SIEMENS

Ingenuity for life

SINAMICS V20

The cost-effective, reliable and easy-to-use drive for basic applications

usa.siemens.com/sinamics-v20

SINAMICS V20

The perfect drive solution for basic applications

SINAMICS V20, the versatile drive for basic demands

Today, in an increasing number of applications in plant and machinery construction, individual automation and drive solutions are demanded that automate simple motion sequences with low associated requirements.

With its compact SINAMICS V20, Siemens offers a simple and cost-effective drive solution for these types of applications. SINAMICS V20 sets itself apart with its quick commissioning times, ease of operation, robustness and cost efficiency.

With seven frame sizes, it covers a power range extending from 0.12 kW up to 30 kW (1/6 hp up to 40 hp).

Minimize your costs

Engineering, commissioning and operating costs as well as those in operation must be kept as low as possible. You have precisely the right answer with our SINAMICS V20.
To increase energy efficiency, the drive is equipped with a control technique to achieve optimum energy efficiency through automatic flux reduction. Not only this, it displays the actual energy consumption and has additional, integrated energy-saving functions.

Highlights

Easy to install	Easy to use	Easy to save money
■ Push-through and wall mounting—side-by-side is possible	■ Programming and parameter loading without power supply	■ ECO mode for V/f, V²/f / Hibernation mode
■ USS and Modbus RTU at terminals	■ Integrated application and connection macros	■ Monitoring energy and water flows
■ Integrated braking chopper for 7.5 kW to 30 kW (10 hp up to 40 hp)	■ Keep Running mode for uninterrupted operation	■ Optimized for solar panel powered pump system
■ Electromagnetic compatibility (EMC) category C1/C2	■ Wide voltage range, advanced cooling design and coated PCBs increase robustness	■ High overload and low overload mode for FSE

Power range	Voltage range	Control modes
0.12 kW to 30 kW (1/6 hp up to 40 hp)	1AC 200 V ... 240 V (–10% / +10%)* 3AC 380 V ... 480 V (–15% / +10%)	V/f V²/f FCC V/f multi-point

* Single-phase devices can also be connected to two phases of a 3-phase 230 V supply system. You can find detailed information here: http://support.industry.siemens.com/cs/document/109476260

Typical applications and SINAMICSV20 benefits

Pumping, ventilating and compressing

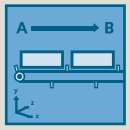
- Centrifugal pumps
- Radial / axial fans
- Compressors
- Solar pumps

Advantages

- High availability through automatic restart and flying restart after power failures
- Broken belt detection by monitoring the load torque
- Pump protection against cavitation
- Hammer start and blockage clearing modes for clogged pumps
- PID controller for process values (e.g. temperature, pressure, level, flow)
- PID auto tuning to optimize controller parameters
- Hibernation mode stops the motor when demand is low
- Motor staging extends the flow range by adding two more fixed-speed drives (cascade)
- Frost and condensation protection preventsmoisture in motors under extreme environmental conditions

Moving

- Belt conveyors
- Roller conveyors
- Chain conveyors
- Treadmills
- Bucket conveyors

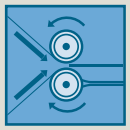


Advantages

- Soft, jerk-free acceleration reduces the stress on the gear units, bearings, drums and rollers
- Super torque start for conveyor belts with high breakaway torque
- Dynamic behavior by using braking resistor or DC braking
- Direct control of mechanical holding brake
- Broken belt detection by monitoring the load torque
- Precise stopping with Quick Stop (switch-off positioning) independently from the control cycle

Processing

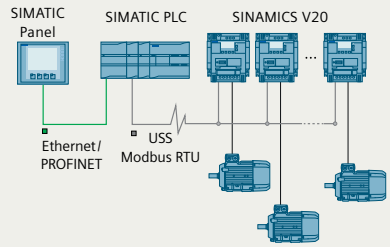
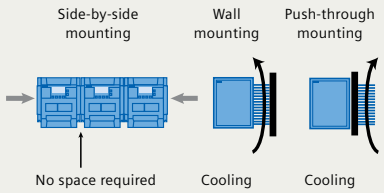
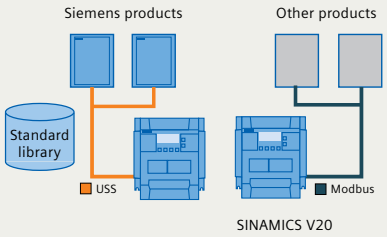
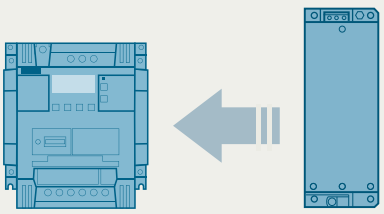
- Single drives
- Main drives



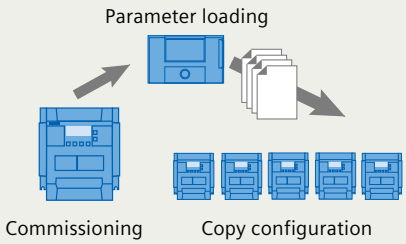
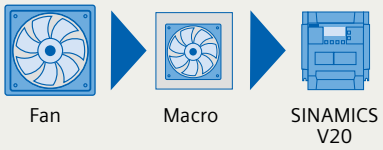
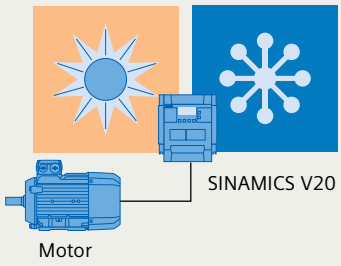
Advantages

- Single drives in the process industry such as mills, mixers, kneaders, crushers, agitators, centrifuges
- Single drives in commerical appliances such as kitchen ovens, mixers, washing machines
- Main drives in machines with mechanically coupled axes such as ring spinning machines, braiding machines for textile, ropes and wire
- Frost and condensation protection prevents moisture in motors under extreme environmental conditions
- Higher productivity with uninterrupted production due to Keep Running Mode
- Exchange of regenerative energy via the DC link
- Super torque start for machines with a high breakaway torque

