

SINAMICS S120 drive system

Chassis format for Line and Motor Modules

Single Motor Modules in chassis format

Design



The Single Motor Modules in chassis format feature the following interfaces as standard:

- 1 DC link connection (DCP, DCN) for connecting to the supply DC busbar
- 1 DC link connection (DCPA, DCNA) for connecting a Braking Module
- 1 electronics power supply connection
- 3 DRIVE-CLiQ sockets
- 1 motor connection
- 1 safe standstill input (enable pulses)
- 1 temperature sensor input (KTY84-130 or PTC)
- 1 PE (protective earth) connection

The status of the Motor Modules is indicated via two multi-color LEDs.

The scope of supply of the Motor Modules includes:

- Frame sizes FX and GX:
 - 0.60 m (1.97 ft) DRIVE-CLiQ cable for connection to another Motor Module

Integration

Single Motor Modules communicate with a CU320 Control Unit or SINUMERIK solution line NCU via DRIVE-CLiQ.

Technical specifications

General technical specifications

DC link voltage Up to 2000 m (6562 ft) above sea level	510 ... 720 V DC (line connection voltage 380 ... 480 V 3 AC)
Output frequency • Control type Servo	0 ... 650 Hz ¹⁾
Electronics power supply	24 V DC -15%/+20%
Type of cooling	Internal/external air cooling, power sections with increased air cooling by means of built-in fan
Permissible ambient or coolant temperature (air) in operation for line-side components, Line Modules and Motor Modules	0 ... 40 °C (32 ... 104 °F) without derating, > 40 ... 55 °C (104 ... 131 °F), see derating characteristics
Installation altitude	Up to 2000 m (6562 ft) above sea level without derating, > 2000 ... 4000 m (6562 ... 13124 ft) above sea level see derating characteristics
Conformity	CE (low-voltage and EMC directives)
Approvals 510 ... 720 V DC Motor Modules only	cULus (File No.: E192450)

¹⁾ Note correlation between max. output frequency, pulse frequency and current derating; see system description on the CD-ROM supplied with the catalog.

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Technical specifications (continued)

DC link voltage 510 ... 720 V DC

Order No.	6SL3320-1TE32-1AA0 6SL3320-1TE32-6AA0 6SL3320-1TE33-1AA0 6SL3320-1TE33-8AA0 6SL3320-1TE35-0AA0					
Product name	Single Motor Modules in chassis format					
Output current						
• Rated current I_{rated}	A	210	260	310	380	490
• Base load current I_{L}	A	205	250	302	370	477
• Base load current I_{H}	A	178	233	277	340	438
• I_{max}	A	307	375	453	555	715
Rated power of a typ. standard asynchronous motor at 400 V 3 AC						
• based on I_{L}	kW (HP)	110 (150)	132 (200)	160 (250)	200 (300)	250 (400)
• based on I_{H}	kW (HP)	90 (125)	110 (150)	132 (200)	160 (250)	200 (350)
Rated pulse frequency	kHz	2	2	2	2	2
Rated DC link current I_{d}¹⁾ when supplied via						
• Basic or Smart Line Module	A	252	312	372	456	588
• Active Line Modules	A	227	281	335	411	530
DC link capacitance	µF	4200	5200	6300	7800	9600
Current requirement						
• with 24 V DC, max.	A	0.9	0.9	1.2	1.2	1.2
• of fan supply with 400 V 2 AC, 50 Hz/60 Hz, max.	A	0.63/0.95	1.13/1.7	1.6/2.4	1.6/2.4	1.6/2.4
Power loss, max.	kW	1.94	2.6	3.1	3.8	4.5
Cooling air requirement	m ³ /s (ft ³ /s)	0.17 (6)	0.23 (8.12)	0.36 (12.71)	0.36 (12.71)	0.36 (12.71)
Sound pressure level L_{pA} (1 m (3.28 ft)) at 50 Hz/60 Hz	dB (A)	< 67	< 69	< 69	< 69	< 69
DC link connection DCP, DCN						
• Conductor cross-section, max. mm ²		2 × 185	2 × 185	2 × 185	2 × 185	2 × 185
Motor connection U2, V2, W2						
• Conductor cross-section, max. mm ²		2 × 185	2 × 185	2 × 185	2 × 185	2 × 185
PE connection						
• Conductor cross-section, max. mm ²		2 × 185	2 × 185	2 × 185	2 × 185	2 × 185
Motor brake connection						
Motor cable length, max. (without external options)						
• Shielded	m (ft)	300 (984)	300 (984)	300 (984)	300 (984)	300 (984)
• Unshielded	m (ft)	450 (1477)	450 (1477)	450 (1477)	450 (1477)	450 (1477)
Degree of protection		IP20	IP20	IP20	IP20	IP20
Dimensions						
• Width	mm (in)	326 (12.83)	326 (12.83)	326 (12.83)	326 (12.83)	326 (12.83)
• Height	mm (in)	1400 (55.12)	1400 (55.12)	1533 (60.35)	1533 (60.35)	1533 (60.35)
• Depth	mm (in)	356 (14.02)	356 (14.02)	545 (21.46)	545 (21.46)	545 (21.46)
Frame size		FX	FX	GX	GX	GX
Weight, approx.	kg (lb)	88 (194)	88 (194)	152 (335)	152 (335)	152 (335)

