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SIEMENS

MOTION CONTROL DRIVES

SINAMICS Converters for Single-Axis Drives

SINAMICS G120XA, USS and PN versions, infrastructure converters for standard pumps/fans

siemens.com/sinamics-g120xa

Catalog
D 31.7

Edition
July
2024

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Related catalogs

Motion Control Drives D 31.1
SINAMICS Converters for Single-Axis Drives
Built-In Units

PDF (E86060-K5531-A111-A4-7600)

Motion Control System PM 21
SIMOTION
Equipment for Production Machines

E86060-K4921-A101-A4-7600

Motion Control Drives D 31.2
SINAMICS Converters for Single-Axis Drives
Distributed Converters

PDF (E86060-K5531-A121-A3-7600)

Industrial Controls IC 10
SIRIUS

PDF (E86060-K1010-A101-B5-7600)

Motion Control Drives D 32
SINAMICS S210 Servo Drive System

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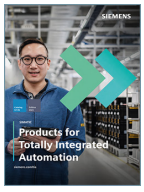
SINAMICS S120 D 21.3
Chassis Format Converter Units
Chassis-2 Format Converter Units
Cabinet Modules, Cabinet Modules-2
SINAMICS S150
Converter Cabinet Units
PDF (E86060-K5521-A131-A9-7600)

SIMATIC ST 70
Products for
Totally Integrated Automation

PDF (E86060-K4670-A101-C0-7600)



Motion Control Drives D 21.4
SINAMICS S120, SINAMICS S220 and
SIMOTICS

E86060-K5521-A141-A2-7600

SIMATIC HMI / PC-based Automation ST 80/ST PC
Human Machine Interface Systems
PC-based Automation

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Motion Control Drives D 36.1
SINAMICS G220 built-in and wall-mounted units

PDF (E86060-K5536-A111-A2-7600)

Industrial Communication IK PI
SIMATIC NET

E86060-K6710-A101-B8-7600

Motion Control Drives D 37.1
SINAMICS S200 Servo drive system

PDF (E86060-K5537-A111-A2-7600)

SITRAIN
Digital Industry Academy

www.siemens.com/sitrain

SIMOTICS S-1FG1
Servo geared motors D 41
Helical, Parallel shaft, Bevel and
Helical worm geared motors

PDF (E86060-K5541-A101-A6-7600)

SiePortal
Information and Ordering Platform
on the Internet:

sieportal.siemens.com

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SIEMENS

Combining the real and digital worlds ...
Transformation

Catalog
D 31.7

Edition
July 2024

MOTION CONTROL DRIVES

SINAMICS Converters for Single-Axis Drives

SINAMICS G120XA, USS and PN versions, infrastructure converters for standard pumps/fans

siemens.com/d31-7

Dear Customer,

We are happy to present you with the new PDF version of the Catalog D 31.7 · July 2024.

The catalog provides a comprehensive overview of the SINAMICS G120XA, USS and PN versions, infrastructure converter system for standard pump and fan applications. With an available power range from 0.75 kW to 560 kW, the series masters every challenge here. In addition to updates and technical adjustments, the new edition of the catalog has essentially been expanded to include the PROFINET version of SINAMICS G120XA.

The products listed in this catalog are also included in SiePortal.
Please contact your local Siemens office for additional information.

Up-to-date information about SINAMICS G120XA is available online at www.siemens.com.cn/sinamics-g120xa

You can access on the internet at: https://sieportal.siemens.com

Your personal contact will be glad to receive your suggestions and recommendations for improvement. You can find your representative in our personal contacts database at www.siemens.com/automation-contact

We hope that you will often enjoy using Catalog D 31.7 · July 2024 as a selection and ordering reference document and wish you every success with our products and solutions.

With kind regards

Frank Golüke
Vice President
General Motion Control
Siemens AG, Digital Industries, Motion Control

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SINAMICS Converters for Single-Axis Drives

SINAMICS G120XA, USS and PN versions, infrastructure converters for standard pumps/fans

Motion Control Drives

Catalog D 31.7 · July 2024

Supersedes:
Catalog D 31.6 · May 2022
Catalog D 31.7 · May 2022

Refer to SiePortal for current updates of this catalog:
https://sieportal.siemens.com

Please contact your local Siemens branch.

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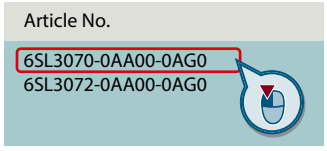
Click on an Article No. in the catalog PDF to call it up in SiePortal and to obtain all the information.



Or directly on the internet, e.g.
www.siemens.com/product_catalog_DIMC?6SL3070-0AA00-0AG0

The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with EN ISO 9001. The certificate is recognized by all IQNet countries.

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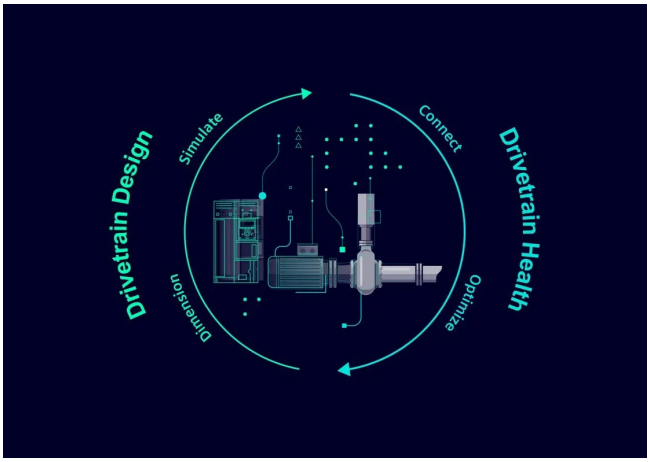
Motion beyond expectations

Drives move the industries. But how can they make them more efficient, more reliable and more sustainable – and exceed all expectations while they are doing it? Our answer: Siemens Xcelerator for Digital Drivetrain.

Digital solutions for Drivetrain Design and Drivetrain Health

Combine the real and the digital world to reach the next level of efficiency and sustainability in your drivetrain value chain: with suitable digital solutions for drivetrain design and drivetrain health.
Drivetrain Design:
Simplify and shorten the engineering steps to get faster and more efficiently from concept to the commissioned drive-train.
Drivetrain Health:
Reduce total cost of ownership for your equipment and machine park – energy, maintenance, downtime.



siemens.com/digital-drivetrain

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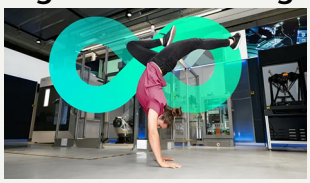
Digitalization along the drivetrain value chain



Dimension

Accurate in motion: Dimension your motors, gearboxes, and complete drivetrains digitally with greater precision – for greater reliability and energy efficiency.

Simulate

Faster in motion: Add the digital twin of the drivetrain to your machine simulation to speed up your design and engineering phases and to accelerate your time-to-market!

Connect

Data in motion: Acquire high-quality raw data and connect your entire drive-trains or machines to cloud or on-premise platforms – for a consistent and secure data flow.

Optimize

Better in motion: Analyze and visualize drivetrain and machine data in digital solutions and apps to identify optimization potentials and concrete actionable measures how to tap it.

Use cases for digital drivetrain technology

Condition monitoring for drivetrains

Healthy in motion: Gain valuable insights into your drivetrain to optimize maintenance, system availability, cost efficiency, and sustainability: Discover intelligent digital condition monitoring for your drivetrains!

Are your drivetrains fit enough for tough times?

The industries are expected to produce ever more efficiently, ever more sustainably and ever more cost-effectively. And if you can't do that, it's easier to be left behind by the competition. Use digitalization and the data from your motors and converters to optimize your competitiveness – and to keep your production in motion.

What if you consume too much electricity?

With digital solutions and digital drive technology, you can significantly reduce your share of this!

What if you waste too much energy?

Digitalization enables you to detect energy waste and impending system down-times at an early stage so that you can take counter-measures in due time!

