

SINAMICS G110
Inverter Chassis Units
0.12 kW to 3 kW

Product Brief • July 2005



sinamics



SIEMENS

SINAMICS G110

Description



SINAMICS G110, frame sizes A, B, C



SINAMICS G110, frame size A with flat plate heatsink

Overview

SINAMICS G110 is a frequency inverter with basic functions for a variety of industrial variable-speed drive applications.

The particularly compact SINAMICS G110 inverter operates with voltage frequency control on single-phase supplies (200 V to 240 V).

It is the ideal low-cost frequency inverter solution for the lower power range of the SINAMICS family.

Benefits

- Easy to install, parameterize and commission
- rugged EMC design
- comprehensive range of parameters enabling configuration for a wide range of applications
- simple cable connection
- scaleable functionality due to analog and USS variants
- high pulse frequencies for low-noise motor operation
- status information and alarm messages with the optional Basic Operator Panel (BOP)
- time saving parameter cloning with the optional Basic Operator Panel (BOP)
- external options for PC communications and Basic Operator Panel (BOP)
- careful handling of the machine mechanical system due to a skip frequency band in case of resonance, parameterizable ramp up/ramp down times up to 650 s, ramp smoothing, as well as bringing the inverter into circuit on turning motor (flying start)
- increasing the installation availability by automatic restart facility following power failure or fault
- fast current limit (FCL) for trip-free operation in case of sudden load changes

- fast, repeatable digital input response time for fast reaction applications
- fine speed adjustment using a high resolution 10-bit analog input (analog variants only)
- LED for status information
- versions with internal EMC filters Class A or B
- DIP switch for easy setting of 50 Hz or 60 Hz applications
- DIP switch for easy bus termination on the RS485 (USS) variant
- RS485 serial interface (USS variants only) facilitates connection to a networked drive system
- 2-/3-wire method (steady/pulsed signals) for universal control via digital inputs
- adjustable lower voltage limit in the DC link for initiating a controlled motor shut down in the case of a power failure.

Area of application

SINAMICS G110 is especially suited for use with pumps and fans, or as a drive in various industrial sectors, such as the food, textile and packaging industries, as well as for conveyor systems, factory gate and garage door drives, and as a universal drive for moving billboards.

