# SIEMENS Ingenuity for life



## SINAMICS Low Voltage Converters

Efficient. Versatile. Fit for the future. Simply my drive.

Edition 2019

siemens.com/sinamics

# Into the digital future – with simplicity and versatility



With the SINAMICS family of converters from Siemens, you can simply and efficiently address each individual drive application – in the low, medium and DC voltage domains. All of the drive components are perfectly harmonized and coordinated with one another. Siemens converters, motors and control systems can be immediately and seamlessly integrated into the drive train and into existing automation landscapes. Simply select the appropriate drive components and start to commission your drive system.

Fit for a digital future – with SINAMICS, you have the optimum basis to address all of the requirements relating to digitalization.

As a result of the convenient connection to MindSphere – the Cloud-based solution – you can simply boost the efficiency of your production and reduce downtimes to a minimum based on innovative maintenance concepts.

SINAMICS - simply my drive.

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# The SINAMICS family for all power & performance classes

Always the optimum version – for every application, power rating and requirement: The wide range of SINAMICS converters has precisely the solution you require for your application.

						Low vol	tage
	Standard perform	nance converters		Industry spec	fic converters		
		Thomas Miles					
V20	G120C	G120	G130 / G150	G120X	G180		S120
0.12 – 30 kW	0.55 – 132 kW	0.55 – 250 kW	75 – 2.700 kW	0.75 – 630 kW	2.2 – 6.600 kW		0.55 – 6.840 kW

#### SINAMICS – versatility for maximum efficiency



#### Extensive portfolio

Customized power, performance and functionality: SINAMICS converters have a huge degree of flexibility – and also provide future-proof solutions for your applications.



#### Digitalization

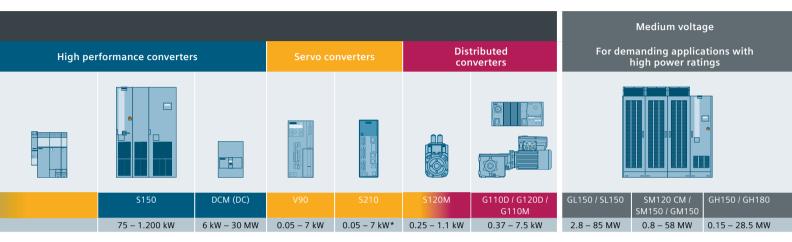
SINAMICS converters are ready & prepared for the digital era: Operating data can be directly transferred to Cloud platforms via MindConnect. The information collected there can help to make your plant or system more productive in the future and reduce downtimes to a minimum.



#### Efficient engineering

Powerful tools support you over the complete lifecycle when configuring, engineering, commissioning and troubleshooting your SINAMICS drive solution. Further, these tools also help you optimize your processes.

Experience more: siemens.com/medium-voltage-converter



\* Being prepared



#### Safety Integrated

Maximum safety for operating and maintenance personnel: Safety functions are already integrated in our SINAMICS drives. You benefit from shorter response times, a higher degree of cost-effectiveness and lower wiring costs.



#### Drive-system solution

Profit from our modular automation concept that can be scaled as required: SINAMICS converters operate perfectly with SIMOTICS motors, SIMOGEAR geared motors – as well as SIMATIC, SINUMERIK and SIMOTION control systems. All of the components communicate seamlessly via PROFINET.



#### Services across the complete lifecycle

From spare parts management up to optimized maintenance concepts:
Based on customized service quotations for your SINAMICS converters, you can sustainably secure maximum availability and productivity of your plants and systems.

#### The optimum converter for each and every application

Depending on the actual power rating and functionality, the following converters are available, for example:

#### Pumping/ventilating/compressing



SINAMICS supports the continuous and energy-efficient operation of pumps, fans and compressors – either running continuously or requiring a high dynamic performance. The advantages include especially precise flow control, short response times – and the avoidance of damaging vibration levels and cavitation.

#### Moving



Energy-efficient and rugged solutions for basic conveyor technology with roller or chain conveyors, for hoisting gear and elevators – as well as for storage and retrieval machines that demand a high dynamic performance – and always with Safety Integrated onboard.

#### **Positioning**



When high dynamic performance and precision are demanded: SINAMICS ensures precise positioning of individual axes, allows several axes to be interpolated in a coordinated fashion – for example as required in complex robotic applications.

#### **Processing**



SINAMICS is the ideal solution for continuously running processes demanding high speed and torque precision, for instance, for extruders, centrifuges, agitators and all types of production machines – motion control, isochronous communication and Safety Integrated.

#### Machining



Whether high-speed spindles or feed and auxiliary axes for turning, milling, drilling and sawing: SINAMICS is the perfect drive for all applications in material processing. Fast adaptability and minimum equipping times play a decisive role when it comes to achieving high productivity.



# Digitalization – for a higher degree of productivity, sustainability and security

#### **Highlights**

- Drive technology as entry point into digitalization
- Seamless machine database through integrated engineering
- Transparency along the complete drive train
- Secure data capture in the Cloud
- Identification and implementation of optimization measures
- Development of new business and service models

The world was never as networked as it is today – thanks to digitalization, machines and equipment exchange data in real time so that they can interact perfectly with one another.

Digital technologies also provide a great opportunity to make your production even more efficient, cost-effective and secure – without having to invest in completely new infrastructures.

Worldwide, operating data from production plants and systems can be captured and evaluated in MindSphere – our Cloud-based open IoT operating system – to generate valuable know-how. Based on this data, predictive maintenance concepts can be implemented to avoid machine failures, therefore keeping downtimes as short as possible. Seamless engineering tools simplify the integration of converters and motors in your plants and systems.

The link to the Cloud and our MindSphere Apps ensure that you benefit from maximum transparency along the complete drive train:

SIDRIVE IQ is the IoT digitalization portfolio for drive systems. It consists of MindSphere apps and digital services and allows the complete drive train to be optimized. The SIDRIVE IQ Fleet MindSphere App for applications in the process industry simply provides you with information about the state of your drive system. This is based on continuous analysis of mechanical vibration values, temperature, power and efficiency. You benefit directly from factors such as increased plant availability and productivity.