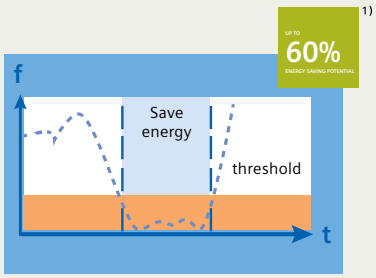
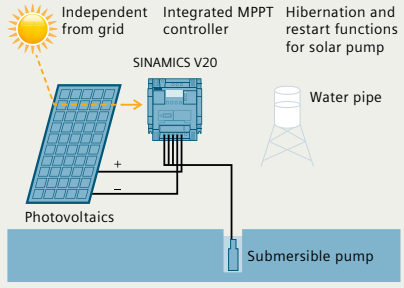
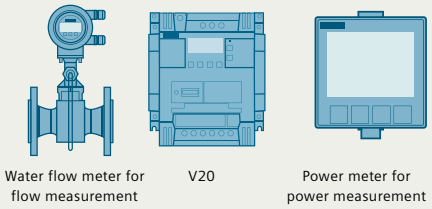
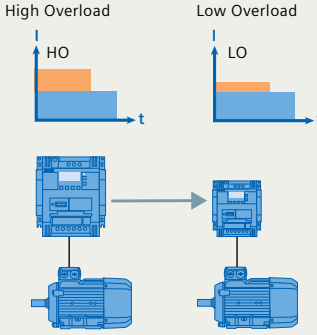
Easy-to-install

	SINAMICS V20 feature	Your benefits
Everything from a single source		
	Together with SIMATIC PLC/HMI, tested and ready-to-run application examples to connect a V20 drive to a controller are available.	■ Different application examples can be downloaded free of charge from the online support portal For more information, also see page 9 or go directly to **http://siemens.com/sinamics-applications**
Installation		
	Compact design, side-by-side mounting and flexible device installation for both wall mounting and push-through mounting. Operation without additional option modules possible.	■ Compact installation allows smaller cabinets to be used ■ Push-through mounting allows the cabinet to be cooled more easily ■ Can be run “out-of-the-box” without other options ■ Basic operator actions at a built-in BOP (Basic Operator Panel) ■ Frame sizes FSAA and FSAB (1AC 230 V) 24% smaller compared to previous frame size FSA within the same power range
Communication		
	The communication port is available at terminals. The preset parameters of the USS and Modbus RTU are defined in the connection macro.	■ Easy integration into existing systems ■ Easy integration into micro automation systems ■ Easier commissioning through standard libraries and connection macros ■ Full flexibility of Modbus RTU settings widen the communication with controllers ■ Simple connection to a control system (SIMATIC PLC)
EMC category C1		
	SINAMICS V20 in frame sizes FSAA and FSAB, 1AC 230 V with integrated category C1 EMC filter are available.	■ Can be operated in EMC-sensitive environments such as residential areas, without requiring additional external filters

Easy-to-use

	SINAMICS V20 feature	Your benefits
Parameter cloning		
	Parameter settings can be easily transferred from one unit to another using the parameter loader — even without a power supply.	■ Less technical support required ■ Short commissioning time ■ The product is delivered to the customer already preset
Macro approach		
	Connection and application macros to simplify I/O configuration and make the appropriate settings.	■ Shorter training and commissioning time ■ Integrated and optimized application setting ■ Simple connection and application macros can be selected instead of configuring long complicated parameter lists ■ Errors caused by wrong parameter settings can be avoided
Keep Running mode		
	The function provides higher productivity in production by automatic adaptation in the case of unstable line supplies.	■ Stable operation under difficult line supply conditions ■ Higher productivity through prevention of interruptions of the production line ■ Adaptation to application-relevant reactions through flexible definition in case of fault / alarm
Robustness		
	Wider voltage range, better cooling design and coated PCB increase robustness of the drive in difficult application environments.	■ Operation possible when the line supply voltage fluctuates ■ Reliable operation for line voltages: 1AC 200V ... 240V (–10% / +10%) 3AC 380V ... 480V (–15% / +10%) ■ Operation at ambient temperaturers between -10° C and 60° C

Easy to save money

	SINAMICS V20 feature	Your benefits
ECO mode / Hibernation mode — Energy reduction during operation and standby		
	Integrated ECO mode for V/f and V^2/f automatically adapts the flux to save energy. The energy consumption can be shown in kWh, CO_2 or even in the local currency. Hibernation mode, drive and motor are only activated when used by the plant or machine.	ECO mode: ■ Energy saving during low dynamic load cycles ■ Tells end users the actual energy that has been saved Hibernation mode: ■ Smart hibernation saves energy ■ Extended lifetime of motor
Optimized for solar panel powered pump system		
	The integrated Maximum Power Point Tracker (MPPT) controller utilizes solar energy and the optimized hibernation function is used to control a motor.	■ No additional MPPT controller is necessary ■ Independent of the public grid ■ Energy-savings and maximum utilization of the solar panel energy ■ Fully automated solution
Integrated energy and water flow monitoring		
	Energy consumption and savings are monitored without the need for power measurement equipment. The volume of water pumped by a SINAMICS V20 drive is calculated without requiring a sensor according to pump characteristic curve in solar pump application.	■ Intuitive values of power consumption and savings without additional investments for measurement equipment ■ Values can be shown as kWh, CO_2 or as a currency ■ Requires no water flow meter ■ Single SINAMICS V20 pump station with report function to show total water flow and operational status of the entire pump system
Cost saving for low overload applications		
	SINAMICS V20 FSE (22 kW/30 hp and 30 kW/40hp) have two different load cycles. ■ Low Overload (LO): 110% I_L 2) for 60 s (cycle time: 300 s) ■ High Overload (HO):150% I_H 3) for 60 s (cycle time: 300 s)	■ With low overload cycle, the drive can reach a higher output current and power. A smaller drive can be used. ■ Optimally designed for a variety of applications: ▪ Low Overload for applications with a low dynamic response (continuous duty) ▪ High Overload for applications with a high dynamic response (cyclic duty)

1) Application and machine-type dependent 2) The output current I_L is based upon the duty cycle for low overload (LO). 3) The output current I_H is based upon the duty cycle for high overload (HO).