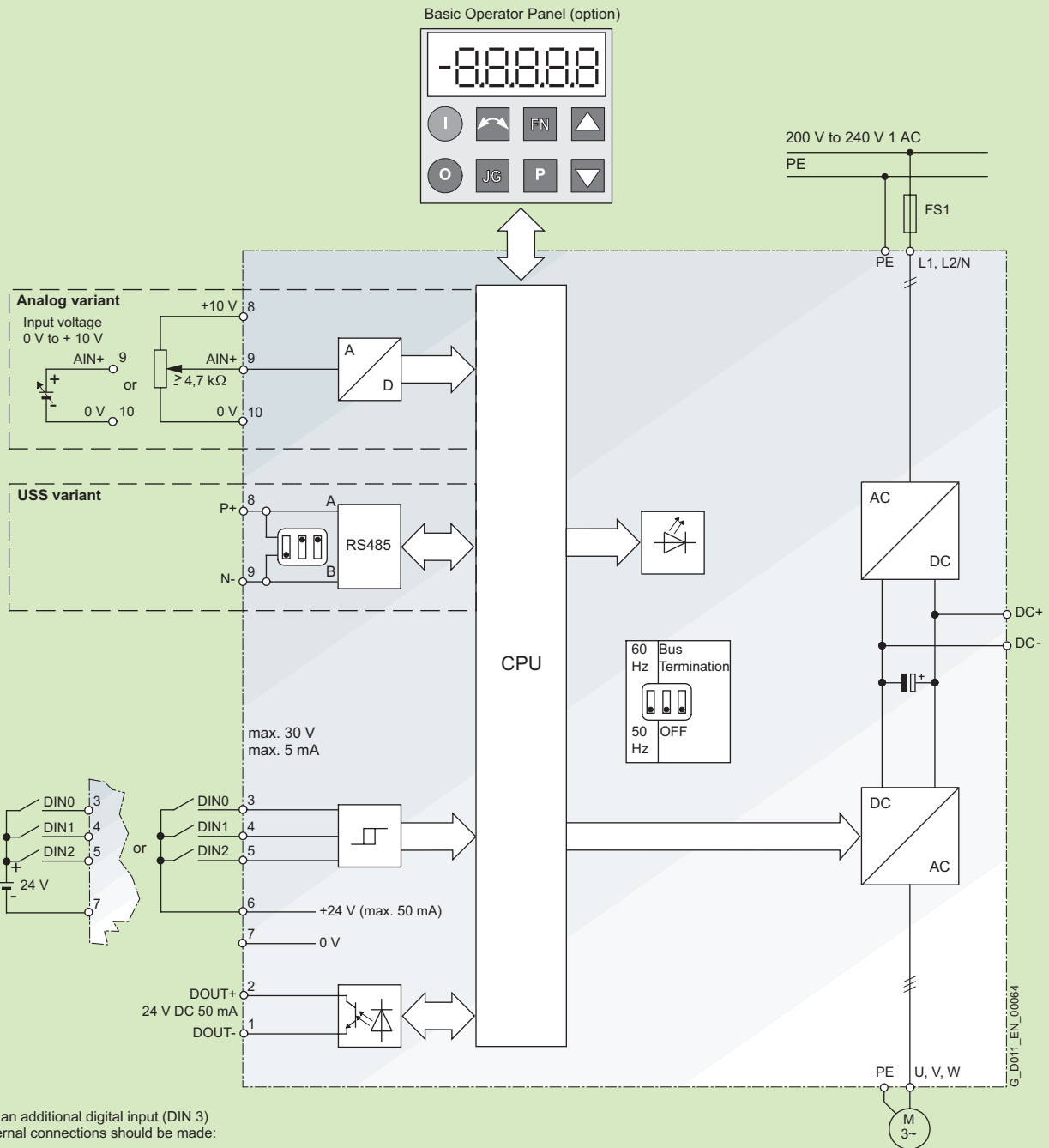
Design

- Compact design
- latest IGBT technology
- digital microprocessor control
- heat dissipation through self ventilation (convection) on FS A, forced air cooling (fan) on FS B and FS C
- mains and motor connections are separated for optimum electromagnetic compatibility and clear connection
- screwless control terminals
- variant with a flat plate heatsink for use in lower depth cabinets (FS A only).