What if your motors are incorrectly designed?

Digital tools make it quicker and easier to correctly design your drive components!

What if your drives fail unexpectedly?

With digital solutions, you can identify risks in your drivetrain at an early stage and react before a failure occurs.

"Our digital solutions transform your drivetrain value chain to the next level of efficiency and sustainability."

siemens.com/digital-drivetrain

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SINAMICS frequency converters

SINAMICS frequency converters – the ultimate solution for all drive applications. From low voltage to medium voltage to direct current (DC), our frequency converters meet your needs. With increased efficiency and versatility, take your applications to the next generation for a digital and sustainable future.

Driving next generation applications

When it comes to driving industry advancements, look no further than our SINAMICS frequency converters. They fuel the creation of innovative, next-generation applications that meet the unique needs of every industry.

From pumping and ventilating to moving, positioning, processing, and machining, our converters have you covered. Get ready to take your applications to new heights.

siemens.com/sinamics

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Low voltage converters

Low voltage frequency converters are suitable for a huge range of applications. For example, if materials must be moved, processed, positioned, pumped or compressed. Variable-speed operation saves energy and also increases process quality and process availability.

Servo converters

These servo converters meet the highest dynamic requirements for single and multi-axis applications. The perfect solution for machine tools, packaging machines, continuous material handling, cranes, rolling mills, test stands, material handling, robotics and many other applications requiring high-precision, dynamic motion control.

DC converters

The dynamic performance, ruggedness, and cost-effectiveness of DC technology continue to make it the most cost-effective and proven drive solution for many applications today – with numerous advantages in terms of reliability, ease of use, and operational performance.

Accelerating the digital and sustainable transformation of industry

How can you make production more efficient? Accelerate your digital transformation? And become more sustainable?

The answer is our SINAMICS frequency converters. They are energy efficient, offer the versatility you need for any application, and drive your digital transformation by providing the data to continuously improve production efficiency and sustainability. Our converters offer you integrated safety and security features, efficient engineering and software tools as well as comprehensive lifecycle services. In other words: Everything you need to address the next generation of applications – today and tomorrow.

EFFICIENT

Implement energy-efficient applications easily, quickly, and safely with efficient motion control.

- Sustainable drive systems
- Efficient Motion Control solutions
- Drive System Services

VERSATILE

Drives equipped with tailored safety features to ensure optimal machine safety in a wide range of industrial applications.

- Safety and Security Integrated
- Drive applications
- Drives for any industry

FUTURE-PROOF

Efficient engineering, powerful software tools, and cloud and edge connectivity for greater transparency.

- Digitalization in drive technology
- Efficient drive engineering
- Drive Software for all applications

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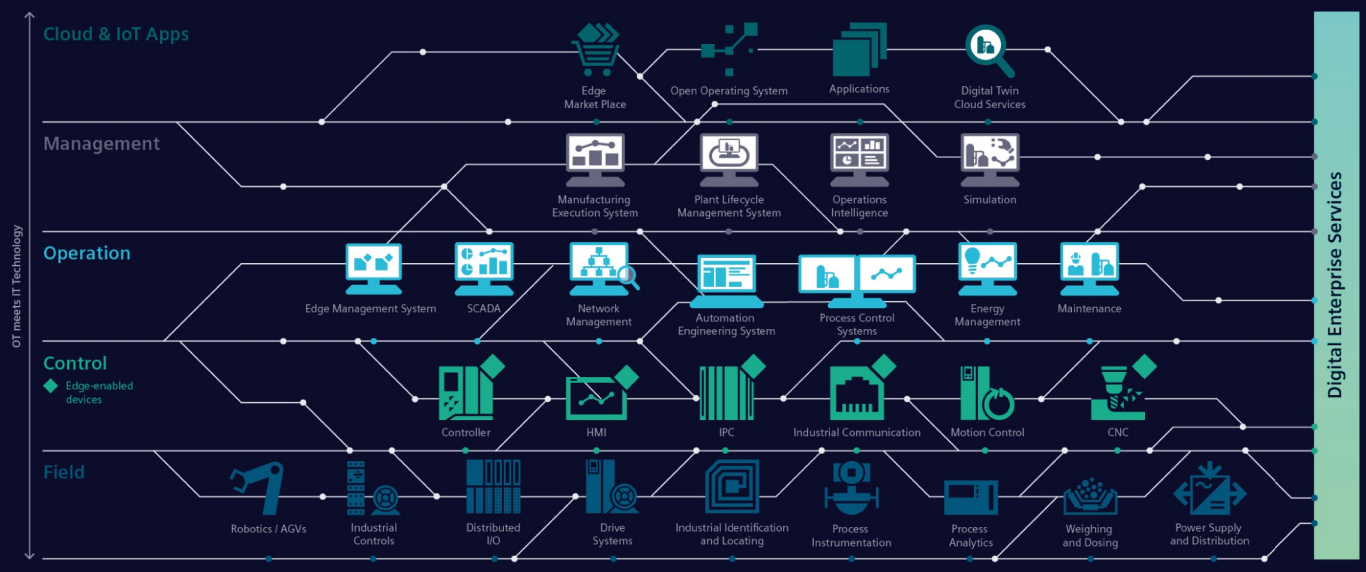
Totally Integrated Automation

Totally Integrated Automation (TIA) offers smart automation development, flexible machine concepts, transparent operation, and sustainable solutions that enable access to data to calculate and optimize the product carbon footprint. We are constantly improving and expanding TIA to be future-proof and adaptive to existing and upcoming challenges.

A comprehensive portfolio for the challenges of today and tomorrow

The TIA offering is integrated seamlessly and it's so comprehensive that it provides the right automation solutions for every industry. We will continue to improve and expand our proven automation portfolio and are constantly including innovative technologies and solutions that pave the way towards the factory of the future.



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Real added value for the automation of your production

From the development of innovative machine concepts to engineering and optimized production:
TIA offers real added value along the entire value chain.

Smart Automation Development

Innovative machine concepts made easy: When you use standardized library concepts and preconfigured expertise, you can count on efficient engineering. Thanks to the integration of safety features, diagnostic functions, and cybersecurity, you also save valuable time.

Flexible Machine Concepts

No matter what new requirements emerge in the market, TIA supports modular machine concepts and the simple integration of new machines into existing lines – thanks to standardized hardware interfaces and engineering libraries. As a machine builder, this enables you to meet any challenge quickly and reliably.

Transparent Operation

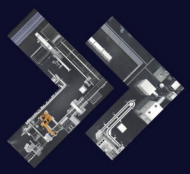
Integrated interfaces let you achieve a new level of transparency for the essential performance indicators in your processes and plants. The connection between IT and OT along with efficient data management lay the foundation for new service models such as predictive maintenance.

Future-proof Automation

Our TIA portfolio is constantly being refined with a view to integrating automation technologies more and more efficiently. The components can then interact with modern IT capabilities, which are becoming increasingly important for specific applications in automation. TIA provides a solid foundation, whether for working with our Industrial Operations X portfolio or for everything the future has in store.

Sustainable Solutions

Sustainability starts with the acquisition of data. With the TIA portfolio, you can measure energy and resource data and make it transparent, providing a solid foundation for calculating the Product Carbon Footprint. This is crucial for drawing the right conclusions and responding to sudden changes in order to lastingly reduce CO_2 emissions and save more resources in production.



www.siemens.com/tia

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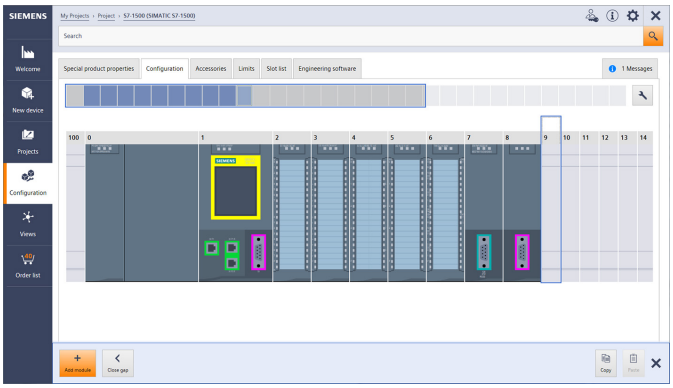
TIA Selection Tool – quick, easy, smart configuration

For you to get the most out of our portfolio quickly and easily.