Integrated and innovative support

DT Configurator — fast product selection and ordering

SINAMICS SELECTOR app —
find part numbers quickly and easily

Scan this QR code to download our
SINAMICS SELECTOR app free-of-charge

The DT Configurator supports you with:

- Selecting the best drive based on the application
- Selecting the correct part number

The DT Configurator supplies you with:

- A drive that is optimally tailored to your requirements
- 2D/3D models
- Operating instructions
- Data sheets

You can directly order the selected components through the Industry Mall — the Siemens e-commerce website — and without having to duplicate entries. In order to avoid making mistakes while ordering, the order number is checked to ensure that it is correct.

https://siemens.com/dt-configurator

Industry Mall — comprehensive online information and services

The Industry Mall supports you with:

- Selecting products, services and trainings

The Industry Mall supplies you with:

- A product selection of the complete and up-to-date Siemens automation and drive technology product spectrum
- System configuration
- Download of CAX data, data sheets and schematic diagrams
- Online shopping cart orders
- Price and order overview
- Availability check and order tracking

https://mall.industry.siemens.com

SINAMICS V20 — best-in-class service and support

USA hotline support
+1 423 262 5710 / +1 800 333 7421
Germany hotline support
+49 911 895 7222
India hotline support
+91 22 2760 0150
China hotline support
+86 400 810 4288

At home or across the globe

- Global hotline support
- Comprehensive service network of factory-trained repair specialists
- Multiple language web-based support and FAQs

Online support

The comprehensive online information platform supports you in all aspects of our service and support at any time and from any location in the world.

siemens.com/automation/service&support

Technical support

Expert advice on technical questions with a wide range of demand-optimized services for all our products and systems.

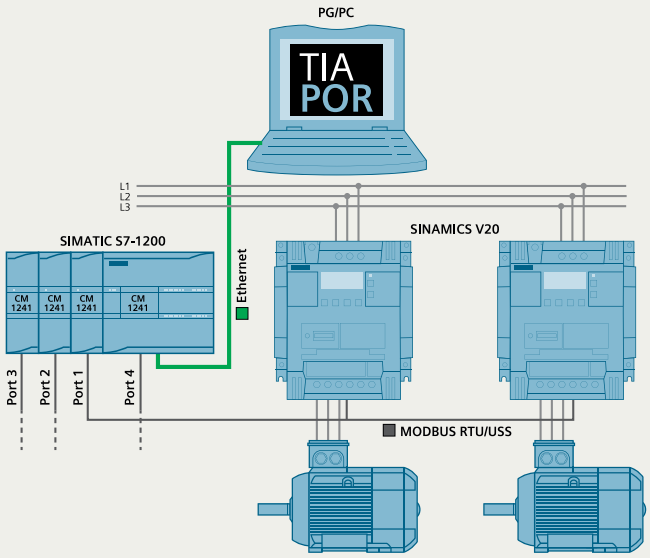
https://siemens.com/automation/support-request

Complete motion control solutions from Siemens

SINAMICS V20 and SIMATIC – Siemens offers comprehensive solutions from a single source for general motion control applications. Through the optimized interaction between SIMATIC control and SINAMICS drive technology, as shown in our "SINAMICS Application Examples," we can provide you with highly efficient systems.

Siemens application examples comprise	Customer benefits
■ Ready-to-run application examples, including wiring diagrams, parameter descriptions ■ Sample configurations for connecting SINAMICS with SIMATIC, including hardware, software and wiring examples, installation instructions for the supplied S7 project, drive parameterization, and HMI sample projects	■ Basis for customer-specific configurations ■ Optimal leveraging of TIA advantages Free download via the Online Support Portal: **https://siemens.com/sinamics-applications**

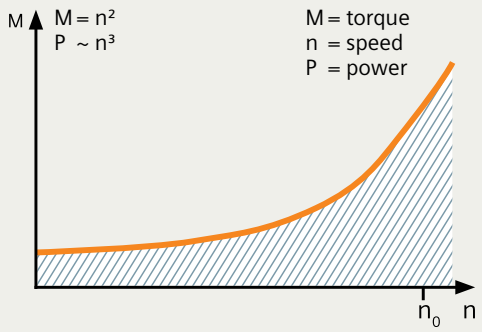
Example: Speed control of a V20 with S7-1200 (TIA Portal) via USS® protocol/MODBUS RTU with HMI

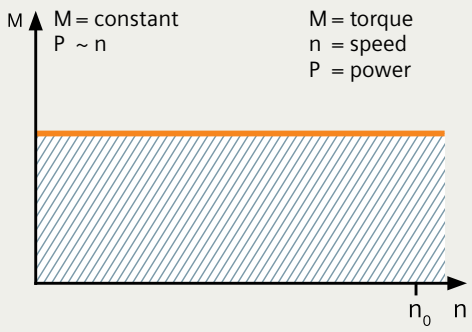


Task	Solution
USS communication ■ Cyclic write/read access of a SIMATIC S7-1200 to selected SINAMICS V20 process/control data, the transmission of which is supported by a STEP 7 instruction ■ Connections of up to 64 drives are possible **MODBUS communication** ■ Cyclic write/read access of a SIMATIC S7-1200 to selected SINAMICS V20 process/control data that can be triggered via a STEP 7 instruction via MODBUS register numbers	With up to three communication modules CM1241 added to the SIMATIC S7-1200 and one communication board CB1241, a USS® or MODBUS communication can be established to SINAMICS V20 drives. **USS communication** ■ Up to 16 drives can be operated per port. The user function blocks use STEP 7 instructions USS_PORT, USS_DRV, USS_RPM and USS_WPM **MODBUS communication** ■ Up to 32 drives can be operated per port (with repeaters, up to 247). The user function blocks use the STEP 7 instructions MB_COMM_LOAD and MB_MASTER **https://siemens.com/sinamics-applications**

Technical information

Overload characteristics (Frame size E only)





Low Overload (LO) is generally used for applications demanding a low level of dynamic performance (continuous duty), square-law torque characteristic with low breakaway torque and low speed precision.