With the Analyze MyDrives MindSphere App, which is also an integral component of SIDRIVE IQ, you can continuously monitor fundamental operating states of your SINAMICS low-voltage converters in the production industry. This allows you to identify when it is necessary to optimize and/ or service your drive train at an early stage.

Carry out maintenance work on your machines at the precise moment that it is necessary.





# Efficient engineering over the complete lifecycle

#### Selecting products with the DT Configurator

From gear units through motors and converters up to the control system: Using the Drive Technology Configurator, you can quickly select the optimum products to address your specific applications.

#### The TIA Portal includes SINAMICS Startdrive to intuitively integrate SINAMICS drives into the automation landscape

Perfect interaction between SINAMICS drives and SIMATIC controllers:

The same operating concept, elimination of interfaces and the high level of user-friend-liness make it possible to quickly integrate SINAMICS converters into the automation environment and commission them using the TIA Portal.

#### SIZER for simple drive engineering

Starting from your application, the tool supports you step-by-step when defining the mechanical system as well as when selecting and dimensioning converters, motors and gear units.

In addition to engineering results such as characteristics, technical data, installation drawings and dimension drawings, SIZER for Siemens Drives also calculates the performance and the load-dependent energy usage.

#### SinaSave to identify energy-saving potential

Using the SinaSave web-based tool, you can identify the energy-saving potential that your SINAMICS converter can free up. The evaluation provides information about the specific energy-saving potential, a financial analysis as well as information regarding the expected payback time.

#### **Commissioning and diagnostics**

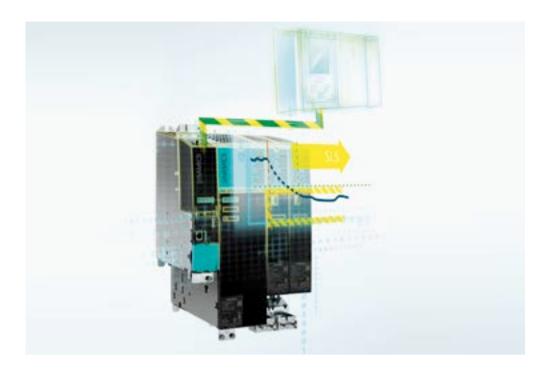
Operation, either locally or from a mobile device, monitoring, commissioning, diagnostics and service using the SINAMICS V20/G120 Smart Access Module, IOP-2 or BOP-2.

#### **Highlights**

- Leverage all of the convenient TIA Portal functions for converter and drive engineering
- Fast selection, configuring and ordering
- · Simple commissioning
- Determine energysaving potential

siemens.com/engineering-tools siemens.com/tiaportal siemens.com/sinamics-accessories





## Safety Integrated – simply safe, twice the efficiency

#### **Highlights**

- Certified system solution in compliance with the applicable standards
- Lower system costs due to fewer components and lower wiring costs
- Faster commissioning/ maintenance
- Higher productivity through shorter downtimes

#### Optimum support for machine OEMs and machine operators:

With Safety Integrated in SINAMICS drives, you are not only selecting a safe technical solution, but you also benefit from perfect support relating to all safety issues. This starts with the seamless integration of safety technology in SINAMICS drives and in SIMATIC, SINUMERIK and SIMOTION control systems. This certified system offers valuable support in the workflow, such as engineering in the TIA Portal, documentation in compliance with the applicable standards using the Safety Evaluation Tool – all the way up to an integrated acceptance test.

Safety Integrated does away with electromechanical components. For you, this means that you require less space in your control cabinet, and you can reduce your costs when it comes to stocking spare parts and maintenance. Further, there is no wear as shutdown is realized purely electronically. Even when safety functions respond, the converter remains connected to the line supply – and can still be fully diagnosed.

Customized safety concepts with Safety Integrated can be very easily implemented based on the safety-related communication via PROFIsafe. You benefit from higher productivity with minimized downtimes.





# Perfect interaction – the drive system solutions

The SINAMICS family is perfectly designed to interact with all automation components from the word go – with straightforward, seamless engineering and products that are perfectly harmonized and coordinated with one another. All of the drive elements seamlessly operate with one another, from converters through motors up to gear units and couplings.

The converters can be optimally linked to control systems such as SIMATIC, SINUMERIK and SIMOTION. Communication is established quickly and safely via PROFINET.

As a consequence, SINAMICS converters provide you with a complete solution that can be flexibly scaled to address your automation task. This means that you not only reduce time and costs, but you can also secure a sustainable lead in the market.

#### **Highlights**

- Drive components that are optimally harmonized and coordinated with one another
- Seamless and futureproof complete solution
- Efficient engineering and simple commissioning

# Cutting edge services – to continuously improve your production environment



#### Highlights

- Maximum system availability and operational reliability through tailored services
- Improved operating conditions with costs that can be transparently budgeted
- Extension of the product lifecycle of machines and systems

If you want to remain competitive, then you must be able to dynamically respond to market requirements. The optimum strategy is to continually increase the availability and productivity of your systems and machines. As partner with comprehensive technology and industry know-how, Siemens Industry Services can offer you a unique range of services and support.

Our industry services cover the complete lifecycle of the SINAMICS product family. We support our customers to produce more efficiently with higher profit margins, help them leverage the opportunities provided by digitalization – and at the same time reduce their total cost of ownership.

You benefit from spare part and repair services specific to your plant or system, as well as global support provided by our experienced service experts. This support is available locally, remotely, online, by telephone or through individual training courses.

#### **Digital Industry Services**

Are you ready for digitalization? With our digitalization check you can find out just how prepared your plant or system already is for the digital era. Here we apply our digital drive train services for the complete drive train – a modular portfolio comprising remote and condition monitoring services along with an extensive portfolio to improve and optimize your system.

#### **Optimized service contracts**

To a large extent, SINAMICS components are maintenance-free. Having said that, with an individual service contract you ensure that every component of your SINAMICS drive solution is checked, maintained and overhauled at precisely the right point in time. And of course, replaced if necessary – also as preventive measure.