¹⁾ Rated DC link current for dimensioning an external DC connection.

For DC link current calculation for dimensioning the Line Module, see system description for power units/Line Modules on CD-ROM supplied with the catalog.

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Selection and Ordering Data

Rated output current	Rated power	Single Motor Module in chassis format
		Order No.
DC link voltage 510 ... 720 V DC		
210 A	110 kW (150 HP)	6SL3320-1TE32-1AA0
260 A	132 kW (200 HP)	6SL3320-1TE32-6AA0
310 A	160 kW (250 HP)	6SL3320-1TE33-1AA0
380 A	200 kW (300 HP)	6SL3320-1TE33-8AA0
490 A	250 kW (400 HP)	6SL3320-1TE35-0AA0

Warning signs in foreign languages

Warning signs in other languages can be placed on top of the standard warning signs in English or German.

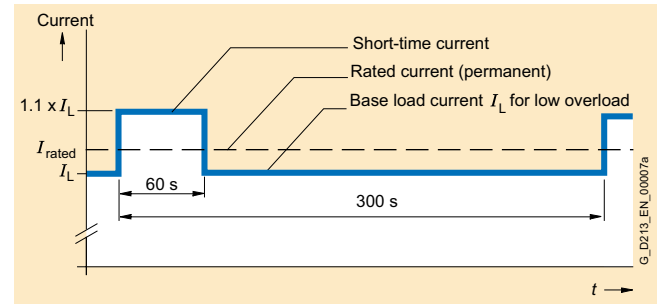
Modules in chassis format are supplied as standard with the following signs:
Chinese, Czech, Danish, Dutch, Finnish, French, Greek, Italian, Japanese, Korean, Polish, Portuguese, Russian, Spanish, Swedish and Turkish.

Characteristic curves

Overload capability

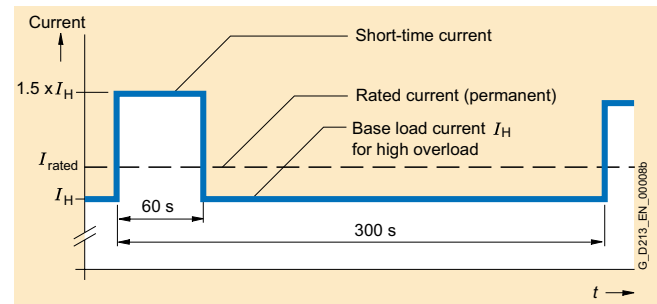
Duty cycle data for Single Motor Modules in chassis format

The base load current I_L is based on a duty cycle of 110% for 60 s or 150% for 10 s with a duty cycle duration of 300 s.



Low overload

The base load current I_H is based on a duty cycle of 150% for 60 s or 160% for 10 s with a duty cycle duration of 300 s.



