

#### Design



PM340 Power Modules in blocksize format, frame sizes FSA to FSF

The PM340 Power Modules in blocksize format feature the following connections as standard:

- DCP/R1 and DCN DC link terminals
- Terminals DCP/R1 and R2 for connection of an external braking resistor
- PM-IF interface for connection of the PM340 Power Module and CU310 DP Control Unit or CUA31 Control Unit Adapter. The PM340 Power Module also supplies power to the CU310 DP Control Unit or CUA31 Control Unit Adapter by means of an integrated power supply
- Motor connection made with screw terminals or screw studs
- Control circuit for the Brake Relay for controlling a holding brake
- 2 PE (protective earth) connections  
Power Modules with integrated line filter are suitable only for connection to TN supply systems.

Power Modules without integrated line filter can be connected to grounded (TN, TT) and non-grounded (IT) supply systems.

When utilizing the integrated Braking Unit (Braking Chopper), the temperature of the external braking resistor must be monitored (i.e. thermostatic switch) to provide protection against thermal overloading.

# SINAMICS S120 drive system

## Power Modules

### Power Modules in blocksize format

#### Integration

The PM340 Power Modules in blocksize format communicate with the CU310 DP Control Unit or the CUA31 Control Unit Adapter via the PM-IF interface.



PM340 Power Module in blocksize format with CU310 DP Control Unit



PM340 Power Module in blocksize format with CUA31 Control Unit Adapter

Many system components for PM340 Power Modules are designed as base components, i.e. the component is mounted on the baseplate and the PM340 Power Module in front of them in a space-saving construction. Up to two base components can be mounted in front of one other.

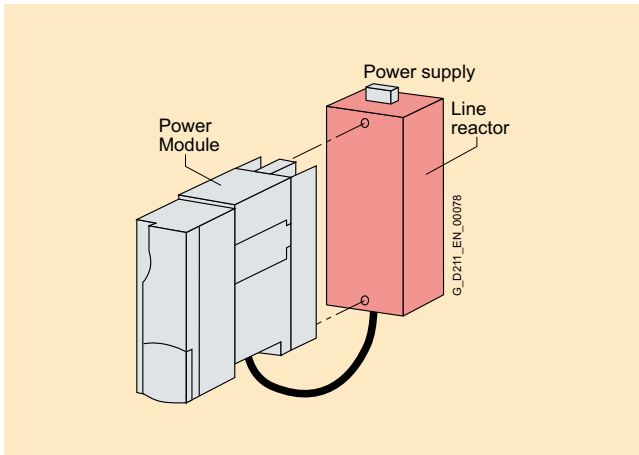
	Frame size					
	FSA	FSB	FSC	FSD	FSE	FSF
Line filter	✓	–	–	–	–	–
Line reactor	✓	✓	✓	✓	✓	○
Braking resistor	✓	✓	○	○	○	○
Motor reactor	✓	✓	✓	○	○	○

✓ suitable as base-type

○ = not suitable as base-type

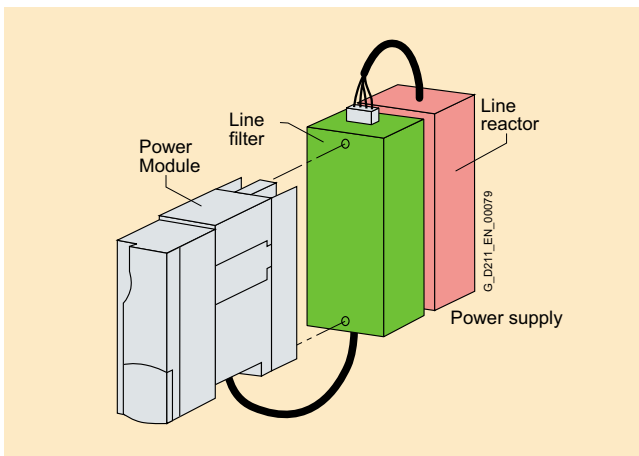
– = not available (use Power Module with integrated filter)

### Integration (continued)



Basic layout of a PM340 Power Module with line reactor as base component

The line-side reactors are equipped with terminals on the line side and with a pre-assembled cable on the Power Module side. When installed, the mains terminals are at the top on frame sizes FSA to FSC, and at the bottom on frame sizes FSD and FSE.



Power Module PM340 frame size FSA with line reactor and line filter

If a line filter is installed in addition to the line reactor on frame size FSA, the components must be arranged as shown in the diagram above. In this case, the mains connection is at the bottom.

Power Modules of frame size FSB and higher are available with integrated line filters, alleviating the need for an external line filter.

For configurations involving more than two base-type system components, e.g. line reactor + braking resistor, individual components must be mounted to the side of the Power Module. In this instance, the line reactor must be installed behind the Power Module and the braking resistor to the side.