#### **Drive system retrofit**

The SIMOVERT converter family sets itself apart as a result of its long service life and high reliability. This also applies to SIMOVERT MASTERDRIVES. In recent years, these have been continuously replaced by the SINAMICS product series. We recommend that you switch over to the SINAMICS family of converters so that the availability of spare parts can be secured in the future, thus avoiding plant downtimes. We would be more than willing to help you draw up the best migration strategy.

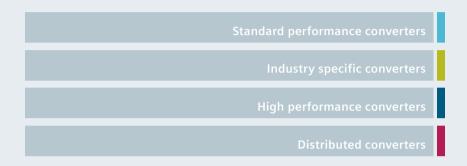
"Extended Exchange" drive service
We offer a free-of-charge 6-month
extended warranty for SINAMICS converters. Further, you have the option of
insuring your SINAMICS drive for up to
seven years – therefore guaranteeing
continuous availability over the complete
product lifecycle.

Register your SINAMICS converter now: siemens.com/drive-registration



siemens.com/drivesystemservices

#### **SINAMICS** low voltage converters



# Powerful and flexible



#### SINAMICS V20 Simple. Rugged. Efficient.

#### Highlights

- The perfect solution for basic applications
- Easy to install
- Easy to use

#### **Applications**







Pumping/ Ventilating/ Compress-

Moving

Processing

Format	Built-in unit (compact)
Drive concept	AC/AC
Degree of protection	IP20/UL open type
Supply voltage/power kW (hp)	
1AC 200 240 V	0.12 3 kW (0.16 4 hp)
3AC 380 480 V	0.37 30 kW (0.5 40 hp)
Energy recovery	No
Control modes	V/f (linear, square law, FCC, ECO)
Ambient temperature	$-10^{\circ}\text{C}$ to 40 $^{\circ}\text{C}$ without derating/to 60 $^{\circ}\text{C}$ with derating
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2/C1
	Without integrated line filter for environments according to EN 61800-3 Category C4
Braking chopper	External braking chopper
Safety functions	No
Communication	USS/Modbus RTU
TIA Portal connected	No
Commissioning tools	BOP-2, V20 Smart Access Module
Controller	SIMATIC S7-1200

SIMOTICS GP/SD (standard induction motors, aluminum/cast iron)



#### SINAMICS G120C Versatile. User-friendly. Compact.

Format	Built-in unit (compact)
Drive concept	AC/AC
Degree of protection	IP20/UL open type
Supply voltage/power kW (hp)	
3AC 380 480 V	0.55 132 kW (0.75 150 hp)
Energy recovery	No
Control modes	V/f (linear, square law, FCC, ECO), sensorless vector control (SLVC)
Ambient temperature	$-10~^{\circ}\text{C}$ to $40~^{\circ}\text{C}$ without derating/to $60~^{\circ}\text{C}$ with derating
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2
	Without integrated line filter for environments according to EN 61800-3 Category C4
Braking chopper	Integrated braking chopper
Safety functions	STO
Communication	Frame size FSAA 0.55 kW to FSC 18.5 kW available with PROFINET, PROFIBUS DP, EtherNet/IP, USS/Modbus RTU
	Frame size FSD 22 kW to FSF 132 kW available with PROFINET
TIA Portal connected	Yes
Commissioning tools	BOP-2, IOP-2, G120 Smart Access Module, SINAMICS Startdrive
Controller	SIMATIC S7-1200, SIMATIC ET200
Recommended motors	SIMOTICS GP/SD (standard induction motors, aluminum/cast iron)
	SIMOGEAR (geared motors)



#### Highlights

- Compact for simple installation in the smallest space
- Simple commissioning and operator control
- Perfect integration in the automation environment
- Integrated safety technology

#### **Applications**







Pumping/ Ventilating/ Compress-

Moving

Processing

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siemens.com/sinamics-selector



siemens.com/dt-configurator



**Format** 

#### SINAMICS G120 Multifunctional. Combinable. Safety Integrated.

Power Module, Control Unit, commissioning options

Built-in unit (modular)

	Tower Module, control only, commissioning options	
Drive concept	AC/AC	
Degree of protection	IP20/UL open type	
Supply voltage/power kW (hp)		
1AC/3AC 200 240 V	0.55 4 kW (0.75 5 hp), Power Module PM240-2	
3AC 200 240 V	5.5 55 kW (7.5 60 hp), Power Module PM240-2	
3AC 380 480 V	0.55 250 kW (0.75 400 hp), Power Module PM240-2	
3AC 380 480 V	7.5 90 kW (10 125 hp), Power Module PM250	
3AC 500 690 V	11 250 kW (10 400 hp bei 600 V), PM240-2	
Control unit	Control Unit CU230P-2, CU240E-2, CU240E-2 F, CU250S-2	
Energy recovery	In conjunction with PM250 Power Modules	
Control modes	V/f (linear, square law, FCC, ECO), vector control with and without encoder (VC, SLVC)	
Ambient temperature	$-10~^{\circ}\text{C}$ to 40 $^{\circ}\text{C}$ without derating/to 60 $^{\circ}\text{C}$ with derating	
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2	
	Without integrated line filter for environments according to EN 61800-3 Category C4	
Braking chopper	Integrated braking chopper for PM240-2 Power Modules	
Safety functions	STO, SS1, SBC, SLS, SDI, SSM	
Communication	PROFINET, PROFIBUS DP, EtherNet/IP, USS/Modbus RTU, CANopen, PROFIsafe	
TIA Portal connected	Yes	
Commissioning tools	BOP-2, IOP-2, G120 Smart Access Module,	

#### Highlights

- · High degree of flexibility and combinability
- · Higher-level, standard safety concept
- Wide range of power ratings

#### **Applications**







Processing

Pumping/ Ventilating/ Compress-



Positioning

#### Modular design



Controller

SIMOTICS GP/SD (standard induction motors, synchronous-reluctance motors aluminum/cast iron)

SIMATIC ET200, SIMATIC S7-1500, SIMATIC PCS 7

SIMOGEAR (geared motors)

SINAMICS Startdrive

SIMOTICS TN (trans-standard motors)

