







**SINAMICS S210 servo drive**

0.1 kW to 0.75 kW

**SINAMICS S210 servo drive****Selection and ordering data**

Description	Frame size	Article No.
<b>200 ... 240 V 1 AC</b>		
 <b>SINAMICS S210 servo converters</b> Incl. shield plate and push-in connector without memory card	• 0.1 kW	FSA <b>6SL3210-5HB10-1UF0</b>
	• 0.2 kW	FSA <b>6SL3210-5HB10-2UF0</b>
	• 0.4 kW	FSB <b>6SL3210-5HB10-4UF0</b>
	• 0.75 kW	FSC <b>6SL3210-5HB10-8UF0</b>

**Accessories**

Description	Article No.
 <b>SINAMICS SD card (optional)</b> 512 MB The parameter assignment, firmware and licenses for a converter can be stored on this memory card <ul style="list-style-type: none"> <li>• Empty</li> <li>• With firmware V5.1</li> <li>• With firmware V5.1 SP1 <b>NEW</b></li> <li>• With firmware V5.1 SP1 and Safety license (Extended Functions) <b>NEW</b></li> </ul>	<b>6SL3054-4AG00-2AA0</b> <b>6SL3054-4FB00-2BA0</b> <b>6SL3054-4FB10-2BA0</b> <b>6SL3054-4FB10-2BA0-Z F01</b>
<b>Safety license</b> <b>NEW</b> (Extended Functions) <sup>1)</sup>	<b>6SL3074-0AA10-0AA0</b>
 <b>PROFINET patch cable</b> For the networking of concatenated converters Industrial Ethernet TP cord, CAT 6 A, twisted pair line 4 × 2 cores, pre-assembled with two RJ45 connectors <ul style="list-style-type: none"> <li>• 0.3 m (0.98 ft)</li> <li>• 0.5 m (1.64 ft)</li> </ul>	<b>6XV1870-3QE30</b> <b>6XV1870-3QE50</b>
 <b>Line filter (optional) <sup>2)</sup></b> European standard EN 61008-3 Category C2 can also be achieved for cable lengths up to 25 m (82 ft) with this line filter. Category C3 is reached with cable lengths up to 50 m (164 ft).	<b>6SL3203-0BB21-8VA0</b>
 <b>Replacement connector set 230 V 1 AC</b> For frame sizes FSA, FSB and FSC with a set of connectors as in scope of delivery and two shield plates	<b>6SL3260-2DB00-0AA0</b>

<sup>1)</sup> Extended function for an existing memory card (firmware V5.1 SP1 or higher). The memory card is not included in the scope of delivery. The Safety license can also be ordered together with a memory card (see above).

<sup>2)</sup> The line filter does not have UL approval.

## Technical specifications

Unless explicitly specified otherwise, the following technical specifications are valid for all SINAMICS S210 servo converters.

### General technical specifications

#### Mechanical specifications

##### Vibratory load

- Transport <sup>1)</sup> acc. to EN 60721-3-2
- Operation acc. to EN 60721-3-3
  - Test values according to EN 60068-2-6

Class 2M3  
 Class 3M2  
 Test Fc (sinusoidal)

- 10 ... 13 Hz: 0.075 mm amplitude of deflection
- 13 Hz ... 150 Hz: 1 × *g* acceleration amplitude
- 10 frequency cycles per axis

##### Shock load

- Transport <sup>1)</sup> acc. to EN 60721-3-2
- Operation acc. to EN 60721-3-3
  - Test values according to EN 60068-2-27

Class 2M3  
 Class 3M2  
 Test Ea (semisinusoidal)

- 5 × *g* peak acceleration
- 30 ms duration
- 3 shocks in all three axes in both directions

#### Environmental conditions

##### Protection class

According to EN 61800-5-1

Class I (with protective bonding circuit) and class III (PELV or SELV)

##### Degree of protection

According to EN 60529

IP20  
 Mounting in control cabinet necessary

##### Permissible ambient temperature (air) in operation

0 ... 50 °C (32 ... 122 °F)

##### Installation altitude

Up to max. 4000 m (13123 ft)

- Up to 1000 m (3281 ft) above sea level without derating
- As from 1000 m (3281 ft) derating 10 % of current or 5 K per 1000 m (3281 ft)
- Isolation transformer required as from 2000 m (6562 ft)

##### Climatic environmental conditions

- Storage <sup>2)</sup> acc. to EN 60721-3-1
- Transport <sup>1)</sup> acc. to EN 60721-3-2
- Operation acc. to EN 60721-3-3

