



SINAMICS G110

**ACP&D Limited.
86 Rose Hill Road,
Ashton under-Lyne,
Lancashire,
OL6 8YF.
England.**

**Tel: +44 (0)161 343 1884
Fax: +44 (0)161 343 7773**

email: sales@acpd.co.uk

**Websites: www.acpd.co.uk
www.acpd.com**

SINAMICS G110



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.

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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 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 variant 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.

Accessories (overview)

- Low leakage EMC Class B filter
- supplementary EMC Class B filter
- line reactors
- Basic Operator Panel BOP
- DIN rail mounting kit (FS A)
- PC to inverter connection kit
- software commissioning tool STARTER.

International standards

- Complies with the requirements of the EC low-voltage directive
- CE marking
- UL and cUL listed
- c-tick.

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

The inverters of the SINAMICS G110 family have been built around the control unit and CPM 110 power module giving them a compact and efficient design. The inverters use latest IGBT technology and digital microprocessor control.

The SINAMICS G110 inverter family consists of the following variants and versions:

- **Analog variant** available in the following versions:
 - unfiltered, with heatsink
 - integrated EMC Class A/B filter, with heatsink
 - unfiltered, with flat plate heatsink (FS A only)
 - integrated EMC Class B filter, with flat plate heatsink (FS A only).
- **USS variant** (RS485) available in the following versions:
 - unfiltered, with heatsink
 - integrated EMC Class A/B filter, with heatsink
 - unfiltered, with flat plate heatsink (FS A only)
 - integrated EMC Class B filter, with flat plate heatsink (FS A only).

Cooling is achieved on FS A by a heatsink and natural convection. The FS A flat plate version offers space saving and favourable thermal heat dissipation by putting an additional heatsink outside the electrical cabinet enclosure. On FS B and FS C an integrated fan is used to cool the heatsink, this allows the compact design to be achieved.

The connections on all versions of the inverter are easily accessible and conform to the standard layout. The mains and motor connections are separated for optimum electromagnetic compatibility and clear connection (as with contactors). The control terminal strip has a screwless design.

The optional Basic Operator Panel BOP can be fitted without the need for tools.

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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 characteristic (with programmable voltage boost); quadratic V/f -characteristic; multipoint characteristic (programmable V/f characteristic)		
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 C2 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		
Protection level	IP 20		
Temperature range	-10 °C to +40 °C	to +50 °C with derating	
Storage temperature	-40 °C to +70 °C		
Humidity	95 % (non-condensing)		
Operational altitude	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) without filter with filter
	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	150 x 90 x 101	0.6 0.7
	A 0.55 kW and 0.75 kW with flat plate	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

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Derating data

Pulse frequency

Rated output kW	Rated output current in A for a pulse frequency of							
	2 kHz	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz	14 kHz	16 kHz
0.12	0.9	0.9	0.9	0.9	u. p.	u. p.	u. p.	u. p.
0.25	1.7	1.7	1.7	1.7	u. p.	u. p.	u. p.	u. p.
0.37	2.3	2.3	2.3	2.3	u. p.	u. p.	u. p.	u. p.
0.55	3.2	3.2	3.2	3.2	u. p.	u. p.	u. p.	u. p.
0.75 (at 40 °C)	3.9	3.9	3.9	3.9	u. p.	u. p.	u. p.	u. p.
0.75	u. p.	u. p.	u. p.	u. p.	u. p.	u. p.	u. p.	u. p.
1.1	6.0	6.0	6.0	6.0	u. p.	u. p.	u. p.	u. p.
1.5 (at 40 °C)	7.8	7.8	7.8	7.8	u. p.	u. p.	u. p.	u. p.
1.5	u. p.	u. p.	u. p.	u. p.	u. p.	u. p.	u. p.	u. p.
2.2	11.0	11.0	11.0	11.0	u. p.	u. p.	u. p.	u. p.
3.0 (at 40 °C)	13.6	13.6	13.6	13.6	u. p.	u. p.	u. p.	u. p.
3.0	u. p.	u. p.	u. p.	u. p.	u. p.	u. p.	u. p.	u. p.