FS = frame size

SINAMICS G110

General Circuit Diagram



SINAMICS G110

Technical Data

Input voltage and power ranges	200 V to 240 V 1 AC $\pm 10\%$	0.12 kW to 3.0 kW	
Input frequency	47 Hz to 63 Hz		
Output frequency	0 Hz to 650 Hz		
cos phi	≥ 0.95		
Inverter efficiency	Inverters < 0.75 kW Inverters ≥ 0.75 kW	90% to 94% $\geq 95\%$	
Overload capability	Overload current 1.5 x rated output current (i.e. 150% overload capability) for 60 s, then 0.85 x rated output current for 240 s, cycle time 300 s		
Inrush current	less than rated input current		
Control method	linear V/f (with programmable voltage boost); quadratic V/f; multipoint characteristic (programmable V/f)		
Pulse frequency	8 kHz (standard)	2 kHz to 16 kHz (in 2 kHz steps)	
Fixed frequencies	3, programmable		
Skip frequency band	1, programmable		
Setpoint resolution	0.01 Hz digital 0.01 Hz serial 10 bit analog (motor potentiometer 0.1 Hz)		
Digital inputs	3 programmable digital inputs, non isolated; PNP type, SIMATIC compatible		
Analog input (analog variant)	1, for setpoint (0 V to 10 V, scaleable or for use as 4th digital input)		
Digital output	1 isolated optocoupler output (24 V DC, 50 mA, resistive, NPN type)		
Serial interface (USS variant)	RS485, for operation with USS protocol		
Motor cable length	max. 25 m (shielded)	max. 50 m (unshielded)	
Electromagnetic compatibility	all devices with internal EMC filter for power drive systems in category 2 installations (restricted availability), limit complies with EN 55 011, Class A, Group 1	furthermore all filtered devices with shielded cables with a max. length of 5 m comply with the limits of EN 55 011, Class B	
Braking	DC braking, compound braking		
Protection level	IP20		
Temperature range	-10 °C to +40 °C	up to +50 °C with derating	
Storage temperature	-40 °C to +70 °C		
Humidity	95% (non-condensing)		
Operational altitudes	up to 1000 m above sea level without derating	<ul style="list-style-type: none"> Rated output current at 4000 m above sea level: 90% Mains voltage up to 2000 m above sea level: 100% at 4000 m above sea level: 75% 	
Protection features for	under-voltage, over-voltage, earth faults, short circuits, stall prevention, I^2t motor thermal protection, inverter over-temperature, motor over-temperature		
Conformity with standards	UL, cUL, CE , c-tick		
CE marking	conformity with EC low voltage directive 73/23/EC		
Dimensions and weights (without options)	Frame size (FS)	H x W x D mm	Weight, approx. (kg) unfiltered filtered
	A ≤ 0.37 kW	150 x 90 x 116	0.7 0.8
	A 0.55 kW and 0.75 kW	150 x 90 x 131	0.8 0.9
	A ≤ 0.37 kW with flat plate heatsink	150 x 90 x 101	0.6 0.7
	A 0.55 kW and 0.75 kW with flat plate heatsink	150 x 90 x 101	0.7 0.8
	B 1.1 kW and 1.5 kW	160 x 140 x 142	1.4 1.5
	C 2.2 kW	181 x 184 x 152	1.9 2.1
	C 3.0 kW	181 x 184 x 152	2.0 2.2

SINAMICS G110

Selection and Ordering Data

Rated output		Rated input current ¹⁾ A	Rated output current A	Frame size	Version	Order No.	
kW	hp					SINAMICS G110 without filter	with internal filter
0.12	0.16	2.3	0.9	FS A	Analog	6SL3211-0AB11-2UA1	6SL3211-0AB11-2BA1
					USS	6SL3211-0AB11-2UB1	6SL3211-0AB11-2BB1
					Analog (with flat plate)	6SL3211-0KB11-2UA1	6SL3211-0KB11-2BA1
					USS (with flat plate)	6SL3211-0KB11-2UB1	6SL3211-0KB11-2BB1
0.25	0.33	4.5	1.7	FS A	Analog	6SL3211-0AB12-5UA1	6SL3211-0AB12-5BA1
					USS	6SL3211-0AB12-5UB1	6SL3211-0AB12-5BB1
					Analog (with flat plate)	6SL3211-0KB12-5UA1	6SL3211-0KB12-5BA1
					USS (with flat plate)	6SL3211-0KB12-5UB1	6SL3211-0KB12-5BB1
0.37	0.5	6.2	2.3	FS A	Analog	6SL3211-0AB13-7UA1	6SL3211-0AB13-7BA1
					USS	6SL3211-0AB13-7UB1	6SL3211-0AB13-7BB1
					Analog (with flat plate)	6SL3211-0KB13-7UA1	6SL3211-0KB13-7BA1
					USS (with flat plate)	6SL3211-0KB13-7UB1	6SL3211-0KB13-7BB1
0.55	0.75	7.7	3.2	FS A	Analog	6SL3211-0AB15-5UA1	6SL3211-0AB15-5BA1
					USS	6SL3211-0AB15-5UB1	6SL3211-0AB15-5BB1
					Analog (with flat plate)	6SL3211-0KB15-5UA1	6SL3211-0KB15-5BA1
					USS (with flat plate)	6SL3211-0KB15-5UB1	6SL3211-0KB15-5BB1
0.75	1.0	10.0	3.9 (at 40 °C)	FS A	Analog	6SL3211-0AB17-5UA1	6SL3211-0AB17-5BA1
					USS	6SL3211-0AB17-5UB1	6SL3211-0AB17-5BB1
					Analog (with flat plate)	6SL3211-0KB17-5UA1	6SL3211-0KB17-5BA1
					USS (with flat plate)	6SL3211-0KB17-5UB1	6SL3211-0KB17-5BB1
1.1	1.5	14.7	6.0	FS B	Analog	6SL3211-0AB21-1UA1	6SL3211-0AB21-1AA1
					USS	6SL3211-0AB21-1UB1	6SL3211-0AB21-1AB1
1.5	2.0	19.7	7.8 (at 40 °C)	FS B	Analog	6SL3211-0AB21-5UA1	6SL3211-0AB21-5AA1
					USS	6SL3211-0AB21-5UB1	6SL3211-0AB21-5AB1
2.2	3.0	27.2	11.0	FS C	Analog	6SL3211-0AB22-2UA1	6SL3211-0AB22-2AA1
					USS	6SL3211-0AB22-2UB1	6SL3211-0AB22-2AB1
3.0	4.0	35.6	13.6 (at 40 °C)	FS C	Analog	6SL3211-0AB23-0UA1	6SL3211-0AB23-0AA1
					USS	6SL3211-0AB23-0UB1	6SL3211-0AB23-0AB1