For example: centrifugal pumps, radial / axial fans, reciprocating blowers, radial compressors, vacuum pumps, agitators, etc.

Low overload (LO) capability
110% I_L [1] for 60 s within a cycle time of 300 s

[1] The output current I_L is based on the duty cycle for low overload (LO).

High Overload (HO) is generally used for applications demanding a higher dynamic performance (cyclic duty), as well as constant torque characteristics with a high breakaway torque.

For example: conveyor belts, geared pumps, eccentric worm pumps, mills, mixers, crushers, vertical conveying equipment, centrifuges, etc.

High overload (HO) capability
150% I_H [2] for 60 s within a cycle time of 300 s

[2] The output current I_H is based on the duty cycle for high overload (HO).

Easy accessibility from outside the cabinet

V20 BOP
(Basic Operator Panel)

V20 BOP
Interface

Frame size FSAA

Power and control	
Voltage	1AC 230V: 1AC 200V ... 240V (–10% ... +10%) [1] 3AC 480V: 3AC 380V ... 480V (–15% ... +10%)
Maximum output voltage	100% of input voltage
Supply frequency	50 / 60 Hz
Line supply type	TN, TT, TT earthed line, IT [2]
Power range	1AC 230V 0.12 ... 3.0 kW (1/6 ... 4 hp) 3AC 480V 0.37 ... 30 kW (1/2 ... 40 hp)
cos φ / Power factor	≥ 0.95 / 0.72
Overload capability	up to 15 kW: High Overload (HO): 150% I_H for 60 s within a cycle time of 300 s from 18.5 kW: Low Overload (LO): 110% IL for 60 s within a cycle time of 300 s High Overload (HO): 150% I_H for 60 s within a cycle time of 300 s
Output frequency	0 ... 550 Hz resolution: 0.01 Hz
Efficiency factor	98%
Control modes	Voltage / frequency control mode: linear V/f, square law V/f, multi-point V/f Flux current control mode: FCC

[1] Single-phase devices can also be connected to two phases of a 3-phase 230V supply system.
You can find detailed information here: http://support.industry.siemens.com/cs/document/109476260
[2] Only 3AC 480V unfiltered devices can be operated at IT network.

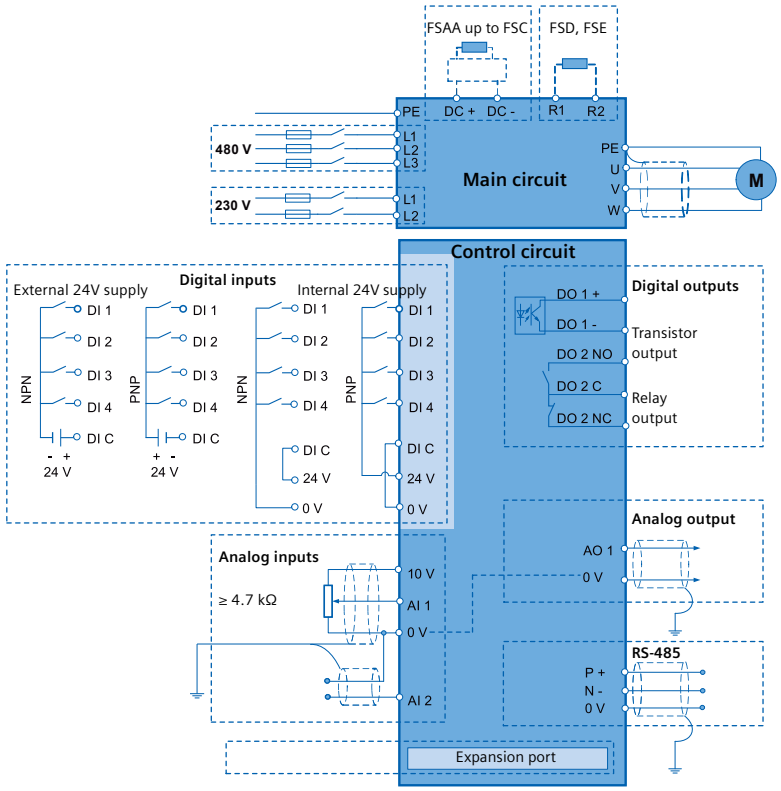
Standards	
Standards	CE, cULus, C-tick, KC
EMC standards, radiated emissions and disturbance voltage (conducted emissions)	**EN61800-3 category C1, 1st environment (residential):** ▪ 1AC 230V 0.12 to 0.75 kW with integrated EMC filter, or unfiltered with external line filter, shielded cables ≤ 5 m **EN61800-3 category C2, 1st environment (domestic premises):** ▪ 1AC 230V 1.1 to 3 kW with integrated EMC filter, shielded cables ≤ 25 m ▪ 3AC 480V without integrated EMC filter with external line filter, shielded cables FSA[3] up to FSE ≤ 25 m **EN61800-3 category C3, 2nd environment (industrial premises):** ▪ 3AC 480V with integrated EMC filter, shielded cables FSA ≤ 10 m, FSB up to FSD ≤ 25 m, FSE ≤ 50 m

Features		
Energy savings	▪ ECO mode ▪ Hibernation mode	▪ Energy consumption monitoring ▪ Integrated MPPT (Maximum power point tracking) controller
Ease-of-use	▪ Connection and application macro ▪ Parameter cloning ▪ Keep Running Mode ▪ USS / Modbus RTU communication ▪ Customized default value ▪ List of modified parameters	▪ Drive status at fault ▪ Automatic restart ▪ Flying start ▪ DC-link voltage control ▪ Imax control
Application	▪ PID controller ▪ BICO function ▪ Hammer start ▪ Super torque mode ▪ Blockage clearing mode ▪ Motor staging	▪ Flexible boost control ▪ Wobble function ▪ Slip compensation ▪ Dual ramp ▪ Adjustable PWM modulation
Protection	▪ Frost protection ▪ Condensation protection ▪ Cavitation protection	▪ Kinetic buffering ▪ Load failure detection