The current data apply to an ambient temperature of 50 °C unless otherwise specified. u. p. = under preparation

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Conformity with standards

CE marking

The SINAMICS G110 inverters comply with the requirements of the low-voltage directive, 73/23/EEC. A certificate can be provided on request.

Low-voltage directive

The inverters comply with the following standards listed in the official EU journal:

- EN 60 204
Safety of machinery, electrical equipment of machines
- EN 50 178
Electronic equipment in electrical power installations.

Machinery directive

The inverters are suitable for installation in machines. Compliance with the machinery directive 89/392/EEC requires a separate certificate of conformity. This must be issued by the firm which constructs the plant or puts the machine on the market.

EMC directive

- EN 61 800-3
Adjustable speed electrical power drive systems
Part 3: EMC product standard including specific test methods.

The modified EMC product standard EN 61 800-3/A11 for electrical power drive systems is valid since 01.01.2002. The following comments apply to the SINAMICS G110 frequency inverters from Siemens:

- The EMC product standard EN 61 800-3/A11 does not apply directly to a frequency inverter but to a PDS (Power Drive System) which comprises the complete circuitry, motor and cables in addition to the inverter.
- A frequency inverter must therefore only be considered as a component which, on its own, is not subject to the EMC product standard EN 61 800-3/A11. However, the inverter's Instruction Manual specifies the conditions on how the product standard can be complied with if the frequency inverter is completed into a PDS. The EMC directive in the EC is complied with for a PDS by observance of the product standard EN 61 800-3/A11 for PDS. The frequency inverters on their own do not generally require marking according to the EMC directive.
- The frequency inverters as components on their own are only classified as "restricted availability" for persons and users with the necessary EMC knowledge. They are not envisaged for unlimited sale or as "general availability" for users.

At this point it is necessary to exactly differentiate between the frequency inverter and the PDS. A PDS can certainly be envisaged by the machine manufacturer for general availability, and the standard must be applied accordingly. On the other hand, the components used in the PDS may possibly not be for "general availability".

- Since 01.01.2002, the EMC product standard EN 61 800-3/A11 also defines, for the first time, limits for conducted interference and radiated interference for the so-called "second environment" (= industrial power supply systems which do not supply households). Although these limits lie below those of filter Class A according to EN 55 011, a PDS with an unfiltered frequency inverter of SINAMICS G110 series nevertheless does not comply with these values, and therefore does not meet the standard EN 61 800-3/A11.
- Using internal or external filters and the installation instructions included in the documentation, the PDS designed using the frequency inverters complies with the product standard EN 61 800-3/A11:
 - with low leakage filters of Class B to EN 55 011 in the first environment (residential, commercial and light industry), general availability
 - with filters of Class A to EN 55 011 in the first environment plus warning label, restricted sale and installation by EMC experts
 - with filters of Class B to EN 55 011 in the first environment, restricted sale
 - with filters of Class A to EN 55 011 in the second environment (industrial areas), where these filters even significantly exceed the requirements of EN 61 800-3/A11.
- A differentiation must be made between the product standards for electrical power drive systems (PDS) of the range of standards EN 61 800-3/ A11 (of which Part 3/ A11 covers EMC topics) and the product standards for the devices/systems/machines etc. No changes will probably result in the practical use of frequency inverters. Since frequency inverters are always part of a PDS, and these are part of a machine, the machine manufacturer must observe various standards depending on the type and environment, e.g. EN 61 000-3-2 for power supply harmonics and EN 55 011 for radio interferences. The product standard for PDS on its own is therefore either insufficient there or irrelevant.

With respect to the compliance of limits for harmonic current emissions, the EMC product standard EN 61 800-3/A11 for PDS refers to compliance with the EN 61 000-3-2 and EN 61 000-3-12 standards.

Electromagnetic compatibility

No inadmissible electromagnetic emissions occur if the product-specific installation guidelines are correctly observed.

The table below lists the measured results for emissions and immunity to interference for inverters SINAMICS G110.

The inverters were installed according to the guidelines with shielded motor cables and shielded control cables.

