

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6SL3210-5FB10-1UF0

SINAMICS V90 SERVO DRIVE

Used with the applicable SINAMICS V90 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official technical documentation for 6SL3210-5FB10-1UF0

General information

The SINAMICS V90 drives with the PROFINET interface (referred to as SINAMICS V90 PN) are available in two variants, 400 V variant and 200 V variant.

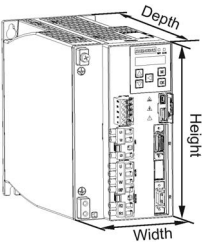
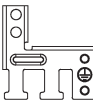
The 200 V variant is available in three frame sizes: FSB, FSC, and FSD. Frame sizes B, and C are used on the single phase or three phase power network while frame size D is used on the three phase power network only.

The 400 V variant is available in four frame sizes: FSAA, FSA, FSB, and FSC. All the frame sizes are used on three phase power network only.

2.1 Deliverables

2.1.1 Drive components

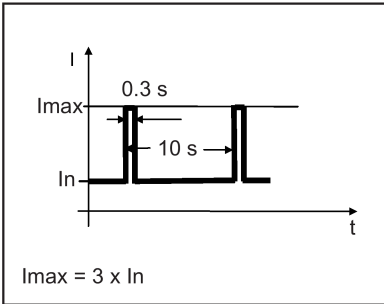
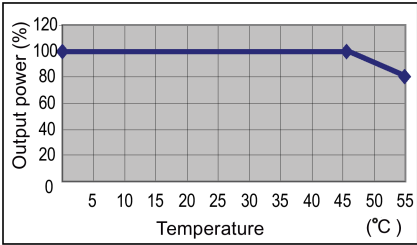
Components in the SINAMICS V90 PN 200 V variant drive package

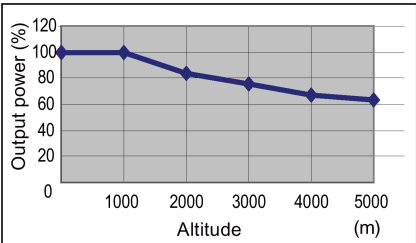
Component	Illustration	Rated power (kW)	Outline dimension (Width x Height x Depth, mm)	Frame size	Order number
SINAMICS V90 PN, single/three-phase, 200 V		0.1/0.2/0.4	55 x 170 x 170	FSB	6SL3210-5FB10-1UF0
					6SL3210-5FB10-2UF0
					6SL3210-5FB10-4UF1
		0.75	80 x 170 x 195	FSC	6SL3210-5FB10-8UF0
		1.0/1.5/2.0	95 x 170 x 195	FSD	6SL3210-5FB11-0UF1
					6SL3210-5FB11-5UF0
					6SL3210-5FB12-0UF0
Connectors		For FSB			6SL3200-0WT02-0AA0
		For FSC and FSD			6SL3200-0WT03-0AA0
Shielding plate		For FSB			
		For FSC and FSD			
User documentation	Information Guide	English-Chinese bilingual version			

2.6 Technical data

2.6.1 Technical data - servo drives

General technical data

Parameter		Description
24 VDC power supply	Voltage (V)	24 (-15% to +20%) ¹⁾
	Maximum current (A)	1.5 A (when using a motor without a brake) 3.5 A (when using a motor with a brake)
Overload capability		300% 
Control system		Servo control
Dynamic brake		Built-in
Protective functions		Earthing fault protection, output short-circuit protection ²⁾ , overvoltage/undervoltage protection, I ² t inverter, I ² t motor, IGBT overtemperature protection ³⁾
Speed control mode	Speed control range	Analog speed command 1:2000, internal speed command 1:5000
	Analog speed command input	-10 VDC to +10 VDC/rated speed
	Torque limit	Set through a parameter or the analog input command (0 VDC to +10 VDC/max. torque)
Environmental conditions	Surrounding air temperature	Operation 0 °C to 45 °C: without power derating 45 °C to 55 °C: with power derating 
		Storage -40 °C to +70 °C