Do you always need the optimum configuration for planning your project?
For your application we offer the TIA Selection Tool to support all project planners, beginners and experts alike.
No detailed portfolio knowledge is necessary.
TIA Selection Tool is available for download as a free desktop version or a cloud variant.



Your Advantages

Quick

- Configure a complete project with just a few entries – without a manual, without special knowledge
- Import and export of hardware configuration to TIA Portal or other systems
- Ideal visualization of the projects to be configured

Easy

- Tool download either as desktop version or web-based cloud version
- Technically always up-to-date about product portfolio and innovative approaches
- Highly flexible, secure, cross-team work in the cloud
- Direct ordering in SiePortal

Smart

- Smart selection wizard for error-free configuration and ordering
- Configuration options can be tested and simulated in advance
- Library for archiving sample configurations

The TIA Selection Tool is a completely paperless solution.
Download it now:
www.siemens.com/tst

For more information, scan the QR code

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Sustainability @Siemens

Transforming the everyday to create a better tomorrow.

For more information, see www.siemens.com/sustainabililty-figures

As a company, Siemens considers environmental, social and governance (ESG) criteria from all angles with its DEGREE framework (decarbonization, ethics, governance, resource efficiency, equity and employability). We are not only committed to reducing the carbon footprint in our own operations to net zero by 2030, but also helping our customers achieve their decarbonization and sustainability goals.

Mission & strategy

As a focused technology company, Siemens is committed to addressing the world's most profound challenges by leveraging the synergies between digitalization and sustainability.

Technology with aim and purpose

We develop technologies that connect the real and digital worlds and enable our customers to positively transform the industries that form the backbone of our economy: industry, infrastructure, transportation and healthcare.

Our contribution

Siemens makes an impact every day by providing innovative solutions in response to challenges relating to environmental protection, decarbonization, health and safety. Innovative solutions that have a clear goal: to make the world more sustainable, more integrative and a better place to live.

Sustainability facts

For almost 175 years, Siemens has been driven by the desire to improve the lives of people around the world with our technologies.

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System overview

Further information about SINAMICS and SIMOTICS can be found on the internet at www.siemens.com/sinamics

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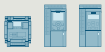
The SINAMICS converter family

Overview

SINAMICS frequency converters

SINAMICS frequency converters are the ultimate solution for all drive applications. From low voltage to medium voltage to direct current (DC), our frequency converters meet your needs.

With increased efficiency and versatility, take your drive applications to the next generation for a digital and sustainable future. www.siemens.com/sinamics

Low voltage											Direct voltage
Standard performance frequency converters		Distributed frequency converters	Industry-specific frequency converters		Servo converters			High performance frequency converters			DC converters
											
SINAMICS V20 G120C G120	SINAMICS G130 G150	SINAMICS G115D G120D SIMATIC ET 200pro FC-2	SINAMICS G120X G120XA	SINAMICS G180	SINAMICS V90 S200	SINAMICS S110	SINAMICS S210 S210 (New)	SINAMICS G220	SINAMICS S120 S120M	SINAMICS S150	SINAMICS DCM DCP [1]
0.12 kW to 250 kW	75 kW to 2700 kW	0.37 kW to 7.5 kW	0.75 kW to 630 kW	2.2 kW to 6600 kW	0.05 kW to 7 kW	0.55 kW to 132 kW	0.05 kW to 7 kW	0.55 kW to 55 kW	0.55 kW to 5700 kW	75 kW to 1200 kW	6 kW to 30 MW
Pumps, fans, compressors, conveyor belts, mixers, mills, spinning machines, textile machines, refrigerated display counters, fitness equipment, ventilation systems, single-axis positioning applications in machine and plant engineering	Pumps, fans, compressors, conveyor belts, mixers, mills, extruders	Conveyor technology, single-axis positioning applications (G120D)	Pumps, fans, compressors, building management systems, process industry, HVAC, water/waste water industries	Pumps, fans, compressors, conveyor belts, extruders, mixers, mills, kneaders, centrifuges, separators	Handling machines, packaging machines, automatic assembly machines, metal forming machines, printing machines, winding and unwinding units	Single-axis positioning applications in machine and plant engineering	Packaging machines, handling equipment, feed and withdrawal devices, stacking units, automatic assembly machines, laboratory automation, wood, glass and ceramics industry, digital printing machines	Pumps, fans, compressors, conveyor belts, mixers, mills, spinning machines, textile machines, refrigerated display counters, fitness equipment, ventilation systems, single-axis positioning applications in machine and plant engineering	Production machines (packaging, textile and printing machines, paper machines, plastic processing machines), machine tools, plants, process lines and rolling mills, marine drives, test bays	Test bays, cross cutters, centrifuges	Rolling mill drives, wire-drawing machines, extruders and kneaders, cableways and lifts, test bay drives
Catalog D 31.1	Catalog D 11	Catalog D 31.2	Catalog D 31.5, D 31.6, D 31.7	Catalog D 18.1	Catalog D 33 D 37.1	Catalog D 31.1	Catalog D 32	Catalog D 36.1	Catalogs D 21.3, D 21.4 NC 62	Catalog D 21.3	Catalog D 23.1, Industry Mall
Engineering tools (e.g. Siemens Product Configurator, TIA Selection Tool, SINAMICS DriveSim Basic/Advanced, STARTER and SINAMICS Startdrive)											

[1] DC/DC controllers, see SiePortal.

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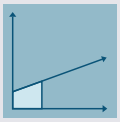
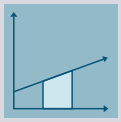
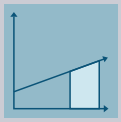
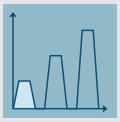
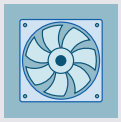
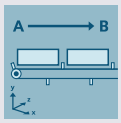
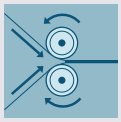
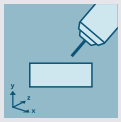
Overview

SINAMICS selection guide – typical applications

Use	Requirements for torque accuracy/speed accuracy/position accuracy/coordination of axes/functionality					
	Continuous motion			Non-continuous motion		
	Basic	Medium	High	Basic	Medium	High
						
Pumping, ventilating, compressing 	Centrifugal pumps Radial / axial fans Compressors	Centrifugal pumps Radial / axial fans Compressors	Eccentric screw pumps	Hydraulic pumps Metering pumps	Hydraulic pumps Metering pumps	Descaling pumps Hydraulic pumps
	V20 G120C **G120X, G120XA**	**G120X, G120XA** G130/G150 G180 [1] DCM	G220 S120	G120/G220	S110	S120
Moving 	Conveyor belts Roller conveyors Chain conveyors	Conveyor belts Roller conveyors Chain conveyors Lifting/ lowering devices Elevators Escalators/ moving walkways Indoor cranes Marine drives Cable railways	Elevators Container cranes Mining hoists Excavators for open-cast mining Test bays	Acceleration conveyors Storage and retrieval machines	Acceleration conveyors Storage and retrieval machines Cross cutters Reel changers	Storage and retrieval machines Robotics Pick & place Rotary indexing tables Cross cutters Roll feeds Engagers/ disengagers
	V20 G115D G120C ET 200pro FC-2 [2]	G120/G220 G120D G130/G150 G180 [1]	G220 S120 S150 DCM	V90 S200 G120/G220 G120D	S110 S210 DCM	S120 S210 DCM
Processing 	Mills Mixers Kneaders Crushers Agitators Centrifuges	Mills Mixers Kneaders Crushers Agitators Centrifuges Extruders Rotary furnaces	Extruders Winders/unwinders Lead/follower drives Calenders Main press drives Printing machines	Tubular bagging machines Single-axis motion control such as • Position profiles • Path profiles	Tubular bagging machines Single-axis motion control such as • Position profiles • Path profiles	Servo presses Rolling mill drives Multi-axis motion control such as • Multi-axis positioning • Cams • Interpolations
	V20 G120C	G120/G220 G130/G150 G180 [1]	G220 S120 S150 DCM	V90 S200 G120/G220	S110 S210	S120 S210 DCM
Machining 	Main drives for • Turning • Milling • Drilling	Main drives for • Drilling • Sawing	Main drives for • Turning • Milling • Drilling • Gear cutting • Grinding	Axis drives for • Turning • Milling • Drilling	Axis drives for • Drilling • Sawing	Axis drives for • Turning • Milling • Drilling • Lasering • Gear cutting • Grinding • Nibbling and punching
	S110	S110 S120	S120	S110	S110 S120	S120

Using the SINAMICS selection guide

The varying range of demands on modern variable frequency drives requires a large number of different types. Selecting the optimum drive has become a significantly more complex process. The application matrix shown simplifies this selection process considerably, by suggesting the ideal SINAMICS drive for examples of typical applications and requirements.