SIMOTICS M-1PH8 (compact induction motors)

SIMOTICS XP (explosion-protected motors)



#### SINAMICS G130/G150 Multifunctional. User-friendly. Rugged.

Format	G130: Built-in unit (modular) G150: Cabinet unit
Drive concept	AC/AC
Degree of protection	G130: IP00 / IP20 G150: IP20 Optional: IP21, IP23, IP43, IP54
Supply voltage/power kW (hp)	
3AC 380 480 V	110 560 kW(150 800 hp)(G130) 110 900 kW(150 800 hp)(G150)
3AC 500 600 V	110 560 kW (150 800 hp)(G130) 110 1000 kW(150 800 hp)(G150)
3AC 660 690 V	75 800 kW (85 810 hp) (G130) 75 2700 kW (85 810 hp) (G150)
Energy recovery	No
Control modes	Sensorless vector control or V/f control
Ambient temperature	0 °C to 40 °C without derating/to 55 °C with derating
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)
Braking chopper	G130: System component Braking Module G150: Braking Module optional
Safety functions	STO, SS1, SBC, SLS, SDI, SSM, SBT
Communication	PROFINET, PROFIBUS DP, EtherNet/IP, USS, CANopen, PROFIsafe
TIA Portal connected	Yes
Commissioning tools	BOP20, AOP30, SINAMICS Startdrive
Controller	SIMATIC ET200, SIMATIC S7-1500, SIMATIC PCS 7
Recommended motors	SIMOTICS GP/SD (standard induction motors aluminum/cast iron)





- · Applications: Pumps, fans, compressors, extruders, mixers, mills etc.
- · Service-friendly thanks to device modules that are easy to access
- 100% line supply voltage at the motor without any secondary effects
- · When required, with integrated line harmonics filter and du/dt filter

#### **Applications**







Pumping/ Ventilating/ Compressing

Moving

Processing

aluminum/cast iron)

SIMOTICS TN (trans-standard motors)

SIMOTICS FD (compact induction motor with different cooling concepts)

SIMOTICS HT (low-speed permanent magnet synchronous motors)

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#### SINAMICS G180 Multifunctional. Industry specific. Seamless across the system.

#### Highlights

- Industry specific features such as du/dt filter and PTC evaluation
- Applications: Pumps, fans, extruders, compressors – also in hazardous zones
- Voltage levels: 400 V/500 V/690 V
- Line side: 6 to 24 pulse or LHF (Line Filter)
- From 200 kW, air or liquid cooled
- ATEX-certified for motors in hazardous zones

#### **Applications**







Pumping/ Ventilating/ Compress-

Moving

Processing

Format	Built-in unit (compact) Cabinet unit
Drive concept	AC/AC
Degree of protection	Compact devices: IP20 (optional IP21)
	Cabinet units/systems: IP21 (higher degrees of protection up to IP54 optional)/with water cooling, IP54
Supply voltage/power kW (hp)	
3AC 380 480 V	2.2 200 kW, compact device 250 630 kW, cabinet unit
3AC 480 500 V	2.2 160 kW, compact device 250 800 kW, cabinet unit
3AC 500 690 V	7.5 200 kW, compact device 250 6000 kW, cabinet unit
Energy recovery	No
Control modes	V/f (linear, square law) Vector control with and without encoder (SLVC) Field-oriented control (FOC) with encoder and certification for explosion protection
Ambient temperature	−10 °C to 40 °C
Line filter	Compact devices: with integrated line filter for environments according to EN 61800-3 Category C2/C1 (optional)
	Cabinet units: with integrated line filter for environments according to EN 61800-3 Category C3
	Compact devices, cabinet units for IT line systems: with integrated line filter for environments according to EN 61800-3 Category C4
Braking chopper	Yes
Safety functions	STO, ATEX-certified PTC thermistor input for explosion- protected motors
Communication	PROFIBUS DP, EtherNet/IP, Modbus TCP/IP, Modbus RTU, CANopen, on request: PROFINET
TIA Portal connected	No
Controller	SIMATIC ET200, SIMATIC S7-1500, SIMATIC PCS 7

Recommended motors

SIMOTICS GP/SD (standard induction motors aluminum/cast iron)

SIMOTICS TN (trans-standard motors)

SIMOTICS FD (compact induction motors with different cooling concepts)

SIMOTICS XP (explosion-protected motors)

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siemens.com/dt-configurator

## SINAMICS G120X Flexible. Combinable. Application-specific.

Format	Built-in unit (compact)
Drive concept	AC/AC
Degree of protection	IP20, UL open type, IP21 (roof top kit)
Supply voltage/power kW (hp)	
3AC 380 480 V	0.75 560 kW / 1 700 hp
3AC 500 690 V	3 630 kW / 4 700 hp
Energy recovery	No
Control modes	V/f (linear, square law, FCC, ECO), sensorless vector control (SLVC)
Ambient temperature	-20 °C to 45 °C (60 °C with derating <sup>1</sup> )
Line filter	According to EN 61800-3, with integrated line filter for environments Category C3/C2; optional C1 with external filter B
Braking chopper	No
Safety functions	STO
Communication	PROFINET, PROFIBUS, EtherNet/IP, Modbus RTU, USS, BACnet MS/TP2, Wi-Fi über SINAMICS G120 Smart Access Module
TIA Portal connected	No, only via GSD file
Commissioning tools	BOP-2, IOP-2, G120 Smart Access Module
Controller	SIMATIC S7-1500/1200/400, Desigo PX



#### Highlights

- The infrastructure drive for pump/fan applications in water/wastewater industries and building technology
- Seamless range of power ratings available in 9 frame sizes extending from 0.75 – 630 kW
- Simple selection and ordering using just one order number – and immediately ready to run
- Impressively efficient with specific industry and energy efficiency functions

#### Recommended motors

SIMOTICS GP/SD (synchronous reluctance motors with aluminum/cast iron enclosures)

SIMOTICS GP/SD (standard induction motors with aluminum/cast iron enclosures)