Signal inputs and outputs	
Analog inputs	▪ AI1: bipolar current / voltage mode, 12-bit resolution ▪ AI2: unipolar current / voltage mode, 12-bit resolution ▪ Can be used as digital inputs
Analog outputs	A01: 0 ... 20 mA
Digital inputs	DI1–DI4, optically isolated PNP/NPN selectable by terminal
Digital outputs	DO1: transistor output DO2: relay output ▪ 250V AC 0.5 A with resistive load ▪ 30V DC 0.5 A with resistive load

[3] To achieve 25 m shielded motor cable length also with FSA, unfiltered devices with external filter have to be used.

Connection diagram

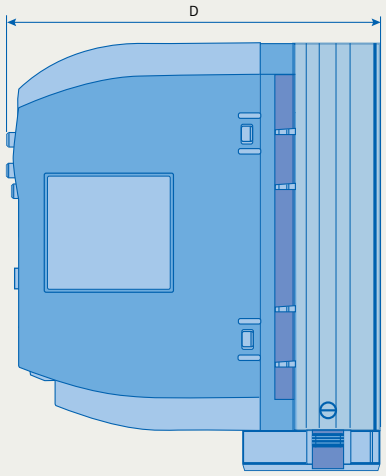


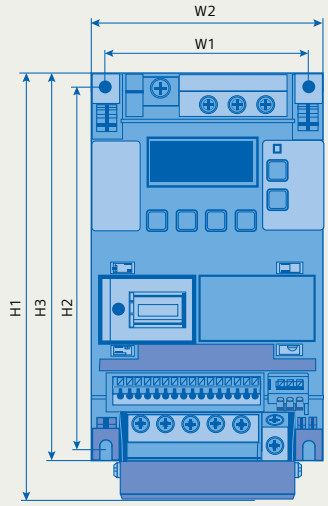
Mounting and environment

Degree of protection	IP20
Mounting	Wall mounting, side-by-side mounting, push-through mounting for FSB, FSC, FSD and FSE
Cooling	▪ 0.12 to 0.75 kW: convection cooling ▪ All frame sizes: power electronics cooled using heat sinks with external fan
Ambient temperature	In operation ▪ –10 ... 60° C (14 ... 140° F) ▪ 40 ... 60° C (104 ... 140° F) with derating In Storage ▪ –40 ... 70° C (–40 ... 158° F)
Relative humidity	95% (non-condensing)
Altitude	▪ Up to 4000 m above sea level ▪ 1000 ... 4000 m: output current derating ▪ 2000 ... 4000 m: supply voltage derating
Motor cable length	▪ Unshielded cable: 50 m for FSSA up to FSD, 100 m for FSE ▪ Shielded cable: 25 m for FSSA up to FSD, 50 m for FSE ▪ Longer motor cables possible with output reactor (see options)
Dynamic braking	Option module for FSSA to FSC; integrated for FSD and FSE

Dimensions

SINAMICS V20 drive

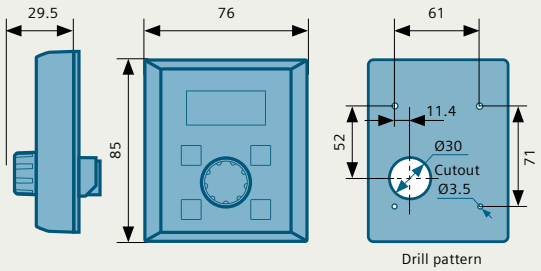




H1: Height with fan
H3: Height without fan

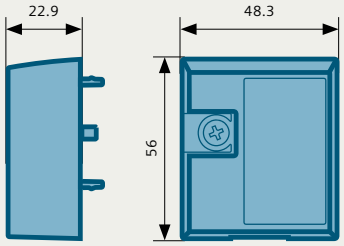
	Width (mm)		Height (mm)			Depth (mm)	Weight (kg)
Frame size	W1	W2	H1	H2	H3	D	WT approx.
FSSA	58	68	–	132	142	107.8	0.7
FSSB	58	68	–	132	142	127.8	0.9
FSA	79	90	166	140	150	145.5	1.05
FSB	127	140	160	135	–	164.5	1.8
FSC	170	184	182	140	–	169	2.6
FSD	223	240	206.5	166	–	172.5	4.3
FSE	228	245	264.5	206	–	209	6.6

V20 Basic Operator Panel (BOP)

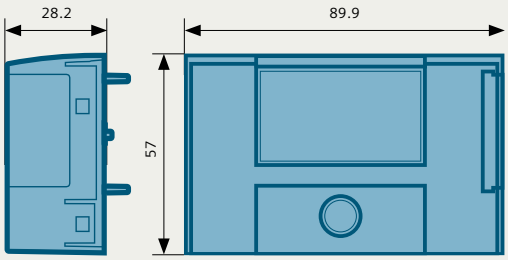


Drill pattern

V20 Basic Operator Panel (BOP) interface



V20 Parameter loader



We made it even smaller

New
Frame size FSAA

New
Frame size FSAB

Frame size FSAA and FSAB, 1AC 230 V 0.12 to 0.75 kW with integrated EMC filter

1AC 200–240V options

		Braking resistors				Line reactors				Output reactors				Braking module				Line filter class B			
P_{rated} (HO) kW 1AC 230 V	FS	W	H	D	WT	W	H	D	WT	W	H	D	WT	W	H	D	WT	W	H	D	WT
0.12	AA	72	230	43.5	1	75.5	200	50	0.5	75	200	50	1.3	90	150	88	0.71	73	200	43.5	0.5
0.25																					
0.37																					
0.55	AB																				
0.75																					
1.1	B	149	239		1.6	150	213		1.2	150	213	80	4.1					149	213	50.5	1
1.5																					
2.2	C																				
3		185	285	150	3.8	185	245		1.0	185	245		6.6					–			