- The application type is selected from the vertical column
  - Pumping, ventilating, compressing
  - Moving
  - Processing
  - Machining
- The quality of the motion type is selected from the horizontal row
  - Basic
  - Medium
  - High

More information

Further information about SINAMICS is available on the internet at www.siemens.com/sinamics

Practical application examples and descriptions are available on the internet at www.siemens.com/sinamics-applications

[1] Industry-specific converters.

[2] Information on the SIMATIC ET 200pro FC-2 frequency converter is available in Catalog D 31.2 and at www.siemens.com/et200pro-fc

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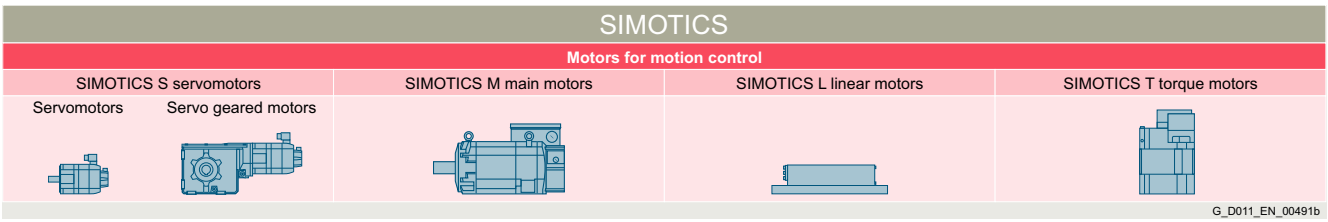
Overview



SIMOTICS stands for

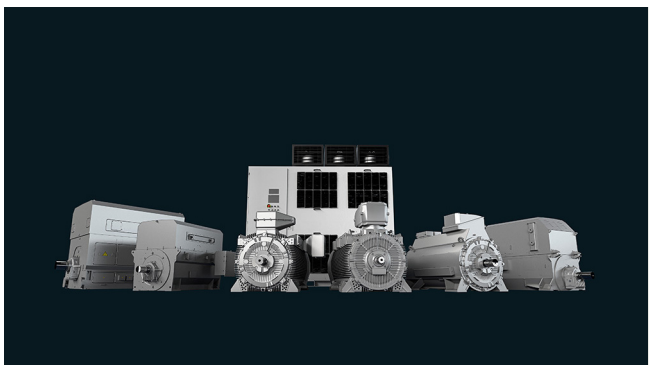
- 150 years of experience in building electric motors
- The most comprehensive range of motors for motion control applications
- Optimum solutions in all industries, regions and power/performance classes
- Innovative motor technologies of the highest quality and reliability
- Highest dynamic performance, precision and efficiency together with the optimum degree of compactness
- Our motors can be integrated into the drive train as part of the overall system
- A global network of skill sets and worldwide service around the clock

A clearly structured portfolio

The entire SIMOTICS product portfolio is transparently organized according to application-specific criteria in order to help users select the optimum motor for their application.

Whatever it is that you want to move – we can supply the right motor for the task.
www.siemens.com/simotics

Motors from Innomotics



You can also find suitable motors from our product partner Innomotics
www.innomotics.com

An outstanding performance for any job

A key characteristic of all SIMOTICS motors is their quality. They are robust, reliable, dynamic and precise to assure the requisite performance level for any process and deliver exactly the capabilities demanded by the application in hand. Thanks to their compact design, they can be integrated as space-saving units into installations. Furthermore, their impressive energy efficiency makes them effective as a means of reducing operating costs and protecting the environment.

A dense network of skill sets and servicing expertise around the world

SIMOTICS offers not only a wealth of sound experience gleaned from a development history which stretches back over around 150 years, but also the know-how of hundreds of engineers. This knowledge and our worldwide presence form the basis for a unique proximity to industries which feeds through in tangible terms to the specific motor configuration which is tailored to suit your application.

Our specialists are available to answer all your queries regarding any aspect of motor technology. At any time – wherever you are in the world. When you choose SIMOTICS, therefore, you reap the benefits of a global service network which is continuously accessible, thereby helping to optimize response times and minimize downtimes.

Perfection of the complete drive train

SIMOTICS is perfectly coordinated with other Siemens product families. In combination with the SINAMICS integrated converter family and the SIRIUS complete portfolio of industrial controls, SIMOTICS fits seamlessly as part of the complete drive train into automation solutions which are based on the SIMATIC, SIMOTION and SINUMERIK control systems.

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Overview

Step by step to more efficiency

One of the core objectives of the European Union is a sustainable power industry. In industrial plants today, around 70 % of the power demand is from electrically driven systems. This high percentage contains huge potential for saving energy in electrical drives. For that reason, the European Union introduced minimum requirements for the energy efficiency of electric motors in the form of a statutory motor regulation as early as 2011.

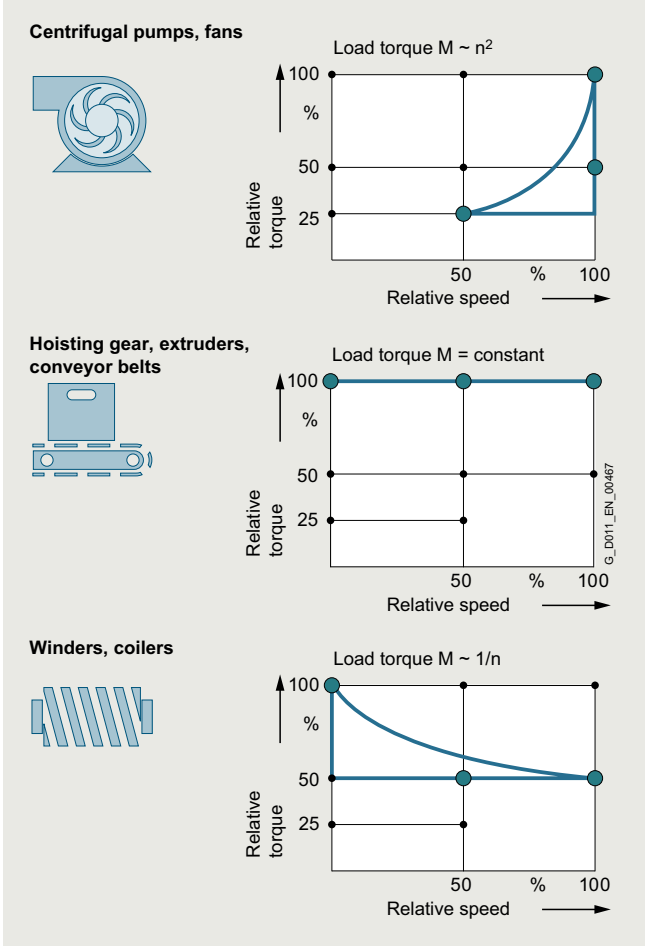
These activities are extended by the 2019/1781 EU regulation dealing with stricter requirements for DOL motors and defining efficiency limits for frequency converters. The regulation provides a legal basis for technical content regarding the efficiency of specific products and services. Standardization, however, has played a leading role in determining the field and the available market technology.