### Technical specifications

#### General technical specifications

<b>Line connection voltage</b> Up to 2000 m (6562 ft) above sea level	200 ... 240 V 1 AC $\pm 10\%$ (-15% < 1 min) or 380 ... 480 V 3 AC $\pm 10\%$ (-15% < 1 min)
<b>Line frequency</b>	47 ... 63 Hz
<b>Line power factor at rated power</b>	> 0.96
• Fundamental power factor (cos $\phi_1$ )	
• Total ( $\lambda$ )	
- 200 ... 240 V 1 AC	0.45 ... 0.7
- 380 ... 480 V 3 AC	0.65 ... 0.95
<b>Overvoltage category</b>	Class III to EN 60664-1
<b>DC link precharging frequency, max.</b>	1x every 30 s
<b>DC link voltage, approx.</b>	1.35 x line voltage
<b>Output frequency</b>	
• Control type Servo	0 ... 650 Hz <sup>1)</sup>
• Control type Vector	0 ... 300 Hz <sup>1)</sup>
• Control type V/f	0 ... 300 Hz <sup>1)</sup>
<b>Electronics power supply</b>	24 V DC -15%/+20%
• Standard	no radio interference suppression
• With line filter	Class A1 to EN 55011 and Category C2 to EN 61800-3
<b>Type of cooling</b>	Internal air cooling, with increased air cooling by means of built-in fans
<b>Permissible ambient or coolant temperature (air)</b> 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
<b>Installation altitude</b>	Up to 1000 m (3281 ft) above sea level without derating, > 1000 ... 4000 m (3281 ... 13124 ft) above sea level, see derating characteristics
<b>Conformity</b>	CE (low-voltage and EMC directives)
<b>Approvals</b>	cULus
• 200 ... 240 V 1 AC - Frame size FSA	File No.: E192450
• 380 ... 480 V 3 AC - Frame sizes FSA to FSC - Frame sizes FSD to FSF	File No.: E121068 File No.: E192450

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

# SINAMICS S120 drive system

## Power Modules

### Power Modules in blocksize format

#### Technical specifications (continued)

Line voltage 200 ... 240 V 1 AC

Order No.		6SL3210-1SB11-0...	6SL3210-1SB12-3...	6SL3210-1SB14-0...
<b>Product name</b>		PM340 Power Modules in blocksize format		
<b>Output current</b>				
• Rated current $I_{rated}$	A	0.9	2.3	3.9
• Base load current $I_{H1}$	A	0.8	2.0	3.4
• for S6 duty (40%) $I_{S6}$	A	1.4	3.3	5.5
• $I_{max}$	A	2.0	4.6	7.8
<b>Rated power</b> based on $I_{rated}$	kW (HP) <sup>3)</sup>	0.12 (0.2)	0.37 (0.5)	0.75 (0.75)
<b>Rated pulse frequency</b>	kHz	4	4	4
<b>Efficiency <math>\eta</math></b>		0.88	0.93	0.93
<b>Power loss</b>	kW	0.06	0.075	0.11
<b>Cooling air requirement</b>	m <sup>3</sup> /s (ft <sup>3</sup> /s)	0.005 (0.02)	0.005 (0.02)	0.005 (0.02)
<b>Sound pressure level</b>	dB (A)	< 45	< 45	< 45
<b>24 V DC supply</b> for Control Unit	A	1.0	1.0	1.0
<b>Rated input current<sup>1)</sup></b> with/without line reactor	A	1.4/2.2	4/6	6.5/10
<b>Resistance value</b> of the external braking resistor	$\Omega$	$\geq 180$	$\geq 180$	$\geq 180$
<b>Cable length, max.</b> to braking resistor	m (ft)	15 (49)	15 (49)	15 (49)
<b>Line connection</b> L, N		Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section		1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5
<b>Motor connection</b> U2, V2, W2		Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section		1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5
<b>DC link connection, connection for the braking resistor</b> DCP/R1, DCN, R2		Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section		1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5
<b>PE connection</b>		On housing with M4 screw	On housing with M4 screw	On housing with M4 screw
<b>Motor cable length, max.<sup>2)</sup></b> (without external options)				
• Shielded	m (ft)	50 (164)	50 (164)	50 (164)
• Unshielded	m (ft)	75 (246)	75 (246)	75 (246)
<b>Degree of protection</b>		IP20	IP20	IP20
<b>Dimensions</b>				
• Width	mm (in)	73 (2.87)	73 (2.87)	73 (2.87)
• Height	mm (in)	173 (6.81)	173 (6.81)	173 (6.81)
• Depth				
- PM340	mm (in)	145 (5.7)	145 (5.7)	145 (5.7)
- PM340 with CU310 DP	mm (in)	234.6 (9.24)	234.6 (9.24)	234.6 (9.24)
- PM340 with CUA31	mm (in)	175.3 (6.9)	175.3 (6.9)	175.3 (6.9)
<b>Frame size</b>		FSA	FSA	FSA
<b>Weight, approx.</b>	kg (lb)	1.2 (3)	1.3 (3)	1.3 (3)

<sup>1)</sup> The input current depends on the motor load and line impedance. The input currents apply for rated power loading (based on  $I_{rated}$ ) for a line impedance corresponding to  $u_k = 1\%$ .

<sup>2)</sup> Max. motor cable length 15 m (49 ft) (shielded) for PM340 Power Modules with integrated line filter to maintain the limit values of EN 61800-3 Category C2.

<sup>3)</sup> Nominal HP based on Asynchronous motors (induction motors). For specific sizing select drive based on motor nameplate current and overload.