3AC 380–480V options

		Braking resistors				Line reactors				Output reactors				Braking module				Line filter class B			
P_{rated} (LO) kW 3AC 400 V	FS	W	H	D	WT	W	H	D	WT	W	H	D	WT	W	H	D	WT	W	H	D	WT
0.37	A	105	295	100	1.48	125	120	71	1.1	207	175	73	3.4	90	150	80	0.71	73	202	65	1.75
0.55																					
0.75																					
1.1																					
1.5																					
2.2		105	345	100	1.80	125	140	71	2.1												
3	B									207	180	73	3.9								
4																		100	297	85	4
5.5	C	175	345	100	2.73	125	145	91	2.95	247	215	100	10.1								
7.5	D					190	220	91	7.8	257	235	115	11.2								
11		250	490	140	6.20									integrated				140	359	95	7.3
15																					
22	E	270	515	175	7.4	275	455	84	13	250	280	250	11.3					260	180	600	7.3
30																		335	200	175	7.5

FS = frame size, WT = weight in kg, W = width in mm, H = height in mm, D = depth in mm

System at a glance

SINAMICS V20

3AC 380V ... 480V

1AC 200V ... 240V

1AC 200V ... 240V

FSAA FSAB FSA FSB FSC FSD FSE

SINAMICS V20 BOP
(Basic Operator Panel)

SINAMICS V20
BOP interface

SINAMICS V20
Parameter loader

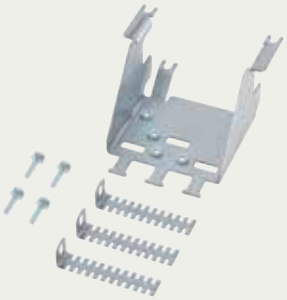
SINAMICS V20
Braking module

SINAMICS V20 — Options

Braking resistor

Line reactor

Output reactor



Shield connection kit

Line filter

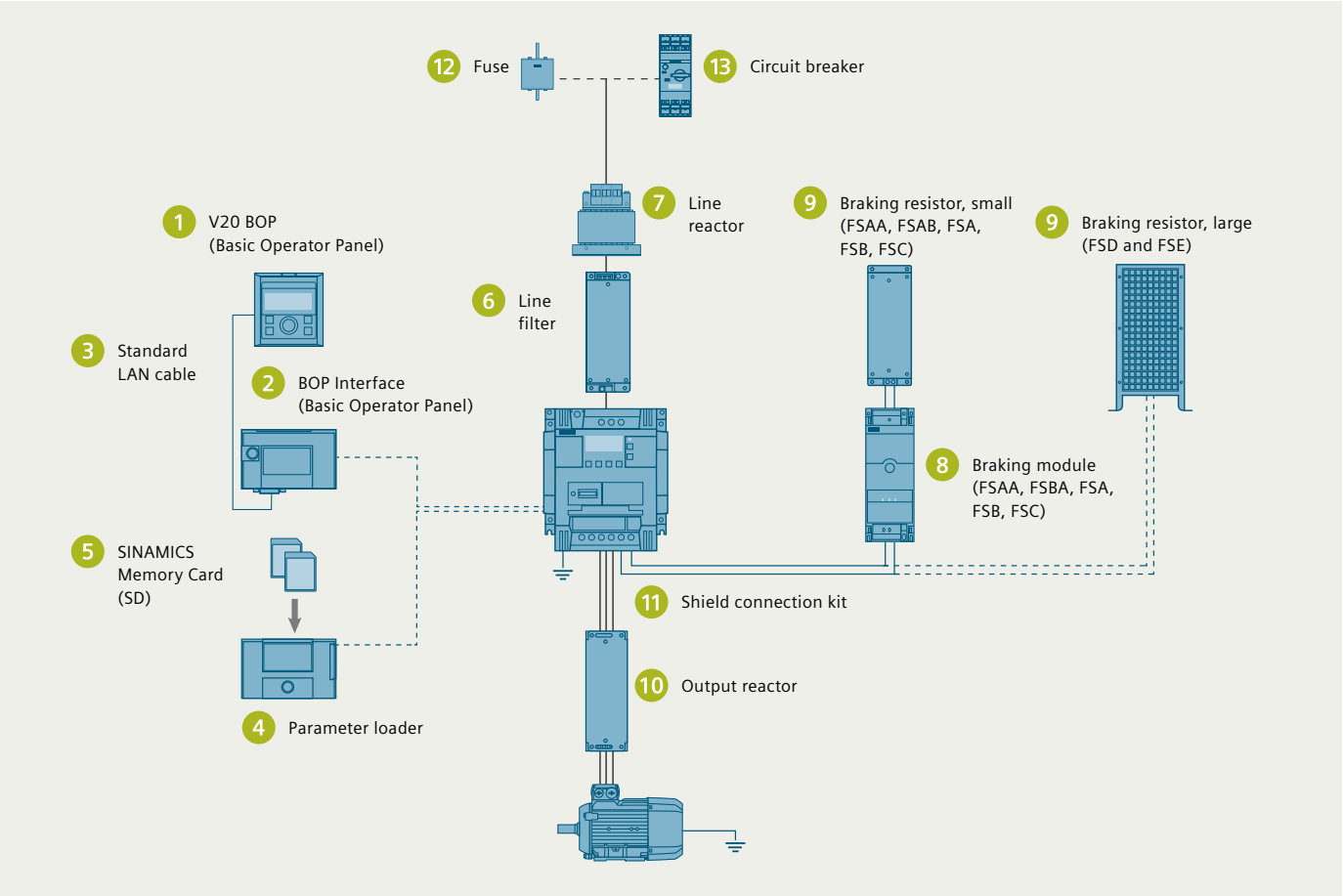
Standard fuse

Circuit breaker

Replacement fan

Standard LAN cable

Full range of options



1 V20 BOP
Same function as the integrated BOP (Basic Operator Panel), but can be used for remote mounting. The value and setpoint are changed by rotating the wheel. For remote mounting with IP54 and UL Type 1 enclosure protection level from outside.