Energy efficiency improvement is supported through a systematic selection of the most efficient converter and drive system technology via the IEC 61800-9 series of standards. Part 1 specifies the methodology to determine the energy efficiency index of an application based on the extended product approach (EPA) and semi analytical models (SAMs), while Part 2 provides indicators for assessing the energy efficiency performance and the classification of converters and drive systems.
To take account of the different use cases, consideration of eight application-relevant operating points has been introduced as mandatory for the first time. Determination of loss values at these eight points and definition of efficiency classes are laid down by the standard in a uniform way. This enables data relevant to operation, such as application-specific load profiles, to now be taken into account more easily in the energy efficiency analysis.

The standard is especially important for variable-speed drives of the following types:

- for AC/AC converters without energy recovery functionality
- for motors with integrated converters
- for supply voltages of 100 V to 1000 V
- for power ratings of 0.12 kW to 1000 kW

To cover all applications of driven machines, the IEC 61800-9-2 standard defines operating points in full-load and partial-load operation, at which the losses of the motor and drive systems have to be determined. Based on the loss data at the operating points in partial-load operation, variable-speed drives can be explicitly considered in more detail. This makes their advantages especially clear.



Duty cycles for different driven machines

Moreover, frequency converters and motor systems are classified in efficiency classes, which permit an initial rough estimate of the potential saving. Definition of reference systems is a key aspect of this because they provide standard reference values. The positioning of these reference systems defines the efficiency class. The relative distance from the reference system can be used as an absolute measure of the efficiency at the operating point in question.

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Overview

Advantages of the detailed loss consideration of IEC 61800-9-2 over the previous consideration of efficiencies and maximum loss values

For motors, the efficiency consideration was previously only defined for operation without a converter at 50/60 Hz. It provides a good way of comparing the energy efficiency of motors from different manufacturers for this use case.

The more detailed loss analysis of IEC 61800-9-2, on the other hand, is aimed at speed-controlled operation and therefore now also includes motors especially designed for converter operation in the energy analysis. These were previously not covered by the applicable standards.
Moreover, a loss analysis over the entire setting and load range of the motor is possible. This is done in accordance with the standard IEC 61800-9-2 with typical values.

For holistic consideration, it is essential to include all the relevant components of a drive system. The IEC 61800-9-2 standard defines this in detail. The standardized expression of power loss data as a percentage makes comparison considerably easier and more transparent.

The method also makes it possible to consider a motor that produces a holding torque at speed zero, for example. In this case, the efficiency is zero, but a power loss from current producing magnetization and holding torque does occur. In summary, the key advantage of standard IEC 61800-9-2 is the ability to perform the energy analysis of an electrical drive system based on standardized load profiles in all operating ranges due to uniform general conditions. This provides the user with complete transparency irrespective of the manufacturer.

Establishing efficiency classes of frequency converters (Complete Drive Modules CDM)

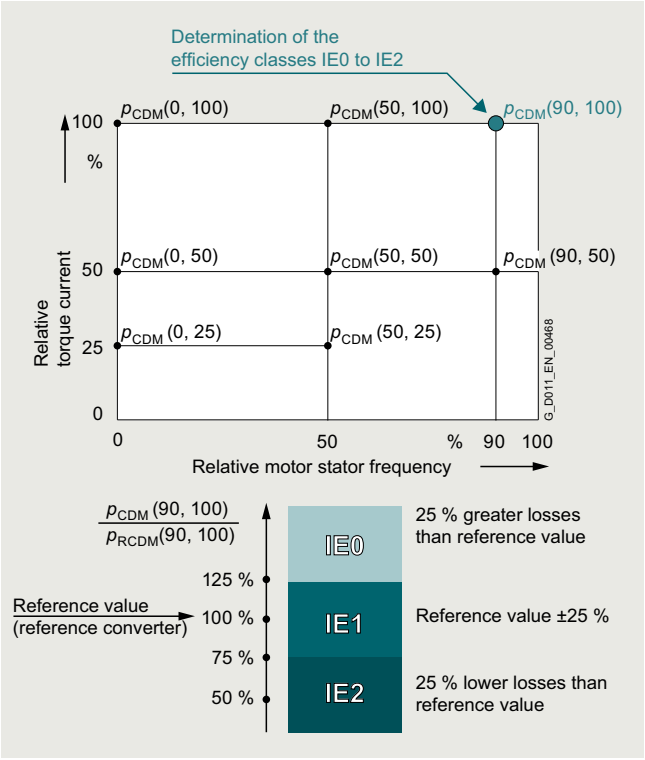
To avoid overmodulation and to ensure comparability between makes, which cannot be achieved otherwise, the efficiency classes of CDMs refer to the 90/100 operating point (90 % motor stator frequency, 100 % torque current).

Standard IEC 61800-9-2 defines the relative losses of a CDM in efficiency classes IE0 to IE2. With reference to the value of a CDM of efficiency class IE1 (reference converter), a CDM of efficiency class IE2 has 25 % lower losses and a CDM of efficiency class IE0 has 25 % higher losses.

The publication of the 2019/1781 EU regulation has made mandatory the fulfillment of the ecodesign requirements for the declaration of product conformity.

AC/AC converters belonging to the aforementioned categories (specific voltage and power level without regenerative capability) have to fulfill efficiency class IE2 in order to be approved for installation/utilization within EU.

Operating points for CDMs



Complete Drive Module (CDM) – determining the efficiency class

Establishing the efficiency classes of drive systems (Power Drive Systems PDS)

What is possible for the individual systems, of course, also applies to the entire electrical PDS (frequency converter plus motor). Detailed comparisons are now possible at this level, too. The reference values for the reference system provide clear indications of the energy performance of the PDS.

Because targeted matching of the motor and CDM provides additional potential for optimization in electrical drive systems, it is especially important for the user to consider the entire drive system.

For the efficiency class of a PDS, too, a specific load point is defined. In this case, the reference point used is the 100/100 operating point (100 % motor stator frequency, 100 % torque).

Standard IEC 61800-9-2 defines the relative losses of a PDS in efficiency classes IES0 to IES2. With reference to the value of a PDS of efficiency class IES1 (reference drive), a PDS of efficiency class IES2 has 20 % lower losses and a PDS of efficiency class IES0 has 20 % higher losses.