High overload

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Single Motor Modules in chassis format

Characteristic curves (continued)

Derating factors

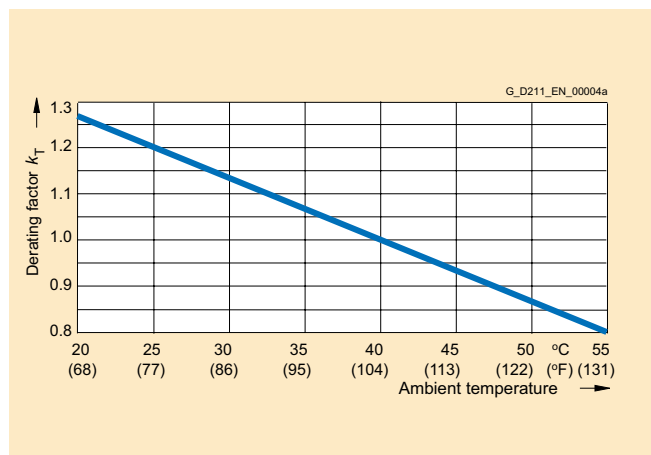
When the pulse frequency is increased, the derating factor of the output current must be taken into account.

This derating factor must be applied to the currents specified in the technical specifications.

Derating factor of the output current dependent on the pulse frequency for devices with a rated pulse frequency of 2 kHz

Single Motor Module in chassis format	Power kW (HP)	Output current A	Derating factor		
			for a pulse frequency of 2 kHz	for a pulse frequency of 2.5 kHz	for a pulse frequency of 4 kHz
Type					
DC link voltage 510 ... 720 V DC					
6SL3320-1TE32-1AA0	110 (150)	210	0.95	0.82	
6SL3320-1TE32-6AA0	132 (200)	260	0.95	0.83	
6SL3320-1TE33-1AA0	160 (250)	310	0.97	0.88	
6SL3320-1TE33-8AA0	200 (300)	380	0.96	0.87	
6SL3320-1TE33-0AA0	250 (400)	490	0.94	0.78	

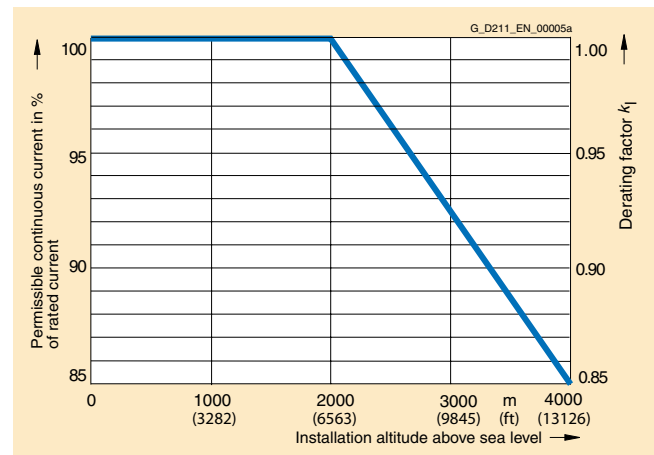
Derating factor of the output current dependent on the pulse frequency for devices with a rated pulse frequency of 1.25 kHz



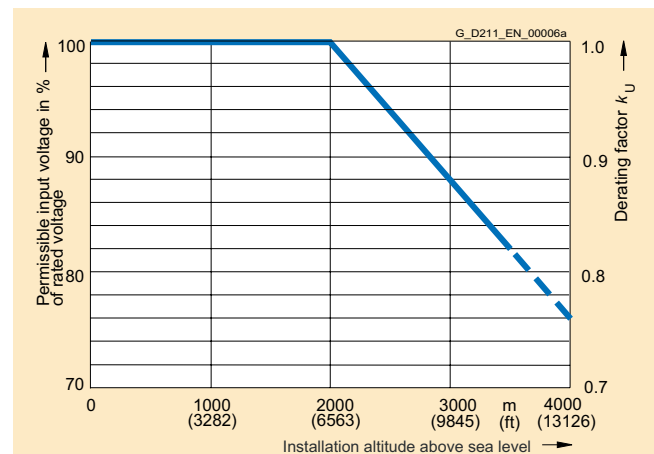
Current derating dependent on ambient temperature

Note:

A derating factor $k_T > 1.0$ must be taken into account only in conjunction with current derating dependent on installation altitude. See also system description.



Current derating dependent on installation altitude



Voltage derating dependent on installation altitude