2 BOP interface
- Connection between drive and BOP
- RJ45 interface is compatible with standard LAN cable

3 BOP cable
The cable is not included in the delivery. You can use any standard LAN cable with standard RJ45 connector.

4 Parameter loader
Up to 100 parameter sets with parameter settings can be written from the memory card (SD card up to 32 GB supported) to the drive or saved from the drive to the memory card without connecting the drive to the line supply.

5 SINAMICS Memory Card (SD)
- 512 MB (Standard SD cards up to 32 GB are supported)

6 Line filter
- Improved EMC performance
- Longer motor cable for FSAA, FSAB, FSA

7 Line reactor
- Reduces the harmonic current
- Improves the power factor
- Recommended if input current (RMS value) is higher than the rated current of the drive

8 Braking module
- Shortens the deceleration ramp time
- Suitable for 1AC 230V and 3AC 480V
- Adjustable duty cycle from 5% to 100%
- FSD and FSE already have an integrated braking unit

9 Braking resistor
- Dissipates regenerative energy as heat
- 5% duty cycle as default setting

10 Output reactor
Longer motor cable:
- 3AC 480V shielded and unshielded cable:
  150 m for FSA to FSD, 200 m / 300 m for FSE
- 1AC 230V shielded and unshielded cable: 200 m

11 Shield connection kit
- Shield connection
- Strain relief

12 Fuse
Recommended fuse corresponding to the EC/UL standard

13 Circuit breaker
Recommended circuit breaker corresponding to the EC/UL standard

1AC 200–240V [1]

Rated data							
P_{rated} (HO)		I_H	Part number			Fans	Frame size
kW	hp	A					
0.12	1/6	0.9	6SL3210-5BB11-2		V1	–	FSSA New
0.25	1/3	1.7	6SL3210-5BB12-5		V1	–	
0.37	1/2	2.3	6SL3210-5BB13-7		V1	–	
0.55	3/4	3.2	6SL3210-5BB15-5		V1	–	FSSB New
0.75	1	4.2	6SL3210-5BB17-5		V1	1	
1.1	1–1/2	6	6SL3210-5BB21-1		V0	1	FSB
1.5	2	7.8	6SL3210-5BB21-5		V0	1	
2.2	3	11	6SL3210-5BB22-2		V0	1	FSC
3	4	13.6	6SL3210-5BB23-0		V0	1	

EMC Standards	
Without integrated filter	U
With integrated line filter category C2[2] (only available for FSB and FSC from 1.1 to 3 kW)	A
With integrated line filter category C1[11] (only available for FSAA and FSAB up to 0.75 kW)	B

[1] Single-phase devices can also be connected to two phases of a 3-phase 230 V supply system. You can find detailed information here: http://support.industry.siemens.com/cs/document/109476260

[2] EN61800-3 Category C2, 1st environment (residential domestic)

[3] The output current I_L is based on the duty cycle for low overload (LO).

[4] The output current I_H is based on the duty cycle for high overload (HO).

[5] EN61800-3 Category C3, 2nd environment (industry)

[6] See specification of EMC standards, page 10

[7] Additional information about the listed fuses and circuit breakers can be found in Catalogs LV 10, IC 10 and IC 10 AO http://siemens.com/drives/infocenter

[8] BOP interface and BOP integrated standard RJ45 connector compatible for standard Ethernet cable.

[9] The cable is not included in the delivery. You can use any standard LAN cable with standard RJ45 connector.

[10] Installation of FSA with fan, please refer to SINAMICS V20 manual. Installation of FSAA/AB, DIN Rail Mounting Kit for FSA install with Migration Mounting Kit together.

[11] EN61800-3 category C1, 1st environment (residential).

1AC 200–240V options

FS	P_{rated} (HO) kW	Braking resistor 6SE6400-...	Line reactor 6SE6400-...	Output reactor 6SE6400-...	Shield connection kit 6SL3266-...	Line filter class B[6] 6SE6400-...	Corresponding to the IEC standard		
							Standard fuse[7]		Circuit breaker[7]
							Current in A	Part number	Part number
FSAA	0.12	4BC05-0AA0	3CC00-4AB3	3TC00-4AD3	1AA00-0VA1	0BB21-8VA0	10	3NA3803	3RV2011-1DA10
	0.25								3RV2011-1FA10
	0.37		3CC01-0AB3						3RV2011-1HA10
FSAB	0.55								3RV2011-1JA10
	0.75						16	3NA3805	3RV2011-1KA10
FSB	1.1	4BC11-2BA0	3CC02-6BB3	3TC01-0BD3	1AB00-0VA0	–	20	3NA3807	3RV2021-4BA10
	1.5						32	3NA3812	3RV2021-4CA10
FSC	2.2				1AC00-0VA0		35	3NA3814	3RV2021-4EA10
	3	4BC12-5CA0	3CC03-5CB3	3TC03-2CD3			50	3NA3820	3RV1031-4FA10

Accessories

Name	Part number
Parameter loader	6SL3255-0VE00-0UA1 New
BOP[8] (Basic Operator Panel) interface	6SL3255-0VA00-2AA1 New
Braking module ▪ 1AC 230V: 8A ▪ 3AC 400V: 7A	6SL3201-2AD20-8VA0
V20 BOP (Basic Operator Panel)	6SL3255-0VA00-4BA1 New
BOP cable[9]	–
SINAMICS Memory Card (512 MB)	6SL3054-4AG00-2AA0
RS485 Terminators (Content 50 pieces)	6SL3255-0VC00-0HA0
SINAMICS V20 training case	6AG1067-2AA00-0AB6
DIN Rail mounting kit	FSA/FSAA/FSAB: 6SL3261-1BA00-0AA0[10] FSB: 6SL3261-1BB00-0AA0
Migration Mounting Kit to fit FSAA/AB to former FSA	6SL3266-1ER00-0VA0