### Technical specifications (continued)

Line voltage 380 ... 480 V 3 AC

Order No.		6SL3210-1SE11-3UA0	6SL3210-1SE11-7UA0	6SL3210-1SE12-2UA0	6SL3210-1SE13-1UA0	6SL3210-1SE14-1UA0
<b>Product name</b>		PM340 Power Modules in blocksize format				
<b>Output current</b>						
• Rated current $I_{rated}$	A	1.3	1.7	2.2	3.1	4.1
• Base load current $I_H$	A	1.1	1.5	1.9	2.7	3.6
• for S6 duty (40%) $I_{S6}$	A	1.3	2.0	2.5	3.5	4.5
• $I_{max}$	A	2.6	3.4	4.4	6.2	8.2
<b>Rated power</b>						
• based on $I_{rated}$	kW (HP) <sup>3)</sup>	0.37 (0.5)	0.55 (0.75)	0.75 (1)	1.1 (1.5)	1.5 (2)
• based on $I_H$	kW (HP)	0.37 (0.5)	0.55 (0.75)	0.75 (1)	1.1 (1.5)	1.5 (2)
<b>Rated pulse frequency</b>	kHz	4	4	4	4	4
<b>Efficiency <math>\eta</math></b>		0.90	0.92	0.94	0.95	0.96
<b>Power loss</b>	kW	0.10	0.10	0.10	0.11	0.11
<b>Cooling air requirement</b>	m <sup>3</sup> /s (ft <sup>3</sup> /s)	0.005 (0.02)	0.005 (0.02)	0.005 (0.02)	0.005 (0.02)	0.005 (0.02)
<b>Sound pressure level</b>	dB (A)	< 45	< 45	< 45	< 45	< 45
<b>24 V DC supply</b> for Control Unit	A	1.0	1.0	1.0	1.0	1.0
<b>Rated input current<sup>1)</sup></b> with/without line reactor	A	1.3/1.7	1.7/2.2	2.2/2.6	3.1/3.9	4.1/4.8
<b>Resistance value</b> of the external braking resistor	$\Omega$	$\geq 390$	$\geq 390$	$\geq 390$	$\geq 390$	$\geq 390$
<b>Cable length, max.</b> to braking resistor	m (ft)	15 (49)	15 (49)	15 (49)	15 (49)	15 (49)
<b>Line connection</b> L, N		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section	mm <sup>2</sup>	1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5
<b>Motor connection</b> U2, V2, W2		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section	mm <sup>2</sup>	1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5
<b>DC link connection, connection for the brak- ing resistor</b> DCP/R1, DCN, R2		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section	mm <sup>2</sup>	1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5	1.0 ... 2.5
<b>PE connection</b>		On housing with M4 screw				
<b>Motor cable length<sup>2)</sup>, max.</b>						
• Shielded	m (ft)	50 (164)	50 (164)	50 (164)	50 (164)	50 (164)
• Unshielded	m (ft)	75 (246)	75 (246)	75 (246)	75 (246)	75 (246)
<b>Degree of protection</b>		IP20	IP20	IP20	IP20	IP20
<b>Dimensions</b>						
• Width	mm (in)	73 (2.87)	73 (2.87)	73 (2.87)	73 (2.87)	73 (2.87)
• Height	mm (in)	173 (6.81)	173 (6.81)	173 (6.81)	173 (6.81)	173 (6.81)
• Depth						
- PM340	mm (in)	145 (5.7)	145 (5.7)	145 (5.7)	145 (5.7)	145 (5.7)
- PM340 with CU310 DP	mm (in)	234.6 (9.24)	234.6 (9.24)	234.6 (9.24)	234.6 (9.24)	234.6 (9.24)
- PM340 with CUA31	mm (in)	175.3 (6.9)	175.3 (6.9)	175.3 (6.9)	175.3 (6.9)	175.3 (6.9)
<b>Frame size</b>		FSA	FSA	FSA	FSA	FSA
<b>Weight, approx.</b>	kg (lb)	1.2 (3)	1.2 (3)	1.2 (3)	1.2 (3)	1.2 (3)

<sup>1)</sup> The input current depends on the motor load and line impedance. The input currents apply for rated power loading (based on  $I_{rated}$ ) for a line impedance corresponding to  $u_k = 1\%$ .

<sup>2)</sup> Max. motor cable length 25 m (82.0 ft) (shielded) for PM340 Power Modules with integrated line filter to maintain the limit values of EN 61800-3 Category C2.

<sup>3)</sup> Nominal HP based on Asynchronous motors (induction motors). For specific sizing select drive based on motor nameplate current and overload.