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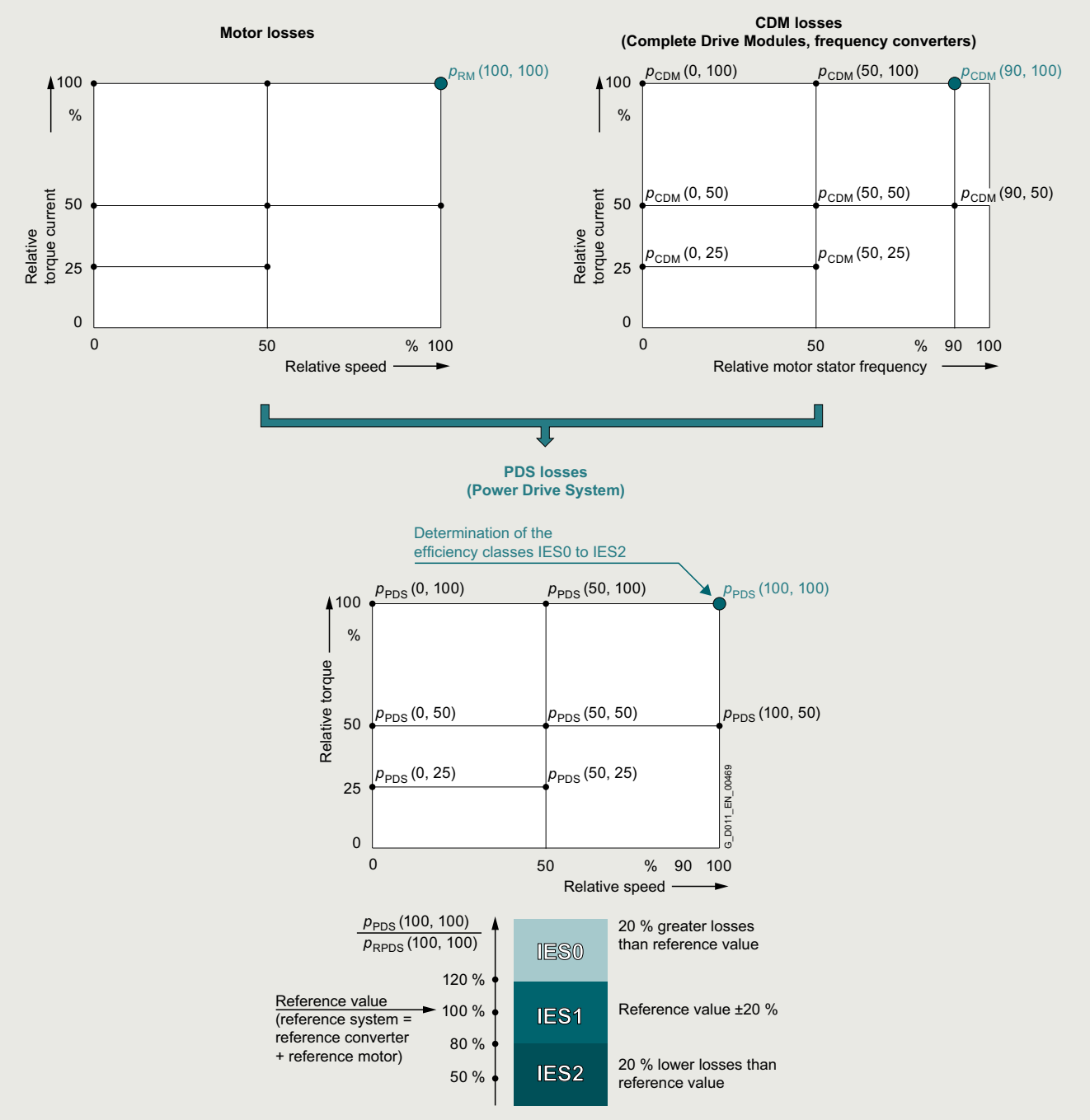
Overview

Operating points for PDS



Power Drive System (PDS) – determining the efficiency class

More information

Power loss data of SINAMICS converters for single-axis drives are available

- for SINAMICS V20, SINAMICS G115D/G120/G120C/G120D/G120P/G120X/G130/G150/G180 and SINAMICS S110/S120/S150 on the internet at https://support.industry.siemens.com/cs/document/94059311
- for SINAMICS G220 via ID-Link or Siemens Product Configurator in SiePortal at www.siemens.com/sinamics-g220/configuration

More information on current laws and standards, new standards, and mandatory guidelines is available on the internet at www.siemens.com/legislation-and-standards

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Overview

SINAMICS G120XA, PN version, frame sizes FSA to FSJ, with IOP-2 Intelligent Operator Panel

Easy handling, utmost reliability, superior efficiency and advanced digitalization – Siemens offers an answer to these trends with the SINAMICS G120XA converter series. SINAMICS G120XA is an innovative and user-friendly converter series that has been specifically developed for applications performed in infrastructure environments such as water/wastewater, but also for tasks in building automation. In this context, the converter supports, for example, pump, fan and compressor applications through numerous integrated functionalities and combines these in one device for the target sectors.

The SINAMICS G120XA converter series is intended for driving pumps and fans or comparable passive load with low dynamic requirements.

The SINAMICS G120XA converter is an integrated and efficient drive solution for a wide range of tasks. The system allows convenient handling through optimized user interfaces: IOP-2 Intelligent Operator Panel with graphic color display and the optional web server module SINAMICS G120 Smart Access – a Wi-Fi-based web server solution. Thus, the SINAMICS G120XA fulfils the request for an easy and fast setup of the devices during the commissioning phase. Further, experienced users can use the full flexibility of a SINAMICS converter and adjust the relevant application to their requirements.

Totally integrated operation - this approach is also supported from ordering through to delivery.
For example, all the major features of the converter are configured and displayed in the article number. The delivery includes the complete device - as configured - that means, the converter and the selected operator panel.

In addition, SINAMICS G120XA has an extremely rugged and reliable construction and an integrated DC link reactor with a maximum output of 250 kW.

Further, the SINAMICS G120XA converter series provides innovative hardware and software functions, e.g. for controlling synchronous reluctance drive systems. In this way, the SINAMICS G120XA converter series makes a substantial contribution towards saving energy and makes more careful use of our natural resources.

Portfolio range

The SINAMICS G120XA, USS and PN versions, converter series offers a seamless system approach with wide options of built-in communication interfaces including PROFINET, EtherNet/IP or USS, Modbus RTU, BACnet MS/TP.

User-friendliness

A high degree of user-friendliness is one of the main characteristics of the SINAMICS G120XA:

- Operator panel with color display and extensive diagnostics functions (IOP-2 Intelligent Operator Panel)
- Two different setup options are available: Standard and quick start with graphical user guidance
- Optimized setups for pumps and fans in the web server module SINAMICS G120 Smart Accesss
- SINAMICS SD card for storing parameter settings, cloning and local commissioning

Integrated functionalities for the start/operating/stop phases of the application

SINAMICS G120XA is always preset, depending on the selected converter performance. Further, the following functions can be easily selected and parameterized:

Start phase

During the start phase, the following functions are supported by default:

- Deragging mode for pumps for cleaning the pump system, improving efficiency and reducing wear
- Pipe filling mode for preventing pressure shocks in pipeline systems
- Two acceleration ramps for shorter start/stop times
- Flying restart of the running motor for fast hot restart
- Automatic restart function after power failure during short downtimes

Operating phase

During the operating phase, the following functions are supported by default:

- Continued run mode with autonomous reduction of output and pulse frequency
- PID controller for autonomous closed-loop control mode, operated according to analog input values
- Up to 16 variable-speed setpoints as fixed frequencies
- Speed monitoring via sensor (pulse input)
- Multi-pump control of up to four pumps
- Protection against blocking, leakage, dry running and cavitation
- Fire response mode for extended operation in case of emergency
- Skip frequencies for skipping critical frequencies and avoiding vibration
- Real time clock for switching over setpoints or controlling releases

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Overview

Stop phase

During the stop phase, the following functions are supported by default:

- ON/OFF2 for an optimized braking
- Condensation protection for the motor
- Frost protection function for the pump

A detailed description of the functions and connection diagrams are included in the device documentation.

Commissioning of complex applications

Sample applications, which include the description and device setting, are provided for SINAMICS G120XA.

The following application descriptions are available:

- Fan for exhaust air with closed-loop control of pressure and air quality
- Fan for cooling tower with closed-loop control of the cooling water temperature
- Fan for tunnel/parking garage with closed-loop control of air quality and essential service mode
- Fan for supply air with closed-loop control of pressure, temperature, air quality and flowrate
- Pumps with closed-loop control of the pressure
- Pumps with closed-loop control of the filling level
- Pumps for cooling circuits with closed-loop control of the temperature
- Compressor with closed-loop control of the pressure
- Vacuum pump with closed-loop control of the pressure

Practical application examples and descriptions are available on the internet at
www.siemens.com/sinamics-applications

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SINAMICS G120XA USS starter kit

Overview

IOP-2
(Intelligent Operator Panel)

SINAMICS G120XA
FSA with BOP-2
(Basic Operator Panel)

SINAMICS G120
Smart Access
(web server module)

SINAMICS G120XA USS starter kit

The SINAMICS G120XA USS starter kit comprises a SINAMICS G120XA converter (380 ... 440 V 3 AC, USS, Modbus RTU, BACnet MS/TP, FSA, 0.75 kW) with a BOP-2 Basic Operator Panel, an IOP-2 Intelligent Operator Panel and a SINAMICS G120 Smart Access web server module.