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EMC phenomenon Standard/test		Relevant criteria	Limit value
Emissions EN 61 800-3 (1st environment ¹⁾)	Conducted via mains cable	150 kHz to 30 MHz	Unfiltered: not tested All devices with internal EMC filter for power drive systems in category C2 installations (restricted availability ²⁾). 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.
	Emitted by the drive	30 MHz to 1 GHz	
ESD immunity test EN 61 000-4-2 ESD through air discharge ESD through contact discharge		Test level 3	8 kV
		Test level 3	6 kV
Electromagnetic fields immunity test EN 61 000-4-3 Electrical field applied to unit		Test level 3 26 MHz to 1 GHz	10 V/m
Burst immunity test EN 61 000-4-4 Applied to all cable terminations		Test level 4	4 kV
Surge immunity test EN 61 000-4-5 Applied to mains cables		Test level 3	2 kV
Immunity to conducted disturbances, induced by radio frequency fields EN 61 000-4-6 Applied to mains, motor and control cables		Test level 4 0.15 MHz to 80 MHz 80 % AM (1 kHz)	10 V

UL listing

UL and cUL listed power conversion equipment type 5B33 in accordance with UL508C.

For use in pollution degree 2 environment.

1) 1st environment

(residential, commercial and light industry): environment which includes residential areas and, in addition, equipment which is directly connected to a low-voltage supply without intermediate transformer, which is used to supply residential buildings.

2) Restricted availability:

Sales channel for which the marketing/sale of the equipment is limited to distributors, customers or users who - either individually or together - have technical EMC knowledge.

Category C2:

Power Drive System (PDS) with rated voltage < 1000 V.

When used in 1st environment, installation and start-up only by EMC experts.

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Selection and ordering data

Rated output		Rated input current ¹⁾		Rated output current	Frame size	Version	Order No.	
kW	hp	A	A				SINAMICS G110 without filter	SINAMICS G110 with internal filter
0.12	0.16	2.3	0.9	FS A	Analog	6SL3211-0AB11-2UA0	6SL3211-0AB11-2BA0	
					USS	6SL3211-0AB11-2UB0	6SL3211-0AB11-2BB0	
					Analog (with flat plate)	6SL3211-0KB11-2UA0	6SL3211-0KB11-2BA0	
					USS (with flat plate)	6SL3211-0KB11-2UB0	6SL3211-0KB11-2BB0	
0.25	0.33	4.5	1.7	FS A	Analog	6SL3211-0AB12-5UA0	6SL3211-0AB12-5BA0	
					USS	6SL3211-0AB12-5UB0	6SL3211-0AB12-5BB0	
					Analog (with flat plate)	6SL3211-0KB12-5UA0	6SL3211-0KB12-5BA0	
					USS (with flat plate)	6SL3211-0KB12-5UB0	6SL3211-0KB12-5BB0	
0.37	0.5	6.2	2.3	FS A	Analog	6SL3211-0AB13-7UA0	6SL3211-0AB13-7BA0	
					USS	6SL3211-0AB13-7UB0	6SL3211-0AB13-7BB0	
					Analog (with flat plate)	6SL3211-0KB13-7UA0	6SL3211-0KB13-7BA0	
					USS (with flat plate)	6SL3211-0KB13-7UB0	6SL3211-0KB13-7BB0	
0.55	0.75	7.7	3.2	FS A	Analog	6SL3211-0AB15-5UA0	6SL3211-0AB15-5BA0	
					USS	6SL3211-0AB15-5UB0	6SL3211-0AB15-5BB0	
					Analog (with flat plate)	6SL3211-0KB15-5UA0	6SL3211-0KB15-5BA0	
					USS (with flat plate)	6SL3211-0KB15-5UB0	6SL3211-0KB15-5BB0	
0.75	1.0	10.0	3.9 (at 40 °C)	FS A	Analog	6SL3211-0AB17-5UA0	6SL3211-0AB17-5BA0	
					USS	6SL3211-0AB17-5UB0	6SL3211-0AB17-5BB0	
					Analog (with flat plate)	6SL3211-0KB17-5UA0	6SL3211-0KB17-5BA0	
					USS (with flat plate)	6SL3211-0KB17-5UB0	6SL3211-0KB17-5BB0	
1.1	1.5	14.7	6.0	FS B	Analog	6SL3211-0AB21-1UA0	6SL3211-0AB21-1AA0	
					USS	6SL3211-0AB21-1UB0	6SL3211-0AB21-1AB0	
1.5	2.0	19.7	7.8 (at 40 °C)	FS B	Analog	6SL3211-0AB21-5UA0	6SL3211-0AB21-5AA0	
					USS	6SL3211-0AB21-5UB0	6SL3211-0AB21-5AB0	
2.2	3.0	27.2	11.0	FS C	Analog	6SL3211-0AB22-2UA0	6SL3211-0AB22-2AA0	
					USS	6SL3211-0AB22-2UB0	6SL3211-0AB22-2AB0	
3.0	4.0	35.6	13.6 (at 40 °C)	FS C	Analog	6SL3211-0AB23-0UA0	6SL3211-0AB23-0AA0	
					USS	6SL3211-0AB23-0UB0	6SL3211-0AB23-0AB0	