# SINAMICS S120 drive system

## Power Modules

### Power Modules in blocksize format

#### Technical specifications (continued)

Line voltage 380 ... 480 V 3 AC							
Order No.		6SL3210-1SE16-0...	6SL3210-1SE17-7...	6SL3210-1SE21-0...	6SL3210-1SE21-8...	6SL3210-1SE22-5...	6SL3210-1SE23-2...
<b>Product name</b>		PM340 Power Modules in blocksize format					
<b>Output current</b>							
• Rated current $I_{rated}$	A	5.9	7.7	10.2	18	25	32
• Base load current $I_H$	A	5.2	6.8	9.1	14	21	27
• for S6 duty (40%) $I_{S6}$	A	6.4	8.3	10.8	19.6	27.8	37.1
• $I_{max}$	A	11.8	15.4	20.4	26.4	38	52
<b>Rated power</b>							
• based on $I_{rated}$	kW (HP) <sup>3)</sup>	2.2 (3)	3 (5)	4 (5)	7.5 (10)	11 (15)	15 (20)
• based on $I_H$	kW (HP)	2.2 (3)	3 (5)	4 (5)	5.5 (10)	7.5 (15)	11 (20)
<b>Rated pulse frequency</b>	kHz	4	4	4	4	4	4
<b>Efficiency <math>\eta</math></b>		0.96	0.97	0.97	0.98	0.98	0.98
<b>Power loss</b>	kW	0.14	0.16	0.18	0.24	0.30	0.40
<b>Cooling air requirement</b>	m <sup>3</sup> /s (ft <sup>3</sup> /s)	0.009 (0.03)	0.009 (0.03)	0.009 (0.03)	0.038 (0.12)	0.038 (0.12)	0.038 (0.12)
<b>Sound pressure level</b>	dB (A)	< 50	< 50	< 50	< 60	< 60	< 60
<b>24 V DC supply</b> for Control Unit	A	1.0	1.0	1.0	1.0	1.0	1.0
<b>Rated input current<sup>1)</sup></b> with/without line reactor	A	5.6/6.7	7.5/8.9	9.8/12.4	17.1/23.1	24.6/32.6	33/39
<b>Resistance value</b> of the external braking resistor	$\Omega$	$\geq 160$	$\geq 160$	$\geq 160$	$\geq 56$	$\geq 56$	$\geq 56$
<b>Cable length, max.</b> to braking resistor	m (ft)	15 (49)	15 (49)	15 (49)	15 (49)	15 (49)	15 (49)
<b>Line connection</b> L, N		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section	mm <sup>2</sup>	1.0 ... 6	1.0 ... 6	1.0 ... 6	2.5 ... 10	2.5 ... 10	2.5 ... 10
<b>Motor connection</b> U2, V2, W2		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section	mm <sup>2</sup>	1.0 ... 6	1.0 ... 6	1.0 ... 6	2.5 ... 10	2.5 ... 10	2.5 ... 10
<b>DC link connection, connection for the braking resistor</b> DCP/R1, DCN, R2		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Conductor cross-section	mm <sup>2</sup>	1.0 ... 6	1.0 ... 6	1.0 ... 6	2.5 ... 10	2.5 ... 10	2.5 ... 10
<b>PE connection</b>		On housing with M5 screw					
<b>Motor cable length<sup>2)</sup>, max.</b>							
• Shielded	m (ft)	50 (164)	50 (164)	50 (164)	50 (164)	50 (164)	50 (164)
• Unshielded	m (ft)	75 (246)	75 (246)	75 (246)	75 (246)	75 (246)	75 (246)
<b>Degree of protection</b>		IP20	IP20	IP20	IP20	IP20	IP20
<b>Dimensions</b>							
• Width	mm (in)	153 (6.02)	153 (6.02)	153 (6.02)	188.4 (7.42)	188.4 (7.42)	188.4 (7.42)
• Height	mm (in)	270 (10.63)	270 (10.63)	270 (10.63)	333.4 (13.13)	333.4 (13.13)	333.4 (13.13)
• Depth							
- PM340	mm (in)	165 (6.5)	165 (6.5)	165 (6.5)	185 (7.28)	185 (7.28)	185 (7.28)
- PM340 with CU310 DP	mm (in)	254.6 (10.02)	254.6 (10.02)	254.6 (10.02)	274.6 (10.81)	274.6 (10.81)	274.6 (10.81)
- PM340 with CUA31	mm (in)	195.3 (7.69)	195.3 (7.69)	195.3 (7.69)	215.3 (8.48)	215.3 (8.48)	215.3 (8.48)
<b>Frame size</b>		FSB	FSB	FSB	FSC	FSC	FSC
<b>Weight, approx.</b>	kg (lb)	4.0 (9)	4.0 (9)	4.0 (9)	6.5 (14)	6.5 (14)	6.5 (14)

<sup>1)</sup> The input current depends on the motor load and line impedance. The input currents apply for rated power loading (based on  $I_{rated}$ ) for a line impedance corresponding to  $u_k = 1\%$ .

<sup>2)</sup> Max. motor cable length 25 m (82.0 ft) (shielded) for PM340 Power Modules with integrated line filter to maintain the limit values of EN 61800-3 Category C2.

<sup>3)</sup> Nominal HP based on Asynchronous motors (induction motors). For specific sizing select drive based on motor nameplate current and overload.