The current data applies for an ambient temperature of 50 °C unless otherwise specified.

All SINAMICS G110 inverters are supplied without a Basic Operator Panel (BOP). Any Basic Operator Panel or other options have to be ordered separately.

For SINAMICS G110 inverters the last digit of the full Order no. indicates the version type. As a result of product development, this digit may differ from the one specified when ordering.

Options

Options	Order No.
Basic Operator Panel (BOP)	6SL3255-0AA00-4BA0
Connection kit for PC to inverter	6SL3255-0AA00-2AA0
Adapter for mounting on DIN rail, Size 1 (FS A)	6SL3261-1BA00-0AA0
Adapter for mounting on DIN rail, Size 2 (FS B)	6SL3261-1BB00-0AA0
Documentation CD, with Operating Instructions, Parameter List, Getting Started Guide and STARTER commissioning tool ²⁾	6SL3271-0CA00-0AG0
STARTER commissioning tool on CD-ROM ³⁾	6SL3272-0AA00-0AG0

1) The value applies to the rated mains voltage of 230 V.

2) Documentation is also available on the Internet at <http://www.siemens.com/sinamics-g110>

3) STARTER commissioning tool is also available on the Internet at <http://www4.ad.siemens.de/WW/view/en/10804985/133100>

SINAMICS G110

Starter kit



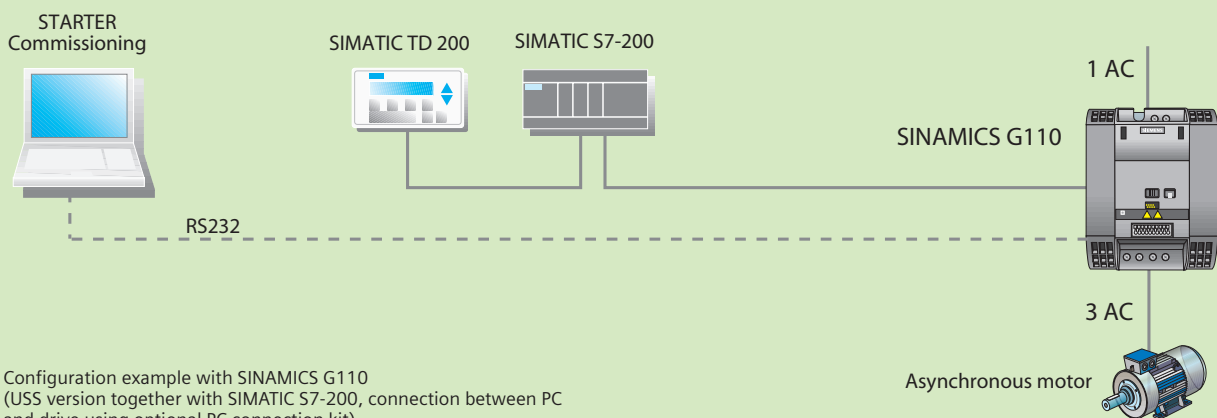
The SINAMICS G110 starter kit provides a low-cost introduction to the world of variable speed drives.