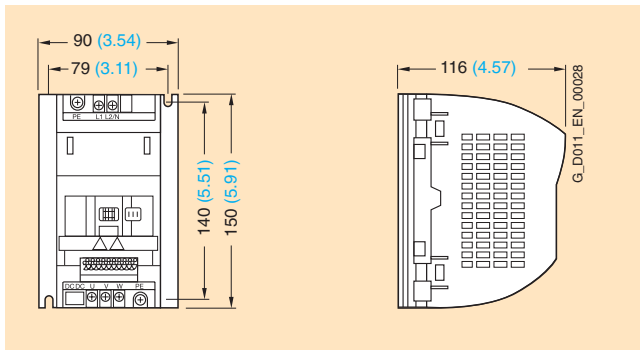
The current data applies for an ambient temperature of 50 °C unless otherwise specified.

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

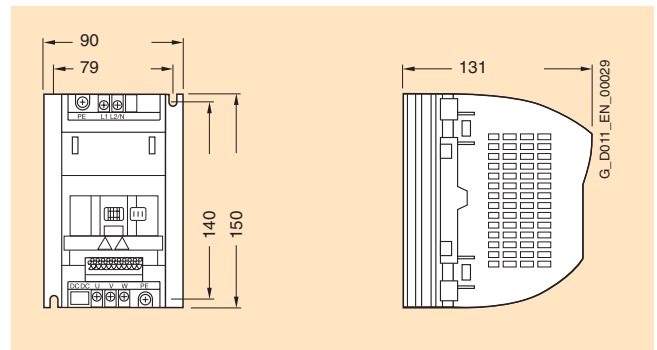
1) The value applies to the rated mains voltage of 230 V.

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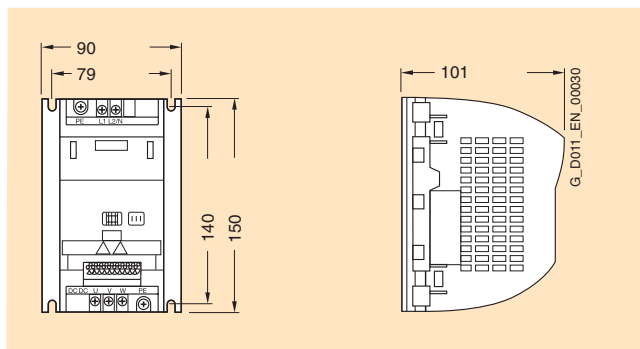
Dimension drawings