### Technical specifications (continued)

Line voltage 380 ... 480 V 3 AC

Order No.		6SL3210-1SE23-8...	6SL3210-1SE24-5...	6SL3210-1SE26-0...	6SL3210-1SE27-5...	6SL3210-1SE31-0...
<b>Product name</b>		PM340 Power Modules in blocksize format				
<b>Output current</b>						
• Rated current $I_{rated}$	A	38	45	60	75	90
• Base load current $I_H$	A	33	40	48	65	80
• for S6 duty (40%) $I_{S6}$	A	49	58	78	98	117
• $I_{max}$	A	64	76	90	124	150
<b>Rated power</b>						
• based on $I_{rated}$	kW (HP) <sup>3)</sup>	18.5 (25)	22 (30)	30 (40)	37 (50)	45 (60)
• based on $I_H$	kW (HP)	15 (20)	18.5 (30)	22 (30)	30 (50)	37 (60)
<b>Rated pulse frequency</b>	kHz	4	4	4	4	4
<b>Efficiency <math>\eta</math></b>		0.98	0.98	0.98	0.98	0.98
<b>Power loss</b>	kW	0.38	0.51	0.69	0.99	1.21
<b>Cooling air requirement</b>	m <sup>3</sup> /s (ft <sup>3</sup> /s)	0.022 (0.07)	0.022 (0.07)	0.039 (0.13)	0.022 (0.07)	0.039 (0.13)
<b>Sound pressure level</b>	dB (A)	< 60	< 60	< 61	< 60	62
<b>24 V DC supply</b> for Control Unit	A	1.0	1.0	1.0	1.0	1.0
<b>Rated input current<sup>1)</sup></b> with/without line reactor	A	40/46	47/53	63/72	78/88	94/105
<b>Resistance value</b> of the external braking resistor	$\Omega$	$\geq 27$	$\geq 27$	$\geq 27$	$\geq 15$	$\geq 15$
<b>Cable length, max.</b> to braking resistor	m (ft)	15 (49)	15 (49)	15 (49)	15 (49)	15 (49)
<b>Line connection</b> L, N		M6 screw studs	M6 screw studs	M6 screw studs	M6 screw studs	M6 screw studs
• Conductor cross-section	mm <sup>2</sup>	10 ... 35	10 ... 35	10 ... 35	10 ... 35	10 ... 35
<b>Motor connection</b> U2, V2, W2		M6 screw studs	M6 screw studs	M6 screw studs	M6 screw studs	M6 screw studs
• Conductor cross-section	mm <sup>2</sup>	10 ... 35	10 ... 35	10 ... 35	10 ... 35	10 ... 35
<b>DC link connection, connection for the braking resistor</b> DCP/R1, DCN, R2		M6 screw studs	M6 screw studs	M6 screw studs	M6 screw studs	M6 screw studs
• Conductor cross-section	mm <sup>2</sup>	10 ... 35	10 ... 35	10 ... 35	10 ... 35	10 ... 35
<b>PE connection</b>		On housing with M6 screw				
<b>Motor cable length<sup>2)</sup>, max.</b>						
• Shielded	m (ft)	70 (230)	70 (230)	70 (230)	70 (230)	70 (230)
• Unshielded	m (ft)	100 (328)	100 (328)	100 (328)	100 (328)	100 (328)
<b>Degree of protection</b>		IP20	IP20	IP20	IP20	IP20
<b>Dimensions</b>						
• Width	mm (in)	275 (10.83)	275 (10.83)	275 (10.83)	275 (10.83)	275 (10.83)
• Height		418.3/511 (16.47/20.12)	418.3/511 (16.47/20.12)	418.3/511 (16.47/20.12)	498.3/633 (19.62/24.92)	498.3/633 (19.62/24.92)
PM340 without/integrated filter						
• Depth						
- PM340	mm (in)	203.5 (8.01)	203.5 (8.01)	203.5 (8.01)	203.5 (8.01)	203.5 (8.01)
- PM340 with CU310 DP	mm (in)	293.1 (11.54)	293.1 (11.54)	293.1 (11.54)	293.1 (11.54)	293.1 (11.54)
- PM340 with CUA31	mm (in)	233.8 (9.2)	233.8 (9.2)	233.8 (9.2)	233.8 (9.2)	233.8 (9.2)
<b>Frame size</b>		FSD	FSD	FSD	FSE	FSE
<b>Weight, approx.</b> PM340 with/without integrated filter	kg (lb)	15.9/19.3 (35/43)	15.9/19.3 (35/43)	15.9/19.3 (35/43)	19.8/27.1 (44/60)	19.8/27.1 (44/60)

<sup>1)</sup> The input current depends on the motor load and line impedance. The input currents apply for rated power loading (based on  $I_{rated}$ ) for a line impedance corresponding to  $u_k = 1\%$ .

<sup>2)</sup> Max. motor cable length 25 m (82.0 ft) (shielded) for PM340 Power Modules with integrated line filter to maintain the limit values of EN 61800-3 Category C2.

<sup>3)</sup> Nominal HP based on Asynchronous motors (induction motors). For specific sizing select drive based on motor nameplate current and overload.