Parameter			Description														
	Ambient humidity	Operation	< 90% (non-condensing)														
		Storage	90% (non-condensing)														
	Operating environment		Indoors (without direct sunlight), free from corrosive gas, combustible gas, oil gas, or dust														
	Altitude		≤ 1000 m (without power derating) <table><caption>Altitude Derating Data</caption><thead><tr><th>Altitude (m)</th><th>Output power (%)</th></tr></thead><tbody><tr><td>0</td><td>100</td></tr><tr><td>1000</td><td>100</td></tr><tr><td>2000</td><td>85</td></tr><tr><td>3000</td><td>75</td></tr><tr><td>4000</td><td>68</td></tr><tr><td>5000</td><td>65</td></tr></tbody></table>	Altitude (m)	Output power (%)	0	100	1000	100	2000	85	3000	75	4000	68	5000	65
	Altitude (m)	Output power (%)															
	0	100															
1000	100																
2000	85																
3000	75																
4000	68																
5000	65																
Degree of protection		IP 20															
Degree of pollution		Class 2															
Vibration	Operation	Shock	Operational area II Peak acceleration: 5 g, 30 ms and 15 g, 11 ms Quantity of shocks: 3 per direction × 6 directions Duration of shock: 1 s														
		Vibration	Operational area II 10 Hz to 58 Hz: 0.075 mm deflection 58 Hz to 200 Hz: 1 g vibration														
	Product packaging	Vibration	2 Hz to 9 Hz: 3.5 mm deflection 9 Hz to 200 Hz: 1 g vibration Quantity of cycles: 10 per axis Sweep seed: 1 octave/min														
Certifications																	

- 1) When SINAMICS V90 PN works with a motor with a brake, the voltage tolerance of 24 VDC power supply must be -10% to +10% to meet the voltage requirement of the brake.
- 2) Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.
- 3) SINAMICS V90 PN does not support motor overtemperature protection. Motor overtemperature is calculated by I^2t and protected by the output current from the drive.

Specific technical data

SINAMICS V90 PN 200V variant

Order No.	6SL3210-5FB...		10-1UF0	10-2UF0	10-4UF1	10-8UF0	11-0UF1	11-5UF0	12-0UF0
Frame size			FSB	FSB	FSB	FSC	FSD	FSD	FSD
Rated output current (A)			1.2	1.4	2.6	4.7	6.3	10.6	11.6
Max. output current (A)			3.6	4.2	7.8	14.1	18.9	31.8	34.8
Max. supported motor power (kW)			0.1	0.2	0.4	0.75	1.0	1.5	2.0
Output frequency (Hz)			0 to 330						
Power supply	Voltage/frequency		FSB and FSC: single phase/three phase 200 VAC to 240 VAC, 50/60 Hz FSD: three phase 200 VAC to 240 VAC, 50/60 Hz						
	Permissible voltage fluctuation		-15% to +10%						
	Permissible frequency fluctuation		-10% to +10%						
	Rated input current (A)	1-phase	2.5	3.0	5.0	10.4	-	-	-
		3-phase	1.5	1.8	3.0	5.0	7.0	11.0	12.0
	Power supply capacity (kVA)	1-phase	0.5	0.7	1.2	2.0	-	-	-
		3-phase	0.5	0.7	1.1	1.9	2.7	4.2	4.6
	Inrush current (A)		8.0						
Cooling method			Self-cooled				Fan-cooled		
Mechanical design	Outline dimensions (W x H x D, mm)		50 x 170 x 170			80 x 170 x 195	95 x 170 x 195		
Weight (kg)			1.25			1.95	2.3	2.4	

SINAMICS V90 PN 400V variant

Order No.	6SL3210-5FE...	10-4UF0	10-8UF0	11-0UF0	11-5UF0	12-0UF0	13-5UF0	15-0UF0	17-0UF0
Frame size		FSA	FSA	FSA	FSB	FSB	FSC	FSC	FSC
Rated output current (A)		1.2	2.1	3.0	5.3	7.8	11.0	12.6	13.2
Max. output current (A)		3.6	6.3	9.0	13.8	23.4	33.0	37.8	39.6
Max. supported motor power (kW)		0.4	0.75	1.0	1.75	2.5	3.5	5.0	7.0
Output frequency (Hz)		0 to 330							
Power supply	Voltage/frequency	Three phase 380 VAC to 480 VAC, 50/60 Hz							
	Permissible voltage fluctuation	-15% to +10%							
	Permissible frequency fluctuation	-10% to +10%							
	Rated input current (A)	1.5	2.6	3.8	6.6	9.8	13.8	15.8	16.5
	Power supply capacity (kVA)	1.7	3.0	4.3	7.6	11.1	15.7	18.0	18.9
	Inrush current (A)	8.0	8.0	8.0	4.0	4.0	2.5	2.5	2.5
Cooling method		Self-cooled			Fan-cooled				