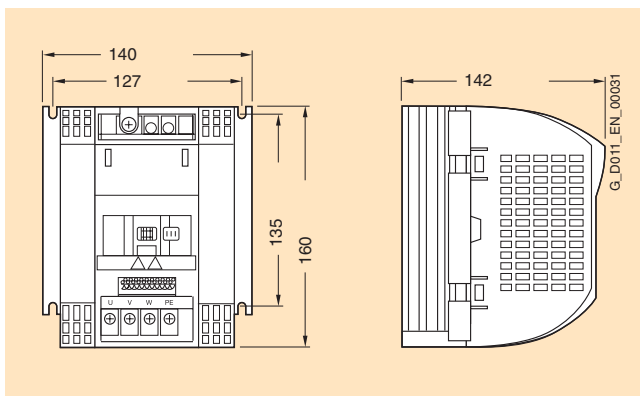
FS A inverter; 0.12 kW to 0.37 kW



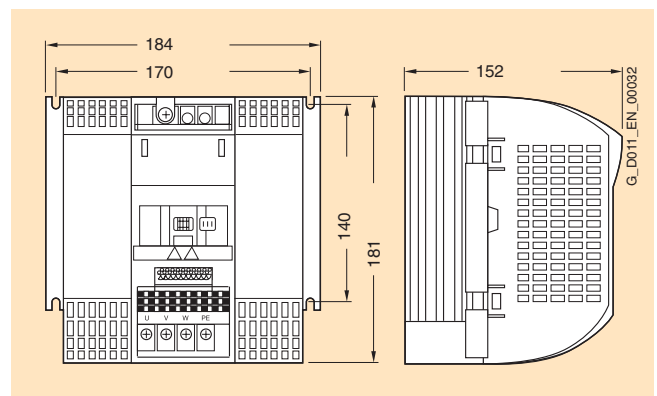
FS A inverter; 0.55 kW to 0.75 kW



FS A inverter with flat plate; 0.12 kW to 0.75 kW



FS B inverter; 1.1 kW to 1.5 kW



FS C inverter; 2.2 kW to 3.0 kW

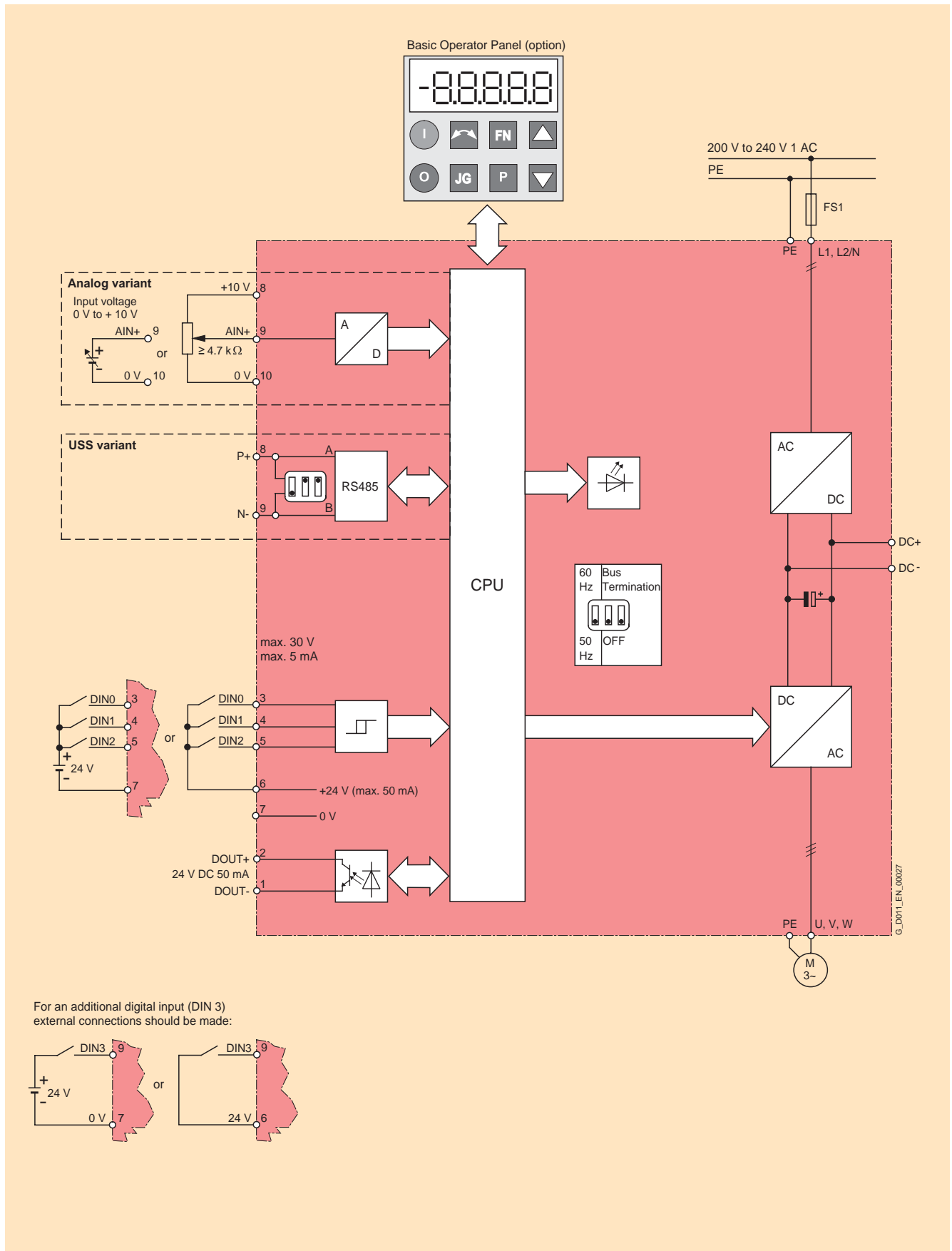
With plugged Basic Operator Panel (BOP), the mounting depth increases by 8 mm (0.31 inches).

