

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6SL3210-5BB15-5AV0

0.55 KW VARIABLE FREQUENCY DRIVE

Used with the applicable SINAMICS V20 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens technical documentation for 6SL3210-5BB15-5AV0

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SINAMICS

SINAMICS V20 Inverter

Getting Started

Preface

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Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

 WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Acknowledging / clearing faults

- To navigate through the current list of faults, press  or .
- To clear / acknowledge the fault, press  or acknowledge externally if the inverter has been set up so.
- To ignore the fault, press .

After you acknowledge or ignore the fault, the screen returns to the previous display. The fault icon remains lit until the fault is cleared / acknowledged.

Alarm code list

Alarm	Description
A501	Current limit
A502	Overvoltage limit
A503	Undervoltage limit
A504	Inverter overtemperature
A505	Inverter I ² t
A506	IGBT junction temperature rise warning
A507	Inverter temperature signal lost
A511	Motor overtemperature I ² t
A535	Braking resistor overload
A541	Motor data identification active
A600	RTOS overrun warning
A910	Vdc_max controller deactivated
A911	Vdc_max controller active
A912	Vdc_min controller active
A921	AO parameters not set properly
A922	No load applied to inverter
A923	Both JOG left and JOG right are requested
A930	Cavitation protection warn
A936	PID autotuning active
A952	Belt failure detected

Acknowledging / clearing alarms

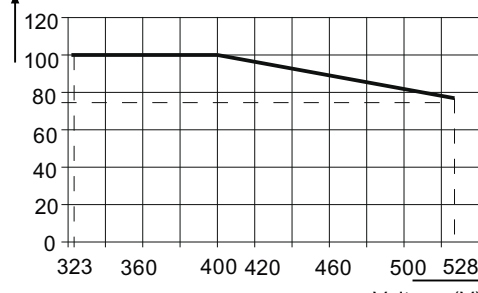
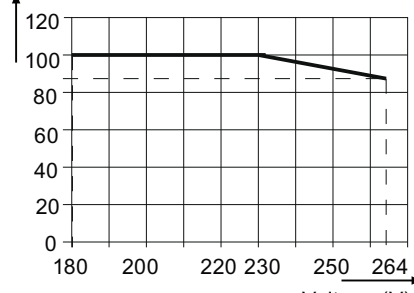
Note

Note that alarms cannot be acknowledged. They are cleared automatically once the warning has been rectified.

Technical specifications

Electrical specifications

Line supply characteristics

	Three phase AC 400 V inverters	Single phase AC 230 V inverters
Voltage range	380 V to 480 V AC (tolerance: -15 % to +10 %) 47 Hz to 63 Hz Current derating at high input voltages:  Note: For the current derating at 480 V at the default 4kHz switching frequency and 40°C surrounding air temperature, refer to the table in the Section "Ordering data (Page 61)".	200 V to 240 V AC (tolerance: -10 % to +10 %) 47 Hz to 63 Hz Current derating at high input voltages: 
Overvoltage category	EN 60664-1 Category III	EN 60664-1 Category III
Permissible supply configuration	TN, TT, IT ¹⁾ , TT earthed line	TN, TT
Supply environment	Second environment (private power network)	Second environment (private power network)

¹⁾ Note that only unfiltered inverters can be operated on IT power system.

Overload capability

Average output current	100 % rated
Overload current	150 % rated for 60 seconds
Maximum overload cycle	150 % rated for 60 seconds followed by 94.5 % rated for 240 seconds (average 100 % rated)

Motor control

Control methods	Linear V/F, quadratic V/F, multi-point V/F, V/F with FCC
Output frequency range	Default range: 0 Hz to 599 Hz Resolution: 0.01 Hz

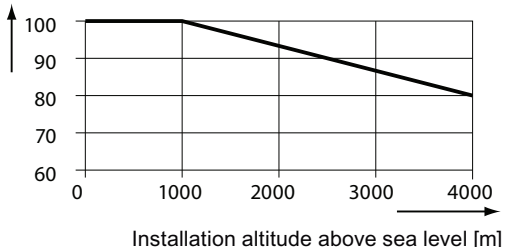
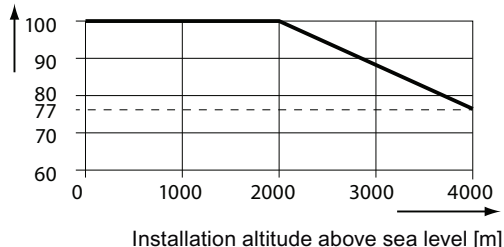
Mechanical specifications

Frame size		Net weight (kg)		Gross weight (kg)	
		unfiltered	filtered	unfiltered	filtered
Three phase AC 400 V inverters					
A	with fan	1.0	1.1	1.4	1.4
	without fan	0.9	1.0 (0.9 ¹⁾)	1.3	1.4 (1.3 ¹⁾)
B		1.6	1.8	2.1	2.3
C		2.4	2.6	3.1	3.3
D	7.5 kW	3.7	4.0	4.3	4.6
	11 kW	3.7	4.1	4.5	4.8
	15 kW	3.9	4.3	4.6	4.9
Single phase AC 230 V inverters					
A		1.0	1.1	1.3	1.4
B		1.6	1.8	2.0	2.1
C		2.5	2.8	3.0	3.2

¹⁾ Weight of Flat Plate inverter (400 V 0.75 kW variant only).