Class 1K4  
 -25 ... +55 °C (-13 ... +131 °F)

Class 2K4  
 -40 ... +70 °C (-40 ... +158 °F)  
 Max. air humidity: 95 % at 40 °C (104 °F)

Better than class 3K3  
 0 ... 50 °C (32 ... 122 °F)  
 Relative air humidity: 5 ... 95 %  
 Condensation, splashwater, and ice formation not permitted (EN 60204, Part 1)

##### Environmental class/harmful chemical substances

- Storage <sup>2)</sup> acc. to EN 60721-3-1
- Transport <sup>1)</sup> acc. to EN 60721-3-2
- Operation acc. to EN 60721-3-3

Class 1C2  
 Class 2C2  
 Class 3C2

##### Organic/biological influences

- Storage <sup>2)</sup> acc. to EN 60721-3-1
- Transport <sup>1)</sup> acc. to EN 60721-3-2
- Operation acc. to EN 60721-3-3

Class 1B2  
 Class 2B2  
 Class 3B2

##### Degree of pollution

According to EN 61800-5-1

2

#### Standards

##### Certificates of suitability

CE, cULus, RCM, EAC, KC

<sup>1)</sup> In transport packaging.

<sup>2)</sup> In product packaging.

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## SINAMICS S210 servo drive

### Technical specifications (continued)

Line voltage 200 ... 240 V 1 AC		SINAMICS S210 servo converters			
		6SL3210-5HB10-1UF0	6SL3210-5HB10-2UF0	6SL3210-5HB10-4UF0	6SL3210-5HB10-8UF0
<b>Line supply connection</b>					
• Supply voltage		200 ... 240 V $\pm 10\%$ 1 AC			
• Line frequency	Hz	50/60			
• Conductor cross-section, max.	mm <sup>2</sup>	2.5			
<b>Rated current</b>	A	1.4	2.7	5	9.3
<b>Inrush current</b>	A	8	8	8	8
<b>Power loss</b>	W	15.7	23.2	38.5	71.1
<b>Electronic power supply</b>					
• Voltage		24 V -15 % ... +20 %			
• Power requirement, max.	A	1.6			
• Conductor cross-section, max.	mm <sup>2</sup>	2.5			
<b>Output</b>					
• Rated power for motor	kW	0.1	0.2	0.4	0.75
• Rated current for motor	A	0.8	1.36	2.4	4.4
• Output current for motor, max.	A	3.1	4.8	8.7	16
<b>Pulse frequency power unit</b>	kHz	8			
<b>Output frequency</b>	Hz	0 ... 550			
<b>Line filter</b>		Integrated, category C2 (up to 10 m (32.8 ft) cable length), category C3 (up to 25 m (82.0 ft) cable length)			
<b>Braking resistor</b>		Without <sup>1)</sup>	Integrated	Integrated	Integrated
<b>Digital inputs <sup>2)</sup></b>					
• Fast inputs for measuring probes, reference marks, temperature monitoring, external braking resistor		3			
- Low level		-30 V ... +5 V and $\leq 2$ mA			
- High level		15 V ... 30 V			
- Current consumption	mA	6			
- Delay time, typ. L $\rightarrow$ H	$\mu$ s	5			
- Delay time, typ. H $\rightarrow$ L	$\mu$ s	50			
- Galvanic isolation		No			
• Fail-safe input		1			
- Low level		-30 V ... +5 V and $\leq 2$ mA			
- High level		15 V ... 30 V			
- Current consumption	mA	5			
- Delay time, typ. L $\rightarrow$ H	$\mu$ s	50			
- Delay time, typ. H $\rightarrow$ L	$\mu$ s	100			
- Galvanic isolation		Yes			
• Conductor cross-section, max.	mm <sup>2</sup>	1.5			
<b>Cooling</b>		Convection (without fan)			
<b>Frame size</b>		FSA	FSA	FSB	FSC
<b>Dimensions</b>					
• Width	mm (in)	45 (1.77)	45 (1.77)	55 (2.17)	74.5 (2.93)
• Height	mm (in)	170 (6.69)	170 (6.69)	170 (6.69)	170 (6.69)
• Depth	mm (in)	170 (6.69)	170 (6.69)	170 (6.69)	195 (7.68)
<b>Weight, approx.</b>	kg (lb)	1.1 (2.43)	1.1 (2.43)	1.2 (2.65)	1.9 (4.19)

<sup>1)</sup> An internal braking resistor is not required for normal operation on account of the available DC link capacity.