The delivery quantity is limited to three per customer.

Selection and ordering data

Description	Article No.
SINAMICS G120XA USS starter kit • 380 ... 440 V 3 AC converter, USS, Modbus RTU, BACnet MS/TP, FSA, 0.75 kW • BOP-2 • IOP-2 • SINAMICS G120 Smart Access	**6SL3200-0AE71-0AA0**

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Overview

BOP-2
(Basic Operator Panel)

SINAMICS G120XA Profinet
FSA with fitted IOP-2
(Intelligent Operator Panel)

SINAMICS G120
Smart Access Module
(Web server)

SINAMICS G120XA USS starter kit

The SINAMICS G120XA PROFINET starter kit comprises a SINAMICS G120XA converter (380 ... 440 V 3 AC, PROFINET, Modbus RTU, BACnet MS/TP, FSA, 0.75 kW) with a BOP-2 Basic Operator Panel, an IOP-2 Intelligent Operator Panel and a SINAMICS G120 Smart Access web server module.

The delivery quantity is limited to three per customer.

Selection and ordering data

Description	Article No.
SINAMICS G120XA USS starter kit • 380 ... 440 V 3 AC converter, PROFINET, EtherNet/IP, FSA, 0.75 kW • BOP-2 • IOP-2 • SINAMICS G120 Smart Access	**6SL3200-0AE75-0AA0**

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Notes

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SINAMICS G120XA, USS and PN versions, infrastructure converters for standard pumps/fans 0.75 kW to 560 kW

Further information about SINAMICS G120XA can be found on the internet at www.siemens.com.cn/sinamics-g120xa

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Overview

SINAMICS G120XA, PN version, frame sizes FSA to FSJ, with IOP-2 Intelligent Operator Panel

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The SINAMICS G120XA converter series is intended for driving pumps and fans or comparable passive load with low dynamic requirements.

The SINAMICS G120XA converter is an integrated and efficient drive solution for a wide range of tasks. The system allows convenient handling through optimized user interfaces: IOP-2 Intelligent Operator Panel with graphic color display and the optional web server module SINAMICS G120 Smart Access – a Wi-Fi-based web server solution. Thus, the SINAMICS G120XA fulfils the request for an easy and fast setup of the devices during the commissioning phase. Further, experienced users can use the full flexibility of a SINAMICS converter and adjust the relevant application to their requirements.

Totally integrated operation - this approach is also supported from ordering through to delivery.
For example, all the major features of the converter are configured and displayed in the article number. The delivery includes the complete device - as configured - that means, the converter and the selected operator panel.

In addition, SINAMICS G120XA has an extremely rugged and reliable construction and an integrated DC link reactor with a maximum output of 250 kW.

Further, the SINAMICS G120XA converter series provides innovative hardware and software functions, e.g. for controlling synchronous reluctance drive systems. In this way, the SINAMICS G120XA converter series makes a substantial contribution towards saving energy and makes more careful use of our natural resources.

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- SINAMICS SD card for storing parameter settings, cloning and local commissioning

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SINAMICS G120XA is always preset, depending on the selected converter performance. Further, the following functions can be easily selected and parameterized:

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During the start phase, the following functions are supported by default:

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- Automatic restart function after power failure during short downtimes

Operating phase

During the operating phase, the following functions are supported by default:

- Continued run mode with autonomous reduction of output and pulse frequency
- PID controller for autonomous closed-loop control mode, operated according to analog input values
- Up to 16 variable-speed setpoints as fixed frequencies
- Speed monitoring via sensor (pulse input)
- Multi-pump control of up to four pumps
- Protection against blocking, leakage, dry running and cavitation
- Fire response mode for extended operation in case of emergency
- Skip frequencies for skipping critical frequencies and avoiding vibration
- Real time clock for switching over setpoints or controlling releases

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SINAMICS G120XA, USS and PN versions, infrastructure converters for standard pumps/fans

Overview

Stop phase

During the stop phase, the following functions are supported by default:

- ON/OFF2 for an optimized braking
- Condensation protection for the motor
- Frost protection function for the pump

A detailed description of the functions and connection diagrams are included in the device documentation.

Commissioning of complex applications

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- Fan for supply air with closed-loop control of pressure, temperature, air quality and flowrate
- Pumps with closed-loop control of the pressure
- Pumps with closed-loop control of the filling level
- Pumps for cooling circuits with closed-loop control of the temperature
- Compressor with closed-loop control of the pressure
- Vacuum pump with closed-loop control of the pressure

Practical application examples and descriptions are available on the internet at
www.siemens.com/sinamics-applications

Benefits

Energy efficiency

SINAMICS G120XA increases the efficiency and minimizes energy consumption in the complete process chain. The converter has integrated hardware as well as software functions as standard. The main features are:

- Power units with DC link reactor for extremely high active power component thanks to efficient converter topology – for the same drive power, the converter requires a lower line current than comparable converters
- Flux reduction through automatic adaptation of the motor current to the prevailing load conditions with closed-loop control modes V/f (ECO) and vector without sensor (SLVC) and savings of up to 5 % under partial load conditions
- Hibernation mode dependent on setpoints in the process
- High efficiency up to η = 98 %

Application-specific commissioning and operation using operator panel

- Local commissioning without specialized knowledge of converters thanks to default settings and graphical user interface
- Unique: SINAMICS SD memory card for pre-parameterization and cloning of converter data sets
- Data backup for easy replacement
- Commissioning/diagnostics and controlling of converters

Flexible deployment of integrated functions

- PLC functions for local control tasks for frame sizes FSA to FSG
  Flexible use of integrated function blocks
  → No need for additional, external components
- Four integrated PID controllers
  Distributed closed-loop control for motor-independent process control without higher-level controller (PLC)
- Three freely programmable digital timer switches
  Control for freely selectable daily and weekly programs

Flexible deployment across a wide range of applications

- Isolated digital inputs with separate potential group
- Isolated analog inputs
  - Potential transfer avoided
  - EMC-compliant design without the need for additional components in line with process industry requirements
- Direct connection of recommended, optional temperature sensors PTC, KTY and Pt1000
- Direct connection of Pt1000/Ni1000 temperature sensors with optional SINAMICS G120X I/O Extension Module at SINAMICS G120XA with Control Unit for PROFINET, EtherNet/IP
- Connection and evaluation of a recommended, optional Pt100 temperature sensor by using a free analog input and output
- 2/3-wire control for static/pulsed signals for universal control via digital inputs
- 230 V AC relay
  - Direct control for auxiliary equipment, e.g. reactor or valve actuators
- X9 terminal strip for devices in frame sizes FSH and FSJ (315 kW to 560 kW)
  - Input for external 24 V DC supply
  - Input for external alarm/fault
  - Input for EMERGENCY OFF/EMERGENCY STOP
  - Output for 24 V DC
  - Control of the main contactor
  - Feedback message "DC link charged"
- Use at ambient temperatures of
  - -20 °C to +55 °C: PROFINET, EtherNet/IP for frame sizes FSA to FSG
  - -20 °C to +60 °C: USS, Modbus RTU, BACnet MS/TP for frame sizes FSA to FSG
  - 0 °C to +50 °C: frame sizes FSH and FSJ
- Removable operator panel
  - Protection against unauthorized access
  - Color-coded signaling of operating states
- Version for harsh environmental conditions
  - PCB coating for environmental class/harmful chemical substances Class 3C2 acc. to IEC 60721-3-3: 2002

Extended warranty

For SINAMICS G120XA, Siemens offers an optional extension of warranty up to 5½ years via **Service Protect**:

- Free for the first 6 months after registering the product at: https://myregistration.siemens.com
- Subject to a charge for a further 3 or 5 years

For further information, go to:
https://support.industry.siemens.com/cs/ww/en/sc/4842

Concerning standard warranty please ask your partner at Siemens. Your partner can be found in our Personal Contacts Database at:
www.siemens.com/automation-contact

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Application

The specialist for pump, fan and compressor applications

SINAMICS G120XA is ideally suited to pump applications (centrifugal pumps, oscillating and rotating pumps), fan applications (axial and radial fans) and compressor applications (cooling compressors, air and gas compressors). They are deployed in the water/wastewater industries, in industrial environments, and in building automation.