# SINAMICS S120 drive system

## Power Modules

### Power Modules in blocksize format

#### Technical specifications (continued)

Line voltage 380 ... 480 V 3 AC

Order No.		6SL3210-1SE31-1...	6SL3210-1SE31-5...	6SL3210-1SE31-8...
<b>Product name</b>		PM340 Power Modules in blocksize format		
<b>Output current</b>				
• Rated current $I_{rated}$	A	110	145	178
• Base load current $I_H$	A	95	115	155
• for S6 duty (40%) $I_{S6}$	A	143	188	231
• $I_{max}$	A	180	220	290
<b>Rated power</b>				
• based on $I_{rated}$	kW (HP) <sup>3)</sup>	55 (75)	75 (100)	90 (125)
• based on $I_H$	kW (HP)	45 (60)	55 (75)	75 (100)
<b>Rated pulse frequency</b>	kHz	4	4	4
<b>Efficiency <math>\eta</math></b>		0.98	0.98	0.98
<b>Power loss</b>	kW	1.42	1.93	2.31
<b>Cooling air requirement</b>	m <sup>3</sup> /s (ft <sup>3</sup> /s)	0.094 (0.31)	0.094 (0.31)	0.117 (0.38)
<b>Sound pressure level</b>	dB (A)	< 60	< 60	65
<b>24 V DC supply</b> for Control Unit	A	1.0	1.0	1.0
<b>Rated input current<sup>1)</sup></b> with/without line reactor	A	115/129	151/168	186/204
<b>Resistance value</b> of the external braking resistor	$\Omega$	$\geq 8.2$	$\geq 8.2$	$\geq 8.2$
<b>Cable length, max.</b> to braking resistor	m (ft)	15 (49)	15 (49)	15 (49)
<b>Line connection</b> U1/L1, V1/L2, W1/L3		M8 screw studs	M8 screw studs	M8 screw studs
• Conductor cross-section	mm <sup>2</sup>	120 or 2 × 50	120 or 2 × 50	120 or 2 × 50
<b>Motor connection</b> U2, V2, W2		M8 screw studs	M8 screw studs	M8 screw studs
• Conductor cross-section	mm <sup>2</sup>	120 or 2 × 50	120 or 2 × 50	120 or 2 × 50
<b>DC link connection, connection for the braking resistor</b> DCP/R1, DCN, R2		M8 screw studs	M8 screw studs	M8 screw studs
• Conductor cross-section	mm <sup>2</sup>	120 or 2 × 50	120 or 2 × 50	120 or 2 × 50
<b>PE connection</b>		On housing with M8 screw	On housing with M8 screw	On housing with M8 screw
<b>Motor cable length<sup>2)</sup>, max.</b>				
• Shielded	m (ft)	70 (230)	70 (230)	70 (230)
• Unshielded	m (ft)	100 (328)	100 (328)	100 (328)
<b>Degree of protection</b>		IP20	IP20	IP20
<b>Dimensions</b>				
• Width	mm (in)	350 (13.78)	350 (13.78)	350 (13.78)
• Height PM340 without/with integrated filter	mm (in)	634/934 (24.96/36.77)	634/934 (24.96/36.77)	634/934 (24.96/36.77)
• Depth				
- PM340	mm (in)	315.5 (12.42)	315.5 (12.42)	315.5 (12.42)
- PM340 with CU310 DP	mm (in)	405.1 (15.95)	405.1 (15.95)	405.1 (15.95)
- PM340 with CUA31	mm (in)	345.8 (13.61)	345.8 (13.61)	345.8 (13.61)
<b>Frame size</b>		FSF	FSF	FSF
<b>Weight, approx.</b> PM340 with/without integrated filter	kg (lb)	50.7/66.7 (112/147)	50.7/66.7 (112/147)	50.7/66.7 (112/147)

<sup>1)</sup> The input current depends on the motor load and line impedance. The input currents apply for rated power loading (based on  $I_{rated}$ ) for a line impedance corresponding to  $u_k = 1\%$ .

<sup>2)</sup> Max. motor cable length 25 m (82.0 ft) (shielded) for PM340 Power Modules with integrated line filter to maintain the limit values of EN 61800-3 Category C2.

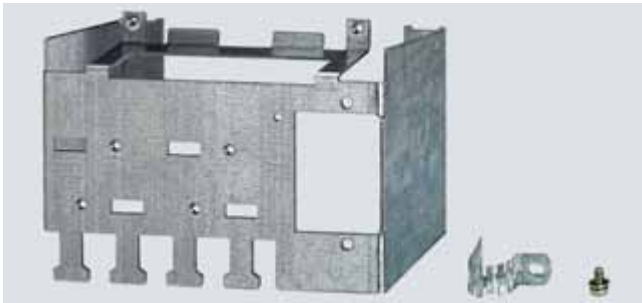
<sup>3)</sup> Nominal HP based on Asynchronous motors (induction motors). For specific sizing select drive based on motor nameplate current and overload.