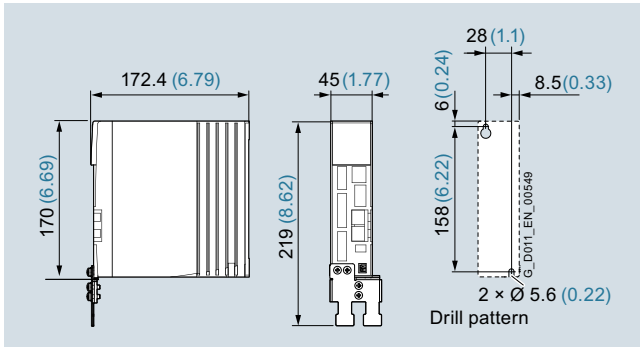
<sup>2)</sup> The specified delay times refer to the hardware. The actual reaction time depends on the time slot in which the digital input is processed.

# SINAMICS S210 servo drive

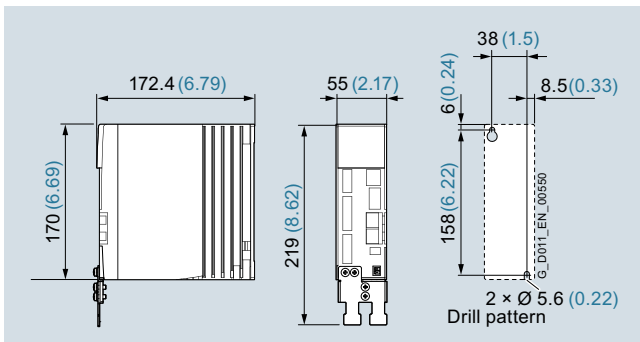
0.1 kW to 0.75 kW

## SINAMICS S210 servo drive

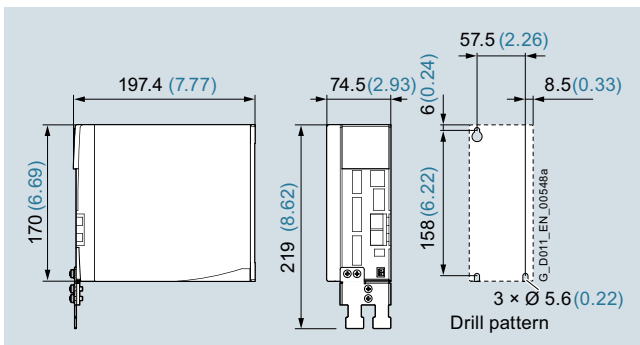
### Dimensional drawings



Dimension drawing, frame size FSA



Dimension drawing, frame size FSB



Dimension drawing, frame size FSC

All dimensions in mm (values in brackets are in inches).

With the OCC motor connection cable connected, the overall depth increases by 56.6 mm (2.28 inches).

### Accessories

#### Line filters

Filters are already integrated in order to achieve category C2 (for motor cable lengths up to 10 m) or category C3 (for motor cable lengths up to 25 m). Further requirements can be achieved using an external line filter.

	Maximum motor cable length	
	for converters without additional line filter	for converters with external line filter
EMC category C2	10 m (32.8 ft)	25 m (82 ft)
EMC category C3	25 m (82 ft)	50 m (164 ft)

#### Recommended line-side overcurrent protective devices

Overcurrent protective devices are absolutely necessary for the operation of the converters. The table listed in the section "Recommended line-side overcurrent protective devices" provides recommendations according to IEC and UL regulations, depending on the area of application. Recommendations on further overcurrent protective devices are available at: <https://support.industry.siemens.com/cs/document/109748999>

Additional information about the listed Siemens fuses is available in Catalog LV 10 as well as in the Industry Mall.

#### Braking resistors

As far as necessary, braking resistors are integrated into the converters. Together with the generously dimensioned DC link capacities, an external braking resistor is not necessary in the normal case.

If the internal braking resistor is inadequate for applications with very high requirements, an external braking resistor can be connected as an alternative.

#### Memory cards

A memory card (SINAMICS SD card) can be optionally used with SINAMICS S210. The associated slot is located under the front cover of the converter. Not only the firmware but also the device parameterization of a SINAMICS S210 servo converter can be stored on the memory card.

When service is required, e.g. after the converter has been replaced and the data have been downloaded from the memory card, the drive system is immediately ready for use again.