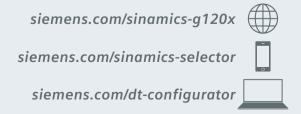
SIMOTICS FD (compact induction motors with different cooling concepts)

SIMOTICS DP (smoke extraction motors)

#### **Application**



Pumping/ Ventilating/ Compressing



<sup>&</sup>lt;sup>1</sup>The max temperature is 55 °C for PN version drives



#### Highlights

- Modular system for high performance
- High degree of scalability, flexibility, combinability

#### **Applications S120**







Pumping/ Ventilating/ Compressing

Processing

Positioning





Machining

Moving

#### SINAMICS S120 Universal. Precise. Safety Integrated.

	S120	S120	
	High-performance application	High-performance application	
Format	Built-in unit Blocksize (modular)	Built-in unit Booksize (modular)	
Structure	Control Unit + Power Module	Control Unit + infeed + Motor Module	
Drive concept	AC/AC	DC/AC	
Degree of protection	IP20	IP00 / IP20	
Supply voltage/power kW (hp)			
1/3AC 200 240 V	0.55 4 kW (0.75 5 hp at 240 V)	_	
3AC 200 240 V	5.5 55 kW (7.5 60 hp at 240 V)	_	
3AC 380 480 V	0.55 250 kW (0.75 400 hp at 480 V)	1.6 107 kW (1.5 150 hp at 400 V)	
3AC 500 690 V	11 250 kW (10 400 hp at 600 V)	_	
Energy recovery	No	Yes, depending on the infeed	
Control modes	V/f control, vector control with/without encoder Servo control with encoder		
Ambient temperature	0 °C to 40 °C		
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2	With integrated line filter for envi- ronments according to EN 61800-3 Category C3/C2 (optional)	
	Without line filter for environments according to EN 61800-3 Category C4	Without line filter for environ- ments according to EN 61800-3 Category C4	
Braking chopper	Integrated braking chopper for PM240-2 Power Modules	Yes (optional)	
Safety functions	STO, SS1, SBC, SOS, SS2, SLS, SSM, SDI, SLP, SP, SBT, SLA, SCA		
Communication	PROFINET, PROFIBUS DP, EtherNet/IP, USS (kein CU310), CANopen (CU320-2), Modbus TCP		
TIA Portal connected	Yes, PROFIsafe		
Commissioning tools	SINAMICS Startdrive, SCOUT, web server		
Control systems	SIMATIC, SINUMERIK, SIMOTION		
Recommended motors	SIMOTICS GP, SD, XP, DP, M, S, L, T	SIMOTICS GP, SD, XP, DP, M, S, L, T	

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	_	

5120	3120 CIVI
High-performance application	High-performance application
Built-in unit Chassis (modular)	Cabinet unit
Control Unit + infeed + Motor	Control Unit + infeed + Motor Module
DC/AC	DC/AC
IP00 / IP20	IP20, optional: IP21, IP23, IP43, IP54
-	- -
110 3040 kW (150 4370 hp at 460 V) 75 6840 kW	4.8 3040 kW (54370 hp at 460 V) 75 5700 kW
(75 1250 hp at 575 V)	(75 1250 hp at 575 V)
Yes, depending on the infeed	Yes, depending on the infeed
With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)	With integrated line filter for environ- ments according to EN 61800-3 Category C3/C2 (optional)
Without line filter for environ- ments according to EN 61800-3 Category C4	Without line filter for environ- ments according to EN 61800-3 Category C4
Yes (optional)	Yes (optional)
SIMOTICS SD, XP, DP, FD, TN, HT, M	SIMOTICS GP, SD, XP, DP, FD, TN, HT, M

**S120 CM** 

**S120** 



#### SINAMICS S150 Multifunctional. Precise. Capable of energy recovery.

## HighlightsModular system for

- high performance
- High degree of scalability, flexibility, combinability

#### **Applications**



Processing

Format	Cabinet unit
Drive concept	AC/AC
Degree of protection	IP20, optional: IP21, IP23, IP43, IP54
Supply voltage/power kW (hp)	
3AC 380 480 V	110 800 kW (150 1150 hp)
3AC 500 690 V	75 1200 kW (75 1250 hp)
Energy recovery	Yes
Control modes	V/f control Vector control with and without encoder Servo control with and without encoder
Ambient temperature	0 °C to 40 °C
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2  Without line filter for environments according to EN 61800-3 Category C4
Braking chopper	Yes (optional)
Safety functions	STO, SS1, SBC, SOS, SS2, SLS, SSM, SDI, SLP, SP, SBT, SLA, SCA
Communication	PROFINET, PROFIBUS DP, EtherNet/IP, USS (no CU310), CANopen (CU320-2), Modbus TCP, PROFIsafe
TIA Portal connected	Yes
Commissioning tools	SINAMICS Startdrive, SCOUT, web server
Controller	SIMATIC, SIMOTION
Recommended motors	SIMOTICS SD, XP, DP, FD, TN, HT, M



#### SINAMICS DCM Universal. Scalable. Rugged.

Format	Built-in unit		
Drive concept	AC/DC		
Degree of protection	IP00 / IP20		
Supply voltage/power kW (hp)			
1AC 230 V	1.61 362 kW (2.16 485 hp)		
1AC 400 V	2.81 653 kW (3.77 876 hp)		
1AC 480 V	3.37 310 kW (4.52 416 hp)		
1AC 575 V	16.1 863 kW (21.6 1160 hp)		
3AC 10 V 50 V	0.16 183 kW (0.21 245 hp)		
3AC 400 V	6.3 1460 kW (8.4 1950 hp)		
3AC 480 V	6.3 690 kW (8.4 925 hp)		
3AC 575 V	35 1930 kW (47 2590 hp)		
3AC 690 V	551 2160 kW (739 2900 hp)		
3AC 830 V	831 1900 kW (1110 2550 hp)		
3AC 950 V	2200 2500 kW (2950 3350 hp)		
Energy recovery	Yes		
Control modes	Speed control, torque control, closed-loop EMF control (operation without tachometer), field weakening control		
Ambient temperature	0 °C to 45 °C without derating for armature currents $\leq$ 125 A		
	0 °C to 40 °C without derating for armature currents $\geq$ 210 A		
	Up to 55 °C with derating		
Line filter	With additional line filter for environments according to EN 61800-3 Category C2		
	Without additional line filter for environments according to EN 61800-3 Category C3, C4		
Safety functions	STO, SS1		
Communication	PROFINET, PROFIBUS DP, USS, EtherNet/IP, Modbus TCP		
TIA Portal connected	Yes		
Commissioning tools	BOP, AOP30, SCOUT		
Controller	SIMATIC, SIMATIC PCS 7, SIMOTION		
Recommended motors	SIMOTICS DC		