Spare parts

Replacement fan	
Frame size	Part number
FSA	6SL3200-0UF01-0AA0
FSB	6SL3200-0UF02-0AA0
FSC	6SL3200-0UF03-0AA0
FSD	6SL3200-0UF04-0AA0
FSE	6SL3200-0UF05-0AA0

3AC 380–480V

Rated data										
P_{rated} (LO)		I_L 480 V	P_{rated} (HO)		I_H 480 V	Part number			Fans	Frame size
kW	hp	A	kW	hp	A					
0.37	1/2	1.3	0.37	1/2	1.3	6SL3210-5BE13-7		V0	–	FSA
0.55	3/4	1.7	0.55	3/4	1.7	6SL3210-5BE15-5		V0	–	
0.75	1	2.2	0.75	1	2.2	6SL3210-5BE17-5		V0	–	
1.1	1–1/2	3.1	1.1	1–1/2	3.1	6SL3210-5BE21-1		V0	1	
1.5	2	4.1	1.5	2	4.1	6SL3210-5BE21-5		V0	1	
2.2	3	4.8	2.2	3	4.8	6SL3210-5BE22-2		V0	1	
3	4	7.3	3	4	7.3	6SL3210-5BE23-0		V0	1	FSB
4	5	8.24	4	5	8.24	6SL3210-5BE24-0		V0	1	
5.5	7–1/2	11	5.5	7–1/2	11	6SL3210-5BE25-5		V0	1	FSC
7.5	10	16.5	7.5	10	16.5	6SL3210-5BE27-5		V0	2	FSD
11	15	21	11	15	21	6SL3210-5BE31-1		V0	2	
15	20	31	15	20	31	6SL3210-5BE31-5		V0	2	
22	30	40	18.5	25	34	6SL3210-5BE31-8		V0	2	FSE
30	40	52	22	30	40	6SL3210-5BE32-2		V0	2	

EMC Standards	
With integrated line filter category C3[5]	C
Without integrated filter	U

3AC 380–480V options

FS	P_{rated} (LO) kW	P_{rated} (HO) kW	Braking resistor 6SL3201-...	Line reactor 6SL3203-...	Output reactor 6SL3202-...	Shield connection kit 6SL3266-...	Line filter class B[6] 6SL3203-...	Corresponding to the IEC standard		
								Standard fuse[7]		Circuit breaker[7]
								Current in A	Part number	Part number
FSA	0.37	0.37	0BE14-3AA0	0CE13-2AA0	0AE16-1CA0	1AA00-0VA0	0BE17-7BA0	6	3NA3801	3RV2011-1CA10
	0.55	0.55								3RV2011-1DA10
	0.75	0.75								3RV2011-1EA10
	1.1	1.1								3RV2011-1FA10
	1.5	1.5		0CE21-0AA0				10	3NA3803	3RV2011-1HA10
	2.2	2.2	0BE21-0AA0		0AE18-8CA0			16	3NA3805	3RV2011-1JA10
FSB	3	3				1AB00-0VA0	0BE21-8BA0	16	3NA3805	3RV2011-1KA10
	4	4			0AE21-8CA0			20	3NA3807	3RV2021-4AA10
FSC	5.5	5.5	0BE21-8AA0	0CE21-8AA0		1AC00-0VA0		32	3NA3812	3RV2021-4BA10
FSD	7.5	7.5			0AE23-8CA0	1AD00-0VA0	0BE23-8BA0	–	–	3VL1103-1KM30-0AA0
	11	11	0BE23-8AA0	0CE23-8AA0				–	–	3VL1104-1KM30-0AA0
	15	15						–	–	3VL1105-1KM30-0AA0
			6SE6400-...	6SE6400-...	6SE6400-...	6SL3266-...	6SL3203-...			
FSE	22	18.5	4BD21-2DA0	OJC24-5AA0	3TC05-4DD0	1AE00-0VA0	0BE23-8BA0	63	3NA3022	3VL1108-1KM30-0AA0
	30	22		OJC25-3AA0			0BE27-5BA0	80	3NA3024	3VL1108-1KM30-0AA0

Selecting SIMATIC S7-1200 PLC for SINAMICS V20s

The shown SIMATIC S7 selection is only a suggestion. For detailed and further information please refer to the SIMATIC S7-1200 brochure, catalog or web page: **http://siemens.com/simatic-s7-1200**

CPU			Communication module	
		Part number	RS485 communication for USS or Modbus RTU	Part number
CPU 1211C	1211 CPU AC/DC/Rly	6ES7 211-1BE40-0XB0	CB 1241 RS 485 or CM 1241 RS 485/422	6ES7241-1CH30-1XB0 or 6ES7241-1CH32-0XB0
	1211 CPU DC/DC/DC	6ES7 211-1AE40-0XB0		
	1211 CPU DC/DC/Rly	6ES7 211-1HE40-0XB0		
CPU 1212C	1212 CPU AC/DC/Rly	6ES7 212-1BE40-0XB0		
	1212 CPU DC/DC/DC	6ES7 212-1AE40-0XB0		
	1212 CPU DC/DC/Rly	6ES7 212-1HE40-0XB0		
CPU 1214C	1214 CPU AC/DC/Rly	6ES7 214-1BG40-0XB0		
	1214 CPU DC/DC/DC	6ES7 214-1AG40-0XB0		
	1214 CPU DC/DC/Rly	6ES7 214-1HG40-0XB0		
CPU 1215C	1215 CPU AC/DC/Rly	6ES7 215-1BG40-0XB0		
	1215 CPU DC/DC/DC	6ES7 215-1AG40-0XB0		
	1215 CPU DC/DC/Rly	6ES7 215-1HG40-0XB0		
CPU 1217C	1217 CPU DC/DC/DC	6ES7 217-1AG40-0XB0		

There’s more to it.

usa.siemens.com/sinamics

Everything about our drive family can be found online.

SINAMICS — one family, one source,all applications

Published by
Siemens Industry, Inc.

5300 Triangle Parkway, Suite 100
Norcross, GA 30092

1-800-879-8079

Order No. DRBR-V2001-0516

Printed in USA

usa.siemens.com/motioncontrol