A memory card is only absolutely necessary, if functions requiring license, such as the Extended Safety functions, are used. The necessary license is saved on the memory card.

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**Line-side components > Line filters****Technical specifications**

Line voltage 200 ... 240 V 1 AC		Line filter <sup>1)</sup>
Rated current		6SL3203-0BB21-8VA0
A		18
Line/load connection		Screw terminals
• Conductor cross-section		mm <sup>2</sup> 10
PE connection		M5 screw stud
Degree of protection		IP20
Dimensions		
• Width		mm (in) 59 (2.32)
• Height		mm (in) 155 (6.10)
• Depth		mm (in) 53 (2.09)
Weight, approx.		kg (lb) 0.9 (1.98)
Suitable for SINAMICS S210 servo converters		Type 6SL3210-5HB10-1UF0 (0.1 kW) 6SL3210-5HB10-2UF0 (0.2 kW) 6SL3210-5HB10-4UF0 (0.4 kW) 6SL3210-5HB10-8UF0 (0.75 kW)

**Selection and ordering data**

Rated power of the servo converter	Suitable for SINAMICS S210	Line filter <sup>1)</sup>
kW		Article No.
Line voltage 200 ... 240 V 1 AC		
0.1	6SL3210-5HB10-1UF0	<b>6SL3203-0BB21-8VA0</b>
0.2	6SL3210-5HB10-2UF0	
0.4	6SL3210-5HB10-4UF0	
0.75	6SL3210-5HB10-8UF0	

**Line-side components > Recommended line-side overcurrent protective devices****Selection and ordering data**

Overcurrent protective devices are absolutely necessary for the operation of the converters. The following table lists recommendations for fuses.

- Siemens fuses of type 3NA3 for use in the area of validity of IEC
- UL-listed fuses Class J for use in USA and Canada

Recommendations on further overcurrent protective devices are available at:

<https://support.industry.siemens.com/cs/document/109748999>

The Short Circuit Current Rating (SCCR) according to UL for industrial control cabinet installations to NEC Article 409 or UL 508A/508C or UL 61800-5-1 is as follows for Class J fuses for

- SINAMICS S210: 65 kA

SCCR and ICC values for combination with further overcurrent protective devices are available at:

<https://support.industry.siemens.com/cs/document/109748999>

Notes for installations in Canada:

The converters are intended for line supply systems with over-voltage category III. More information is available in the technical documentation on the Internet at:

[www.siemens.com/sinamics-s210/documentation](http://www.siemens.com/sinamics-s210/documentation)

Additional information about the listed Siemens fuses is available in Catalog LV 10 as well as in the Industry Mall.

Rated power	SINAMICS S210	IEC-compliant		UL/cUL-compliant	
		Fuse		Fuse type	
		Current	3NA3	Rated voltage 600 V AC	Current
kW	Type 6SL3210-...	A	Article No.	Class	A
Line voltage 200 ... 240 V 1 AC					
0.1	5HB10-1UF0	6	<b>3NA3801</b>	J	6
0.2	5HB10-2UF0	6	<b>3NA3801</b>	J	6
0.4	5HB10-4UF0	10	<b>3NA3803</b>	J	10
0.75	5HB10-8UF0	16	<b>3NA3805</b>	J	20

<sup>1)</sup> The line filter does not have UL approval.

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### DC link components > External braking resistors

#### Overview

As far as necessary, braking resistors are integrated into the converters. Together with the generously dimensioned DC link capacities, another external braking resistor is not necessary in the normal case.

If the internal braking resistor is inadequate for applications with very high requirements, an external braking resistor can be connected as an alternative.

Only intrinsically safe braking resistors with temperature monitoring may be used in order to minimize the risk of an explosion, the outbreak of fire or melting of the enclosure in the event of a continuous overload, e.g. due to a defect.

#### Technical specifications

##### *Requirements placed on an external braking resistor*

Converter	Braking resistor			
	Rated power	Resistance	Continuous power	Peak braking power
	kW	Ω	W	kW
Line voltage 200 ... 240 V 1 AC				
6SL3210-5HB10-1UF0	0.1	150	50	1.09
6SL3210-5HB10-2UF0	0.2	150	100	1.09
6SL3210-5HB10-4UF0	0.4	100	200	1.64
6SL3210-5HB10-8UF0	0.75	50	380	3.28

#### More information

Further information is available from the "Siemens Product Partner for Drives Options":

[www.siemens.com/drives-options-partner](http://www.siemens.com/drives-options-partner)