It comprises a stackable carrying case containing the following:

- Inverter with analog input and internal EMC filter
- Basic Operator Panel (BOP)
- PC to inverter connection kit
- Product brief, operating instructions and parameter list (paper version in German or English)
- STARTER commissioning tool on CD-ROM, including: Operating Instructions, Parameter List and Getting Started Guide
- Screwdriver.

	Output	Language	Order no.
Starter kit	0.75 kW	German	6SL3200-0AB10-0AA0
	1.5 kW	German	6SL3200-0AB20-0AA0
	0.75 kW	English	6SL3200-0AB30-0AA0
	1.5 kW	English	6SL3200-0AB40-0AA0

Integration



Configuration example with SINAMICS G110 (USS version together with SIMATIC S7-200, connection between PC and drive using optional PC connection kit)

SINAMICS G110

Terms and Conditions of Sale and Delivery

By using this product brief you can acquire hardware and software products described therein from the Siemens AG subject to the following terms. Please note! The scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity.

For customers based in Germany

The General Terms of Payment as well as the General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry shall apply.

For software products, the General License Conditions for Software Products for Automation and Drives for Customers with Seat or registered Office in Germany shall apply.

For customers with a seat or registered office outside of Germany

The General Terms of Payment as well as the General Conditions for Supplies of Siemens, Automation and Drives for Customers with a Seat or registered Office outside of Germany shall apply.

For software products, the General License Conditions for Software Products for Automation and Drives for Customers with Seat or registered Office outside of Germany shall apply.

General

The prices are in € (Euro) ex works, exclusive packaging.

The sales tax (value added tax) is not included in the prices. It shall be debited separately at the respective rate according to the applicable legal regulations.

In addition to the prices of products which include silver and/or copper, surcharges may be calculated if the respective limits of the notes are exceeded.

Prices are subject to change without prior notice. We will debit the prices valid at the time of delivery.

The dimensions are in mm. Illustrations are not binding.

Insofar as there are no remarks on the corresponding pages – especially with regard to data, dimensions and weights given – these are subject to change without prior notice.

Comprehensive Terms and Conditions of Sale and Delivery are available free of charge from your local Siemens business office under the following Order Nos.:

6ZB5310-OKR30-0BA0

(for customers based in the Federal Republic of Germany)

6ZB5310-OKS53-0BA0

(for customers based outside of the Federal Republic of Germany)

or download them from the Internet:

<http://www.siemens.com/automation/mall>

(A&D Mall Online Help System)

Export Regulations

The products listed in this product brief may be subject to European/ German and/or US export regulations.

Therefore, any export requiring a license is subject to approval by the competent authorities.

According to current provisions, the following export regulations must be observed with respect to the products featured in this product brief:

AL

Number of the German Export List

Products marked other than "N" require an export license. In the case of software products, the export designations of the relevant data medium must also be generally adhered to.

Goods labeled with an "AL not equal to N" are subject to a European or German export authorization when being exported out of the EU.

ECCN

Export Control Classification Number

Products marked other than "N" are subject to a reexport license to specific countries.

In the case of software products, the export designations of the relevant data medium must also be generally adhered to.

Goods labeled with an "ECCN not equal to N" are subject to a US re-export authorization.