### Selection and Ordering Data

Rated output current	Rated power	Frame size	PM340 Power Module in blocksize format	
			without line filter	with integrated line filter
A	kW (HP) <sup>1)</sup>		Order No.	Order No.
Line voltage 200 ... 240 V 3 AC				
0.9	0.12 (0.2)	FSA	6SL3210-1SB11-0UA0	6SL3210-1SB11-0AA0
2.3	0.37 (0.5)	FSA	6SL3210-1SB12-3UA0	6SL3210-1SB12-3AA0
3.9	0.75 (0.75)	FSA	6SL3210-1SB14-0UA0	6SL3210-1SB14-0AA0
Line voltage 380 ... 480 V 3 AC				
1.3	0.37 (0.5)	FSA	6SL3210-1SE11-3UA0	–
1.7	0.55 (0.75)	FSA	6SL3210-1SE11-7UA0	–
2.2	0.75 (1)	FSA	6SL3210-1SE12-2UA0	–
3.1	1.1 (1.5)	FSA	6SL3210-1SE13-1UA0	–
4.1	1.5 (2)	FSA	6SL3210-1SE14-1UA0	–
5.9	2.2 (3)	FSB	6SL3210-1SE16-0UA0	6SL3210-1SE16-0AA0
7.7	3 (5)	FSB	6SL3210-1SE17-7UA0	6SL3210-1SE17-7AA0
10.2	4 (5)	FSB	6SL3210-1SE21-0UA0	6SL3210-1SE21-0AA0
18	7.5 (10)	FSC	6SL3210-1SE21-8UA0	6SL3210-1SE21-8AA0
25	11 (15)	FSC	6SL3210-1SE22-5UA0	6SL3210-1SE22-5AA0
32	15 (20)	FSC	6SL3210-1SE23-2UA0	6SL3210-1SE23-2AA0
38	18.5 (25)	FCD	6SL3210-1SE23-8UA0	6SL3210-1SE23-8AA0
45	22 (30)	FCD	6SL3210-1SE24-5UA0	6SL3210-1SE24-5AA0
60	30 (40)	FCD	6SL3210-1SE26-0UA0	6SL3210-1SE26-0AA0
75	37 (50)	FSE	6SL3210-1SE27-5UA0	6SL3210-1SE27-5AA0
90	45 (60)	FSE	6SL3210-1SE31-0UA0	6SL3210-1SE31-0AA0
110	55 (75)	FSF	6SL3210-1SE31-1UA0	6SL3210-1SE31-1AA0
145	75 (100)	FSF	6SL3210-1SE31-5UA0	6SL3210-1SE31-5AA0
178	90 (125)	FSF	6SL3210-1SE31-8UA0	6SL3210-1SE31-8AA0

### Accessories



Example of shield connection kit for PM340 frame size FSB

Designation	Order No.
<b>Shield connection kit for PM340</b>	
• Frame size FSA	6SL3262-1AA00-0BA0
• Frame size FSB	6SL3262-1AB00-0DA0
• Frame size FSC	6SL3262-1AC00-0DA0
• Frame sizes FSD and FSE	6SL3262-1AD00-0DA0
• Frame size FSF	6SL3262-1AF00-0DA0

<sup>1)</sup> Nominal HP based on Asynchronous motors (induction motors), see technical specifications for specific sizing.

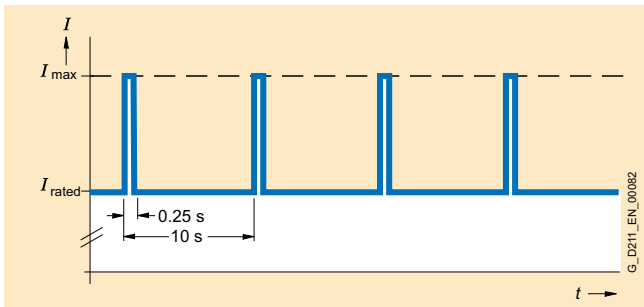
# SINAMICS S120 drive system

## Power Modules

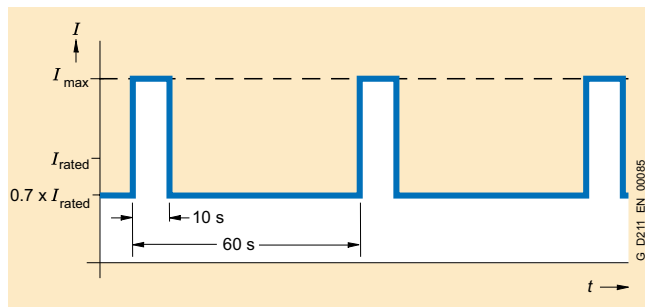
### Power Modules in blocksize format

#### Characteristic curves

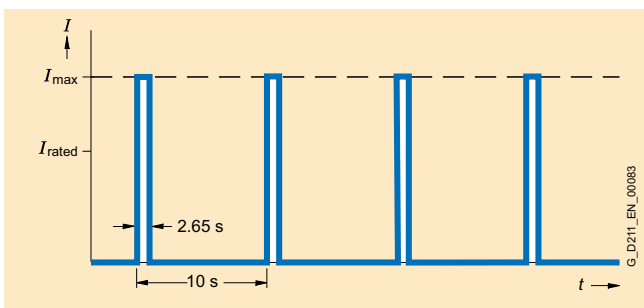
##### Overload capability



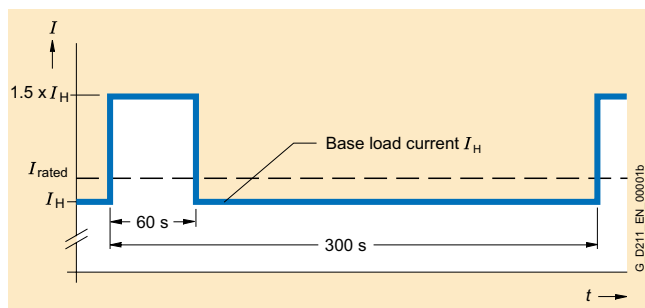
Duty cycle with previous load



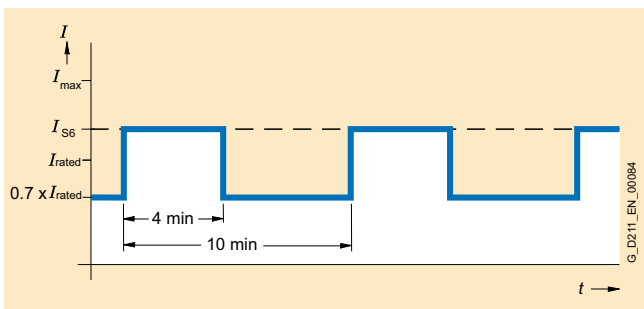
S6 duty cycle with previous load with a duty cycle duration of 60 s



