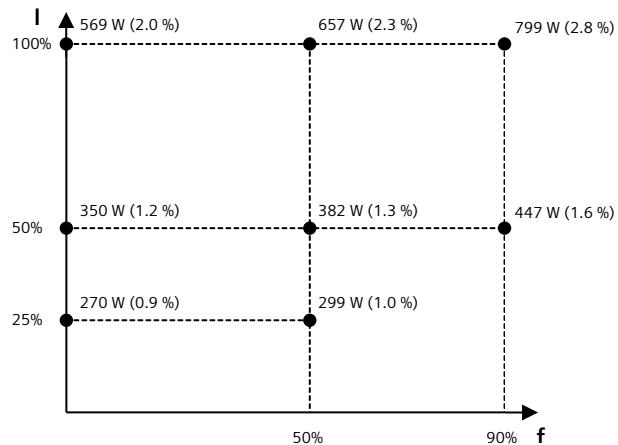
Connections	
<b>Signal cable</b>	
Type	Push-in connection
Conductor cross-section	0.20 ... 2.50 mm <sup>2</sup> (24 ... 12 AWG)
<b>Line side</b>	
Type	screw terminal
<b>Conductor cross-section</b>	
for single-core cables	16.00 ... 35.00 mm <sup>2</sup> (6 ... 2 AWG)
for multi-core cables	16.00 ... 35.00 mm <sup>2</sup> (6 ... 2 AWG)
<b>Motor end</b>	
Type	screw terminal
Conductor cross-section	6.00 ... 35.00 mm <sup>2</sup> (10 ... 2 AWG)
<b>DC link</b>	
Type	screw terminal
Conductor cross-section	6.00 ... 35.00 mm <sup>2</sup> (10 ... 2 AWG)
<b>PE connection</b>	
Type	M8, screw terminal
Conductor cross-section	6.00 ... 35.00 mm <sup>2</sup> (10 ... 2 AWG)
Type	stud terminal, M6
Conductor cross-section	6.00 ... 50.00 mm <sup>2</sup> (10 ... 1/0 AWG)
<b>Max. motor cable length</b>	
Shielded	200 m (656 ft)
Unshielded	300 m (984 ft)
<b>with EMC category C2</b>	
Shielded	150 m (492 ft)

Mechanical data	
Degree of protection	IP55 / UL type 12
Frame size	FSD1
Net weight	25.8 kg (56.88 lb)
<b>Dimensions</b>	
Width	209 mm (8.23 in)
Height	571 mm (22.48 in)
Depth	284 mm (11.18 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 (Not in the scope of the ecodesign guideline)
Reason of exception	sinusoidal input current
<b>IEC power loss data based on</b>	
Input	3 AC 400 V, 50 Hz
Output	3 AC 0 - 400 V, 50 Hz, 4 kHz Space-vector modulation
Rated apparent power	28.5 kVA
Power loss in standby	37.2 W (0.1%)



**NEC power loss data based on**

Input	3 AC 480 V, 60 Hz
Output	3 AC 0 - 480 V, 60 Hz, 4 kHz Space-vector modulation
Rated apparent power	29 kVA
Power loss in standby	37.2 W (0.1%)

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