#### Highlights

- For simple and favorably-priced plant and system modernization
- Flexible expandability regarding both functionality and performance
- High power rating in a compact design
- High reliability of all components

#### **Applications**





Moving

Processing

siemens.com/sinamics-dcm

ntor

siemens.com/dt-configurator



#### SINAMICS G120D Multifunctional. Rugged. Distributed.

#### Highlights

- Integrated safety functions and positioning functionality
- Simple commissioning using prompted parameterizing software
- High degree of protection

#### **Applications**





Moving

Positioning

Format	Distributed compact device		
Drive concept	ACIAC		
Degree of protection	IP65/UL Type 3		
Supply voltage/power kW (hp)			
3AC 380 500 V	0.75 7.5 kW (1 10 hp)		
Energy recovery	Yes		
Control modes	V/f (linear, square law, FCC, ECO), vector control with and without encoder (VC, SLVC)		
Ambient temperature	–10 °C to 40 °C without derating/to 60 °C with derating		
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2		
Braking chopper	No		
Safety functions	STO, SS1, SLS, SDI, SSM		
Communication	PROFINET, PROFIBUS DP, EtherNet/IP, PROFIsafe		
TIA Portal connected	Yes		
Commissioning tools	IOP-2 Handheld, SINAMICS Startdrive		
Controller	SIMATIC S7-1200, SIMATIC ET200		
Recommended motors	SIMOTICS GP/SD (standard induction motors, synchronous-reluctance motors aluminum/cast iron)		

SIMOGEAR (geared motors)



#### SINAMICS G110M Simple. Rugged. Integrated in the motor.



Format	Distributed compact device for mounting on a motor
Drive concept	AC/AC
Degree of protection	IP20 to IP66/UL open type
Supply voltage/power kW (hp)	
3AC 380 480 V	0.37 4 kW (0.5 4 hp)
Energy recovery	No
Control modes	V/f (linear, square law, FCC, ECO), sensorless vector control (SLVC)
Ambient temperature	$-10~^{\circ}\text{C}$ to 40 $^{\circ}\text{C}$ without derating/to 60 $^{\circ}\text{C}$ with derating
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2
Braking chopper	Integrated braking chopper
Safety functions	STO
Communication	PROFINET, PROFIBUS DP, EtherNet/IP, USS/Modbus RTU, AS-i, PROFIsafe
TIA Portal connected	Yes
Commissioning tools	IOP-2 Handheld, SINAMICS Startdrive
Controller	SIMATIC S7-1200, SIMATIC ET200
De common de dimentana	SIMOTICS GP/SD (standard induction motors, synchronous-

#### Highlights

- High degree of flexibility and combinability
- Higher-level, standard safety concept
- Wide range of power ratings

#### **Applications**







Pumping/ Ventilating/ Compressing

Moving

Processing

Recommended motors

SIMOTICS GP/SD (standard induction motors, synchronous-reluctance motors aluminum/cast iron)

SIMOGEAR (geared motors)

siemens.com/dt-configurator





#### SINAMICS G110D Versatile. Rugged. Distributed.

#### Highlights

- Low profile design and identical drilling pattern
- Optional repair switch at the device
- Mounted close to the motor for good accessibility
- All connections use standard plug connections

#### **Applications**





Moving

Processing

Format	Distributed compact device		
Drive concept	AC/AC		
Degree of protection	IP65		
Supply voltage/power kW (hp)			
3AC 380 500 V	0.75 7.5 kW (1 10 hp)		
Energy recovery	No		
Control modes	V/f (linear, square law, FCC, ECO)		
Ambient temperature	$-10~^{\circ}\text{C}$ to 40 $^{\circ}\text{C}$ without derating/to 60 $^{\circ}\text{C}$ with derating		
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2		
Braking chopper	No		
Safety functions	STO		
Communication	AS-i		
TIA Portal connected	Yes		
Commissioning tools	IOP-2 Handheld, SINAMICS Startdrive		
Controller	SIMATIC S7-1200, SIMATIC ET200		

necommenaea motors

SIMOTICS GP/SD (standard induction motors aluminum/cast iron)
SIMOGEAR (geared motors)



#### SINAMICS servo converters

Servo drive converte

# Precise and with a high dynamic performance



#### Highlights

- Modular system for high performance
- · High degree of scalability, flexibility, combinability

#### **Applications S120**







Pumping/ Ventilating/ Compressing

Moving

Processing





Positioning Machining

#### SINAMICS S120 Universal. Precise. Safety Integrated.

	S120	S120	
	Servo drive converter		
Format	Built-in unit Blocksize (modular)	Built-in unit Booksize (modular)	
Structure	Control Unit + Power Module	Control Unit + infeed + Motor Module	
Drive concept	AC/AC	DC/AC	
Degree of protection	IP20, optional IP43	IP20	
Supply voltage/power kW (hp)			
1AC 200 240 V	_	_	
3AC 200 240 V	-	_	
3AC 380 480 V	110 250 kW (150 400 hp at 460 V)	1.6 107 kW (1.5 150 hp at 400 V)	
3AC 500 690 V	-	-	
Energy recovery	No	Yes, depending on the infeed	
Control modes	V/f control, vector control with/without encoder Servo control with encoder		
Ambient temperature	0 °C to 40 °C		
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3/C2	With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)	
	Without line filter for environ- ments according to EN 61800-3 Category C4	Without line filter for environ- ments according to EN 61800-3 Category C4	
Safety functions	STO, SS1, SBC, SOS, SS2, SLS, SSM, SDI, SLP, SP, SBT, SLA, SCA		
Communication	PROFINET, PROFIBUS DP, EtherNet/IP, USS (no CU310), CANopen (CU320-2), Modbus TCP, PROFIsafe		
TIA Portal connected	Yes		
Commissioning tools	SINAMICS Startdrive, SCOUT, web server		
Controller	SIMATIC, SIMOTION, SINUMERIK		
Recommended motors	SIMOTICS SD, XP, DP, FD, TN, HT, M, S, L, T	SIMOTICS GP, SD, XP, DP, M, S, L, T	