Environmental conditions

Surrounding air temperature	0 °C to 40 °C: without derating 40 °C to 60 °C: with derating
Storage temperature	- 40 °C to + 70 °C
Protection class	IP 20
Maximum humidity level	95 % (non-condensing)
Shock and vibration	Long-term storage in the transport packaging according to EN 60721-3-1 Class 1M2
	Transport in the transport packaging according to EN 60721-3-2 Class 2M3
	Vibration during operation according to EN 60721-3-3 Class 3M2

Operating altitude	Up to 4000 m above sea level 1000 m to 4000 m: output current derating 2000 m to 4000 m: input voltage derating Permissible output current [%]  Permissible input voltage [%] 
Environmental classes	Pollution class: 3S2 Gas class: 3C2 (SO₂, H₂S) Climate class: 3K3
Minimum mounting clearance	Top: 100 mm Bottom: 100 mm (85 mm for fan-cooled frame size A) Side: 0 mm

Standards

	European Low Voltage Directive The SINAMICS V20 product range complies with the requirements of the Low Voltage Directive 2006/95/EC as amended by Directive 98/68/EEC. The units are certified for compliance with the following standards: EN 61800-5-1 — Semiconductor inverters – General requirements and line commutated inverters
	European EMC Directive When installed according to the recommendations described in this manual, the SINAMICS V20 fulfills all requirements of the EMC Directive as defined by the EMC Product standard for Power Drive Systems EN 61800-3
UL certification (UL508C)	
	The SINAMICS V20 complies with the appropriate C-tick EMC standard.
ISO 9001	Siemens plc operates a quality management system, which complies with the requirements of ISO 9001.

Certificates can be downloaded from the internet under the following link:

Website for certificates

(<http://support.automation.siemens.com/WW/view/en/60668840/134200>)

EMC requirements

For more information about the EMC-compliant installation of the inverter, refer to the SINAMICS V20 Inverter Operating Instructions.

Ordering data

Three phase AC 400 V variants

Component	Rated output power	Rated input current	Rated output current	Output current at 480 V at 4kHz / 40°C	Order number	
					unfiltered	filtered
Frame size A (without fan)	0.37 kW	1.7 A	1.3 A	1.3 A	6SL3210-5BE13-7UV0	6SL3210-5BE13-7CV0
	0.55 kW	2.1 A	1.7 A	1.6 A	6SL3210-5BE15-5UV0	6SL3210-5BE15-5CV0
	0.75 kW	2.6 A	2.2 A	2.2 A	6SL3210-5BE17-5UV0	6SL3210-5BE17-5CV0
	0.75 kW ¹⁾	2.6 A	2.2 A	2.2 A	-	6SL3216-5BE17-5CV0
Frame size A (with single fan)	1.1 kW	4.0 A	3.1 A	3.1 A	6SL3210-5BE21-1UV0	6SL3210-5BE21-1CV0
	1.5 kW	5.0 A	4.1 A	4.1 A	6SL3210-5BE21-5UV0	6SL3210-5BE21-5CV0
	2.2 kW	6.4 A	5.6 A	4.8 A	6SL3210-5BE22-2UV0	6SL3210-5BE22-2CV0
Frame size B (with single fan)	3.0 kW	8.6 A	7.3 A	-	6SL3210-5BE23-0UV0	6SL3210-5BE23-0CV0
	4.0 kW	11.3 A	8.8 A	8.24 A	6SL3210-5BE24-0UV0	6SL3210-5BE24-0CV0
Frame size C (with single fan)	5.5 kW	15.2 A	12.5 A	11 A	6SL3210-5BE25-5UV0	6SL3210-5BE25-5CV0
Frame size D (with two fans)	7.5 kW	20.7 A	16.5 A	16.5 A	6SL3210-5BE27-5UV0	6SL3210-5BE27-5CV0
	11 kW	30.4 A	25 A	21 A	6SL3210-5BE31-1UV0	6SL3210-5BE31-1CV0
	15 kW	38.1 A	31 A	31 A	6SL3210-5BE31-5UV0	6SL3210-5BE31-5CV0

¹⁾ This variant refers to the Flat Plate inverter with a flat plate heatsink.

Single phase AC 230 V variants

Component	Rated output power	Rated input current	Rated output current	Order number	
				unfiltered	filtered
Frame size A (without fan)	0.12 kW	2.3 A	0.9 A	6SL3210-5BB11-2UV0	6SL3210-5BB11-2AV0
	0.25 kW	4.5 A	1.7 A	6SL3210-5BB12-5UV0	6SL3210-5BB12-5AV0
	0.37 kW	6.2 A	2.3 A	6SL3210-5BB13-7UV0	6SL3210-5BB13-7AV0
	0.55 kW	7.7 A	3.2 A	6SL3210-5BB15-5UV0	6SL3210-5BB15-5AV0
	0.75 kW	10 A	3.9 A	6SL3210-5BB17-5UV0	6SL3210-5BB17-5AV0
Frame size B (with single fan)	1.1 kW	14.7 A	6.0 A	6SL3210-5BB21-1UV0	6SL3210-5BB21-1AV0
	1.5 kW	19.7 A	7.8 A	6SL3210-5BB21-5UV0	6SL3210-5BB21-5AV0
Frame size C (with single fan)	2.2 kW	27.2 A	11 A	6SL3210-5BB22-2UV0	6SL3210-5BB22-2AV0
	3.0 kW	32 A	13.6 A	6SL3210-5BB23-0UV0	6SL3210-5BB23-0AV0