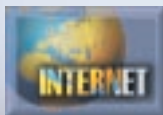
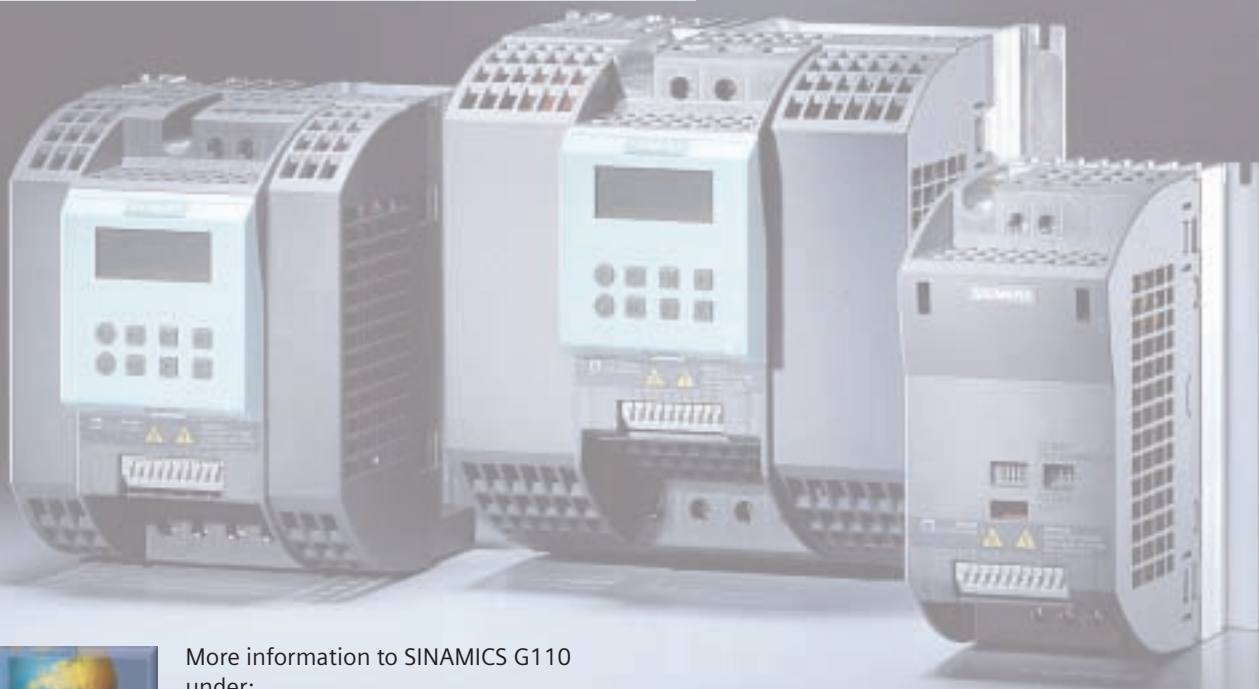
Even without a label or with an "AL: N" or "ECCN: N", authorization may be required due to the final destination and purpose for which the goods are to be used.

The deciding factors are the AL or ECCN export authorization indicated on order confirmations, delivery notes and invoices.

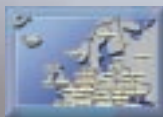
Subject to change and errors excepted without prior notice.

SINAMICS G110

- Frequency inverter 0.12 kW to 3 kW
- For single-phase supplies 200 V to 240 V
- World-wide use due to easy setting of 50 Hz/60 Hz (DIP switch)
- 2-/3-wire control
- Ready for connection, thus fast installation
- Clearly arranged power terminals as with contactors
- Compact – particularly for inverters with flat plate
- Analog and USS variants
- Time saving parameter cloning with optional Basic Operator Panel
- Low cost



More information to SINAMICS G110
under:
<http://www.siemens.com/sinamics-g110>



Address of your contact person
under:
<http://www.siemens.com/automation/partner>



You can order directly and electronically
via Internet with the A&D Mall:
<http://www.siemens.com/automation/mall>

The information provided in this brochure contains descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract. Availability and technical specifications are subject to change without notice.