#### siemens.com/sinamics-s120



#### siemens.com/dt-configurator



S120	S120M	
Built-in unit Chassis (modular)	Distributed multi-axis system	
Control Unit + infeed + Motor Module	Control Unit + infeed + Motor Module combined with motor	
DC/AC	DC/AC	
IP00/IP20	IP65	
- -	- -	
110 3040 kW (150 4370 hp at 460 V) 75 6840 kW (75 1250 hp at 575 V)	0.25 1.1 kW	
·	Yes, depending on the infeed	
Yes, depending on the infeed		
Yes, depending on the infeed	Servo control with encoder	
Yes, depending on the infeed		
With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)		
With integrated line filter for environments according to EN 61800-3	Servo control with encoder  With integrated line filter for environments according to EN 61800-3	
With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional) Without line filter for environments according to EN 61800-3	Servo control with encoder  With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)  Without line filter for environments according to EN 61800-3	
With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional) Without line filter for environments according to EN 61800-3	Servo control with encoder  With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)  Without line filter for environments according to EN 61800-3	
With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional) Without line filter for environments according to EN 61800-3	Servo control with encoder  With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)  Without line filter for environments according to EN 61800-3	
With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional) Without line filter for environments according to EN 61800-3	Servo control with encoder  With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)  Without line filter for environments according to EN 61800-3	
With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional) Without line filter for environments according to EN 61800-3	Servo control with encoder  With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)  Without line filter for environments according to EN 61800-3	
With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional) Without line filter for environments according to EN 61800-3	Servo control with encoder  With integrated line filter for environments according to EN 61800-3 Category C3/C2 (optional)  Without line filter for environments according to EN 61800-3	





#### SINAMICS V90 Simple. Precise. System-based.

Format	Built-in unit (compact)		
Drive concept	AC/AC		
Degree of protection	Converters: IP20		
	Motor: IP65		
Supply voltage/power kW (hp)			
1AC / 3AC 200 240 V	0.10 0.75 kW (0.07 1.02 hp)		
3AC 200 240 V	1.0 2 kW (0.7 2.7 hp)		
3AC 380 480 V	0.40 7 kW (0.54 10 hp)		
Energy recovery	_		
Control modes	Servo control with encoder		
Ambient temperature	0 °C to 45 °C without derating/to 55 °C with derating		
Line filter	With integrated line filter for environments according to EN 61800-3 Category C3		
Braking chopper	Yes		
Safety functions	STO via terminal		
Communication	Pulse/direction interface, USS/Modbus RTU, PROFINET		
TIA Portal connected	Yes, via the Hardware Support Package		
Commissioning tools	SINAMICS V-ASSISTANT		
Controller	SIMATIC S7-1200, SIMATIC S7-1500		

#### Highlights

- Optimized servo performance thanks to One-Button-Tuning and **Auto-Tuning**
- Simple to operate complete solution for motion control applications
- Together with a SIMATIC controller, a strong team in the TIA Portal

#### **Applications**







Processing

Positioning Machining

SIMOTICS S-1FL6 (servomotors)