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

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Circuit diagrams

General circuit diagram



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Variant dependent options

Overview

Internal EMC filter

Variants with internal EMC filter for both Class A and Class B environments are available.

- **Class A**

For Class A the requirements are fulfilled using shielded cables with a max. length of 10 m for FS A or 25 m for FS B and FS C. The limits comply with EN 55 011 Class A.

- **Class B**

For Class B the requirements are fulfilled using shielded cables with a maximum length of 5 m. The limit complies with EN 55 011 Class B.

An inverter with an internal filter can be used with a 30 mA residual-current circuit-breaker, and is only suitable for hardwired installations.

A non-filtered inverter together with the optional filter "Filter Class B with low leakage currents" has a leakage current < 3.5 mA (shielded motor cable up to 5 m).

Additional EMC filter Class B

Obtainable for inverters with an internal EMC filter Class A.

With this filter, the inverter complies with the emission standard EN 55 011, Class B.

The requirements are fulfilled using shielded cables with a max. length of 25 m.

Class B filter with low leakage currents

With this filter, the unfiltered inverter complies with the emission standard EN 55 011, Class B. The leakage currents are reduced to < 3.5 mA.

Unfiltered inverters with frame sizes A and B can be used for power drive systems in category C1 installations (general availability).

The requirements are fulfilled

- using shielded cables with a max. length of 5 m and
- installing the inverter in a metallic enclosure (e.g. control panel).

Line reactor

Line reactors are used to smooth voltage peaks or to bridge commutating dips.

In addition, line reactors reduce the effects of harmonics on the inverter and the power supply.

If the ratio of inverter rated power to network short-circuit power is less than 1 %, a line reactor must be used in order to reduce the current peaks.

In line with the EN 61 000-3-2 regulations "Limits for harmonic currents with device input current ≤ 16 A per phase", there are special aspects for drives with 250 W to 550 W and 230-V single-phase supplies which can be used in non-industrial applications (1st environment).

For devices with 250 W and 370 W it is necessary either to fit the recommended line reactors or to apply to the power utility company for authorization to connect the devices to the public power supply.

No limits are currently defined in the EN 61 000-3-2 standard for professionally used devices with a connected load > 1 kW. This means that the inverters with an output power ≥ 0.75 kW comply with the EN 61 000-3-2 standard.

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Selection and ordering data

The options listed here (EMC filters, line reactors, fuses and circuit-breakers) are inverter specific.

EMC filters and line reactors have to be mounted separately as there are no footprint versions.

The inverter and the associated options have the same voltage ratings.

All variant dependent options and the Basic Operator Panel BOP are certified to UL except fuses. The fuses of type 3NA3 are recommended for Europe.

Use in America requires UL listed fuses, for example the Class NON range from Bussmann.