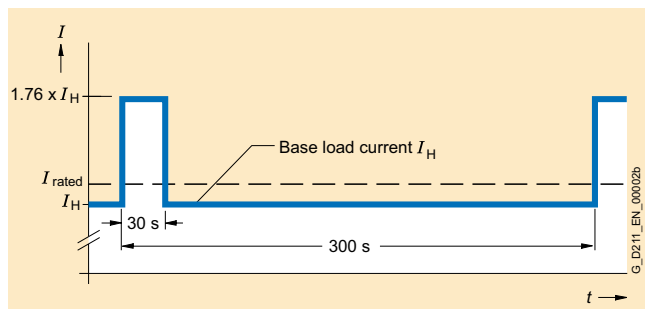
Duty cycle without previous load



Duty cycle with 60 s overload with a duty cycle duration of 300 s



S6 duty cycle with previous load with a duty cycle duration of 600 s

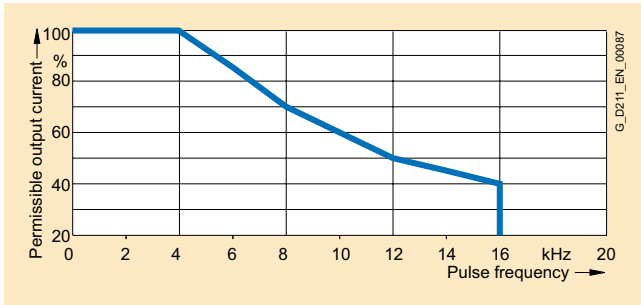


Duty cycle with 30 s overload with a duty cycle duration of 300 s

**Characteristic curves** (continued)

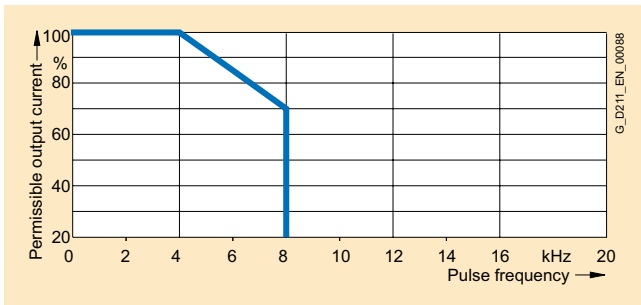
*Derating characteristics*

- Frame sizes FSA to FSE

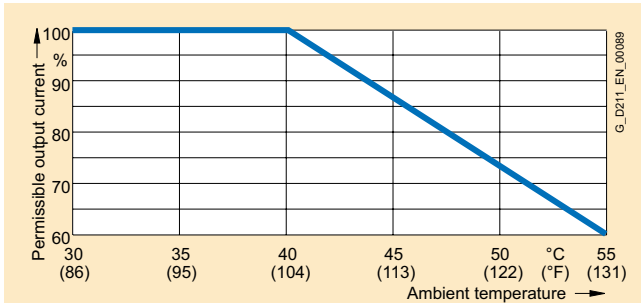


Output current dependent on pulse frequency

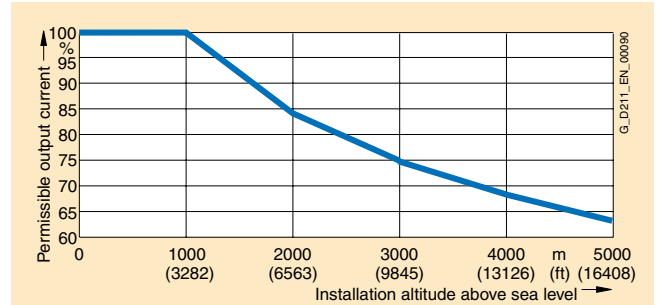
- Frame sizes FSF



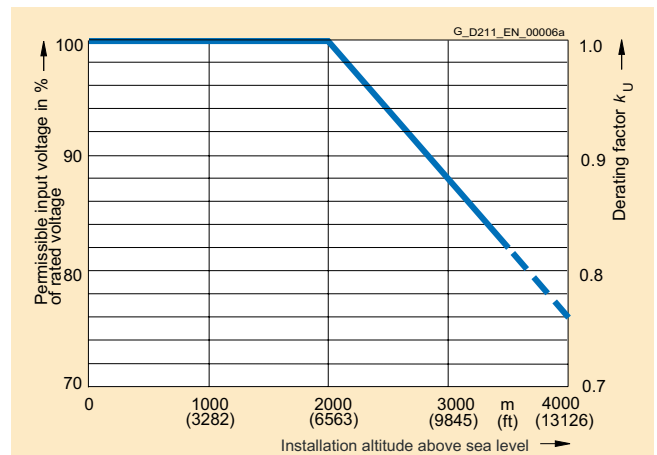
Output current dependent on pulse frequency



Output current dependent on ambient temperature



Output current dependent on installation altitude



Voltage derating dependent on installation altitude