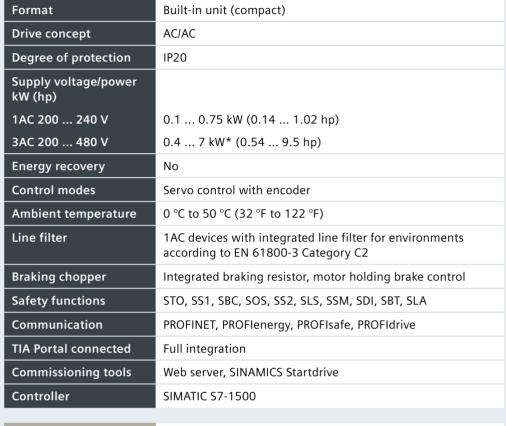
#### SINAMICS family – an overview

	Supply voltage	Power (kW)	Powerg (hp)
Low voltage AC			
SINAMICS V20	1AC 200 240 V 3AC 380 480 V	0.12 3 kW 0.37 30 kW	0.16 4 hp 0.5 40 hp
SINAMICS G120C	3AC 380 480 V	0.55 132 kW	0.75 150 hp
SINAMICS G120	1AC / 3AC 200 240 V 3AC 200 240 V 3AC 380 480 V 3AC 380 480 V 3AC 500 690 V	0.55 4 kW 5.5 55 kW 0.55 250 kW 7.5 90 kW 11 250 kW	0.75 5 hp, PM240-2 7.5 60 hp, PM240-2 0.75 400 hp, PM240-2 10 125 hp, PM250 10 400 hp at 600 V, PM240-2
SINAMICS G130/G150	3AC 380 480 V 3AC 500 600 V 3AC 660 690 V	110 560 kW 110 560 kW 75 800 kW	150 800 hp 150 800 hp 85 810 hp
SINAMICS G120X	3AC 380 480 V 3AC 500 690 V	0.37 560 kW 3 kW 630 kW	0.75 700 hp 1 700 hp
SINAMICS G180	3AC 380 500 V	400 V: 2.2 kW 630 kW 500 V: 2.2 kW 800 kW 690 V: 7.5 kW 6700 kW	3 857 hp 3 1088 hp 8 9110 hp
SINAMICS S120	AC 380 480 V AC 500 690 V	400 V: 1.6 107 kW 460 V: 110 250 kW 460 V: 110 3040 kW 480 V: 0.55 250 kW 600 V: 11 250 kW	1.5 150 hp 150 400 hp 150 4370 hp 0.75 400 hp 10 400 hp
		575 V: 75 6840 kW	75 1250 hp
SINAMICS S150	3AC 380 480 V 3AC 500 690 V	110 800 kW 75 1200 kW	150 1150 hp 75 1250 hp
SINAMICS DCM (DC)	1AC 230 V 1AC 400 V 1AC 480 V 1AC 575 V 3AC 10 V 50 V 3AC 400 V 3AC 480 V 3AC 575 V 3AC 690 V 3AC 830 V 3AC 950 V	1.61 362 kW 2.81 653 kW 3.37 310 kW 16.1 863 kW 0.16 183 kW 6.3 1460 kW 6.3 690 kW 35 1930 kW 551 2160 kW 831 1900 kW 2200 2500 kW	2.16 485 hp 3.77 876 hp 4.52 416 hp 21.6 1160 hp 0.21 245 hp 8.4 1950 hp 8.4 925 hp 47 2590 hp 739 2900 hp 1110 2550 hp 2950 3350 hp
SINAMICS V90	1AC / 3AC 200 240 V 3AC 200 240 V 3AC 380 480 V	0.1 0.75 kW 1 2 kW 0.4 7 kW	0.07 1.02 hp 0.7 2.7 hp 0.54 10 hp
SINAMICS S210	1AC 200 240 V 3AC 200 480 V	0.1 – 0.75 kW 0.4 – 7 kW*	0.14 1.02 hp 0.54 9.5 hp
SINAMICS S120	AC 380 480 V	0.37 90 kW 110 250 kW 1.6 107 kW 110 3040 kW 1.6 3000 kW	0.5 120 hp 150 340 hp 2 145 hp 150 4133 hp 2 4079 hp
CINAMICC C120M	AC 500 690 V	75 5700 kW	100 7750 hp
SINAMICS S120M	3AC 380 480 V	0.25 1.55 kW	0.3 2 hp
SINAMICS G110D	3AC 380 500 V	0.75 7.5 kW	1 10 hp
SINAMICS G120D	3AC 380 500 V	0.75 7.5 kW	1 10 hp
SINAMICS G110M	3AC 380 480 V	0.37 4 kW	0.5 4 hp

<sup>\*</sup>Being prepared

Communication	Commissioning tools	Safety functions
USS/Modbus RTU	BOP-2, V20 Smart Access Module	No
PROFINET, PROFIBUS DP, EtherNet/IP, USS/Modbus RTU, PROFIsafe	BOP-2, IOP-2, G120 Smart Access Module, SINAMICS Startdrive	STO
PROFINET, PROFIBUS DP, EtherNet/IP, USS/Modbus RTU, CANopen, PROFIsafe	BOP-2, IOP-2, G120 Smart Access Module, SINAMICS Startdrive	STO, SS1, SBC, SLS, SDI, SSM
PROFINET, PROFIBUS DP, EtherNet/IP, USS, CANopen, PROFIsafe	Yes	STO, SS1, SBC, SLS, SDI, SSM, SBT
PROFINET, PROFIBUS DP, EtherNet/IP, USS/ Modbus RTU/BACNet/FLN1	BOP-2, IOP-2, G120 Smart Access Module	STO
PROFIBUS DP, EtherNet/IP, Modbus TCP/IP, Modbus RTU, CANopen, on request: PROFINET	IMS (Inverter Management Software)	STO, ATEX-certified PTC thermistor input for explosion-protected motors
PROFINET, PROFIBUS DP, EtherNet/IP2, USS, CANopen, pulse/direction interface, PROFIenergy, PROFIsafe, PROFIdrive, PROFIsafe	SINAMICS Startdrive	STO, SS1, SBC, SOS, SS2, SLS, SSM, SDI, SLP, SP, SCA, SLA, SBT
PROFINET, PROFIBUS DP, EtherNet/IP, USS, CANopen, PROFIsafe	SINAMICS Startdrive	STO, SS1, SBC, SOS, SS2, SLS, SSM, SDI, SLP, SP, SCA, SLA, SBT
PROFINET, PROFIBUS DP, USS, EtherNet/IP, Modbus TCP	BOP, AOP30, SCOUT	STO, SS1
Pulse/direction interface, USS/Modbus RTU, PROFINET	SINAMICS V-ASSISTANT, TIA Portal HSP	STO
OCC (One Cable Connection) PROFINET, EtherNet/IP2, USS, CANopen, pulse/direction interface, PROFlenergy, PROFIsafe, PROFIdrive	Web server, SINAMICS Startdrive	STO, SS1, SBC, SOS, SS2, SLS, SSM, SDI, SBT
PROFINET, PROFIBUS DP, EtherNet/IP2, USS, CANopen, Puls-/Richtungsschnittstelle, PROFIenergy, PROFIsafe, PROFIdrive	Web server, SINAMICS Startdrive	STO, SS1, SBC, SOS, SS2, SLS, SSM, SDI, SLP, SP, SCA, SLA, SBT
PROFINET, PROFIBUS DP, EtherNet/IP2, USS, CANopen	SINAMICS Startdrive	STO, SS1, SBC, SOS, SS2, SLS, SSM, SDI, SLP, SP, SCA, SLA, SBT
AS-i, PROFIsafe	IOP-2 Handheld, SINAMICS Startdrive	STO
PROFINET, PROFIBUS DP, EtherNet/IP	IOP-2 Handheld, SINAMICS Startdrive	STO, SS1, SLS, SDI, SSM
PROFINET, PROFIBUS DP, EtherNet/IP, USS/ Modbus RTU, AS-i, PROFIsafe	IOP-2 Handheld, SINAMICS Startdrive	STO

#### SINAMICS S210 Versatile. Precise. Safety Integrated.





#### Highlights

- Easy commissioning using a web server and One Button Tuning
- Optimized connection system using OCC (one cable connection)
- SIMOTICS S-1FK2 motors for increased performance

#### **Applications**







Processing

Positioning

Moving

Recommended motors

SIMOTICS S-1FK2 (servomotors)

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