Rated output kW	Order No. of the options				
	Filter Class B with low leakage current	Line reactor	Supplementary Class B EMC filter	Fuse	Circuit-breaker
Options for inverters without filter					
0.12	6SE6400-2FL01-0AB0	6SE6400-3CC00-4AB0	-	3NA3803	3RV1021-1DA10
0.25	6SE6400-2FL01-0AB0	6SE6400-3CC00-4AB0	-	3NA3803	3RV1021-1FA10
0.37	6SE6400-2FL01-0AB0	6SE6400-3CC01-0AB0	-	3NA3803	3RV1021-1HA10
0.55	6SE6400-2FL01-0AB0	6SE6400-3CC01-0AB0	-	3NA3803	3RV1021-1JA10
0.75	6SE6400-2FL01-0AB0	6SE6400-3CC01-0AB0	-	3NA3805	3RV1021-1KA10
1.1	6SE6400-2FL02-6BB0	6SE6400-3CC02-6BB0	-	3NA3807	3RV1021-4BA10
1.5	6SE6400-2FL02-6BB0	6SE6400-3CC02-6BB0	-	3NA3810	3RV1021-4CA10
2.2	6SE6400-2FL02-6BB0	6SE6400-3CC02-6BB0	-	3NA3814	3RV1031-4EA10
3.0	-	6SE6400-3CC03-5CB0	-	3NA3820	3RV1031-4FA10
Options for inverters with internal filter Class A/B					
0.12	-	6SE6400-3CC00-4AB0	6SE6400-2FS01-0AB0	3NA3803	3RV1021-1DA10
0.25	-	6SE6400-3CC00-4AB0	6SE6400-2FS01-0AB0	3NA3803	3RV1021-1FA10
0.37	-	6SE6400-3CC01-0AB0	6SE6400-2FS01-0AB0	3NA3803	3RV1021-1HA10
0.55	-	6SE6400-3CC01-0AB0	6SE6400-2FS01-0AB0	3NA3803	3RV1021-1JA10
0.75	-	6SE6400-3CC01-0AB0	6SE6400-2FS01-0AB0	3NA3805	3RV1021-1KA10
1.1	-	6SE6400-3CC02-6BB0	6SE6400-2FS02-6BB0	3NA3807	3RV1021-4BA10
1.5	-	6SE6400-3CC02-6BB0	6SE6400-2FS02-6BB0	3NA3810	3RV1021-4CA10
2.2	-	6SE6400-3CC02-6BB0	6SE6400-2FS02-6BB0	3NA3814	3RV1031-4EA10
3.0	-	6SE6400-3CC03-5CB0	6SE6400-2FS03-5CB0	3NA3820	3RV1031-4FA10

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Variant independent options

Overview

Basic Operator Panel (BOP)

With the BOP, individual parameter settings can be made.

Values and units are shown on a 5-digit display.

A BOP can be used for several inverters. It is directly plugged into the inverter.

The BOP offers a parameter cloning function which allows one parameter set to be stored from an inverter and then downloaded into another inverter.

Connection set for PC to inverter

For controlling and commissioning an inverter directly from a PC if the appropriate software has been installed (STARTER).

Isolated RS232 adapter board for reliable point to point connection for a PC.

It offers a 9-pin Sub-D connector and an RS232 standard cable (3 m).

Commissioning tool

STARTER is a graphic start-up software for guided commissioning for SINAMICS G110 frequency inverters under Windows NT/2000. Parameter lists can be read out, altered, stored, entered and printed.

Selection and ordering data

The options listed here are suitable for all SINAMICS G110 inverters.

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
Commissioning tool STARTER on CD-ROM, including: operating instructions, parameter list, getting started guide ¹⁾	6SL3271-0CA00-0AG0

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

Documentation

Selection and ordering data

Type of documentation	Language	Order No.
Operating instructions ¹⁾ (paper version)	German	6SL3298-0AA11-0AP0
	English	6SL3298-0AA11-0BP0
	French	6SL3298-0AA11-0DP0
	Italian	6SL3298-0AA11-0CP0
	Spanish	6SL3298-0AA11-0EP0
Parameter list ¹⁾ (paper version)	German	6SL3298-0BA11-0AP0
	English	6SL3298-0BA11-0BP0
	French	6SL3298-0BA11-0DP0
	Italian	6SL3298-0BA11-0CP0
	Spanish	6SL3298-0BA11-0EP0
Getting Started Guide ¹⁾	Multilanguage	A paper version is supplied with each inverter.

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