SINAMICS G120XA is ideally suited for the following applications:

- Circulating pumps for heating and cooling systems
- Pumps for pressure boosting stations
- Level control
- Fans in cooling towers
- Fans for air intake and discharge
- Fans for tunnels and multi-story car parks
- Fans for stairwells
- Compressors for cooling units

The SINAMICS G120XA converter series is intended for driving pumps and fans or comparable passive load with low dynamic requirements.
With this converter series, regenerative energy can neither be regenerated to the supply system nor dissipated via braking chopper and braking resistor.

Reliable operation in harsh environments

SINAMICS G120XA is suitable for use under harsh environmental conditions:

- Degree of protection IP20 for use in the control cabinet
- Use at ambient temperatures of
  - -20 °C to +55 °C: PROFINET, EtherNet/IP for frame sizes FSA to FSG
  - -20 °C to +60 °C: USS, Modbus RTU, BACnet MS/TP for frame sizes FSA to FSG
  - 0 °C to +50 °C: frame sizes FSH and FSJ
- Coated modules for increased resistance to humidity and dust (Class 3C2)

Design

SINAMICS G120XA is a converter system that comprises a power output module and a control module with or without an operator panel.

The converter is configured on the basis of the power requirement and the application. State-of-the-art IGBT technology with pulse-width modulation is used for reliable and flexible motor operation. Comprehensive protection functions provide a high degree of protection for the converter and motor.

The SINAMICS G120XA converters are intended for installation in a control cabinet.

- Selection of the line filter for line voltage 380 V to 440 V 3 AC
  - Without integrated line filter 0.75 kW to 132 kW
  - With integrated line filter Category C3, 0.75 kW to 560 kW
- Environmental class/harmful chemical substances acc. to IEC 60721-3-3: 2002
  - Class 3C2
- Selection of communication
  - USS, Modbus RTU, BACnet MS/TP
  - PROFINET, EtherNet/IP
- Selection of the operator panel
  The operator panels support user-friendly local commissioning, control and diagnostics and enable complete converter data sets to be pre-parameterized and cloned.
  - Without operator panel
  - BOP-2 Basic Operator Panel
    The menu prompting and the 2-line display allow for simple commissioning of the converter. Simultaneous display of the parameter and parameter value, as well as parameter filtering, means that basic commissioning of a drive can also be performed without a printed parameter list.
  - IOP-2 Intelligent Operator Panel
    Supports entry-level personnel as well as drive experts. Thanks to the color display, a user-friendly menu structure and wizards, it is much easier to commission, diagnose and locally control standard drives.

Line-side power components

The following line-side power components are available for the SINAMICS G120XA converters:

- Line filters for category C3 for frame sizes FSA to FSF
  With an additional line filter, the converter without integrated line filter complies with a higher radio interference class.
- Line harmonics filters for frame sizes FSB to FSF together with converters without integrated line filter
  The use of a line harmonics filter enables a significant reduction in unwanted harmonics. This means that a THD (I) value of typically 10 % can be achieved.
- Line reactors for devices from 315 kW and for frame sizes FSH and FSJ
  Line reactors smooth the current drawn by the converter and thus reduce harmonic components in the line current. Through the reduction of the current harmonics, the thermal load on the power components in the rectifier and in the DC link capacitors is reduced as well as the harmonic effects on the supply. The use of a line reactor increases the service life of the converter.
  SINAMICS G120XA frame sizes FSA to FSG feature an integrated DC link reactor as standard. The use of an additional line reactor is not necessary for this.

Recommended line-side overcurrent protection devices and power components

This section contains recommendations for additional line-side components, such as Siemens fuses and circuit breakers (line-side components must be dimensioned in accordance with IEC standards).

Additional information about the listed fuses and circuit breakers is available in the Catalogs LV 10, IC 10 and IC 10 AO as well as in SiePortal.

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Design

Load-side power components

Various load-side power components are available for the SINAMICS G120XA converters. These allow the use of longer shielded motor cables and increase the motor service life:

- Output reactors for frame sizes FSD to FSJ
  Output reactors reduce the rate of voltage rise (dv/dt) and the height of the current peaks, and can allow longer motor cables to be connected.
- Sine-wave filters for frame sizes FSD to FSG
  Sine-wave filters limit the rate of voltage rise (dv/dt) and the peak voltages on the motor winding. Similar to an output reactor, they enable the connection of longer motor cables.
- dv/dt filters plus VPL for frame sizes FSH and FSJ
  dv/dt filters plus VPL (Voltage Peak Limiter) limit the voltage rate-of-rise dv/dt to values of <500 V/µs and the typical voltage peaks to values according to the limit value curve according to IEC/TS 60034-17: 2006.
  Standard motors with standard insulation and without insulated bearings can be used for converter operation if a dv/dt filter plus VPL is used.

Optional accessories

- SINAMICS memory card (SD card)
- SINAMICS G120 Smart Access for simple setup via Wi-Fi
- SINAMICS G120X I/O Extension Module for direct connection of Pt1000/Ni1000 temperature sensors at SINAMICS G120XA with Control Unit for PROFINET, EtherNet/IP
- Wiring adapter for frame size FSG for optimal and space-saving wiring

Note:

Shield connection kits for frame sizes FSA to FSC are an integral component of the delivery. The shield connection kits for the Power Module are not included in the scope of delivery for the SINAMICS G120XA converters, frame sizes FSD to FSG, but they can be ordered as an option.

Spare parts

- FPI (freely programmable interface) board for frame sizes FSH and FSJ
- PSB (power supply board) board for frame sizes FSH and FSJ
- Current transformers for frame sizes FSH and FSJ
- Spare parts kit for Control Unit for frame sizes FSA to FSJ
- Shield connection kit for Control Unit for frame sizes FSD to FSG
- Shield connection kits for Power Module for frame sizes FSA to FSC
- Small parts assembly set for frame sizes FSD to FSG
- Terminal cover kits for covering the connecting terminals for frame sizes FSD to FSG
- Fan units
  - External for frame sizes FSA to FSJ
  - Internal for frame sizes FSH and FSJ
- SITOP power supply for frame sizes FSH and FSJ
- Fuse for the external fan unit for frame sizes FSH and FSJ
- Control Units for frame sizes FSA to FSJ

Function

Technology function

Functions specific to pumps, fans and compressors are already integrated, e.g.:

- Specific firmware functions such as deragging or pipe fill mode
- Automatic restart
  Application restart after a power failure or fault occurrence
- Flying restart
  Connection of the converter when the motor is running
- Flux reduction
  Automatic adaptation of the motor current to the prevailing load conditions in V/f control mode (ECO mode) as well as in sensorless vector control mode
- Cascade connection
  Load-dependent connection and disconnection of a maximum of three additional motors by the converter in order to provide a largely constant output power (implemented by means of an additional external circuit)
- Hibernation mode
  Startup or shutdown of the drive when the relevant value drops below an external setpoint or the internal PID controller setpoint
- Real-time clock
  For time-dependent process controls, e.g. to reduce the temperature of a heating control at night and with automatic daylight saving/standard time switchover
- Freely programmable logical function blocks for frame sizes FSA to FSG
  For simulating simple PLC functions

Functions especially for building technology as well as heating/air conditioning/ventilation applications

- Four integrated PID controllers
  One PID controller for controlling the drive speed as a function of pressure, temperature, flowrate, fill level, air quality and other process variables; a further three PID controllers with freely configurable outputs, e.g. for controlling valves (heating, cooling) or flaps
- Emergency mode
  Special converter operating mode that enhances the availability of the drive system in the event of a fire
- Bypass mode
  When the setpoint is reached or a fault occurs, the system changes over to line operation (implemented by means of an additional external circuit)
- Programmable time switches

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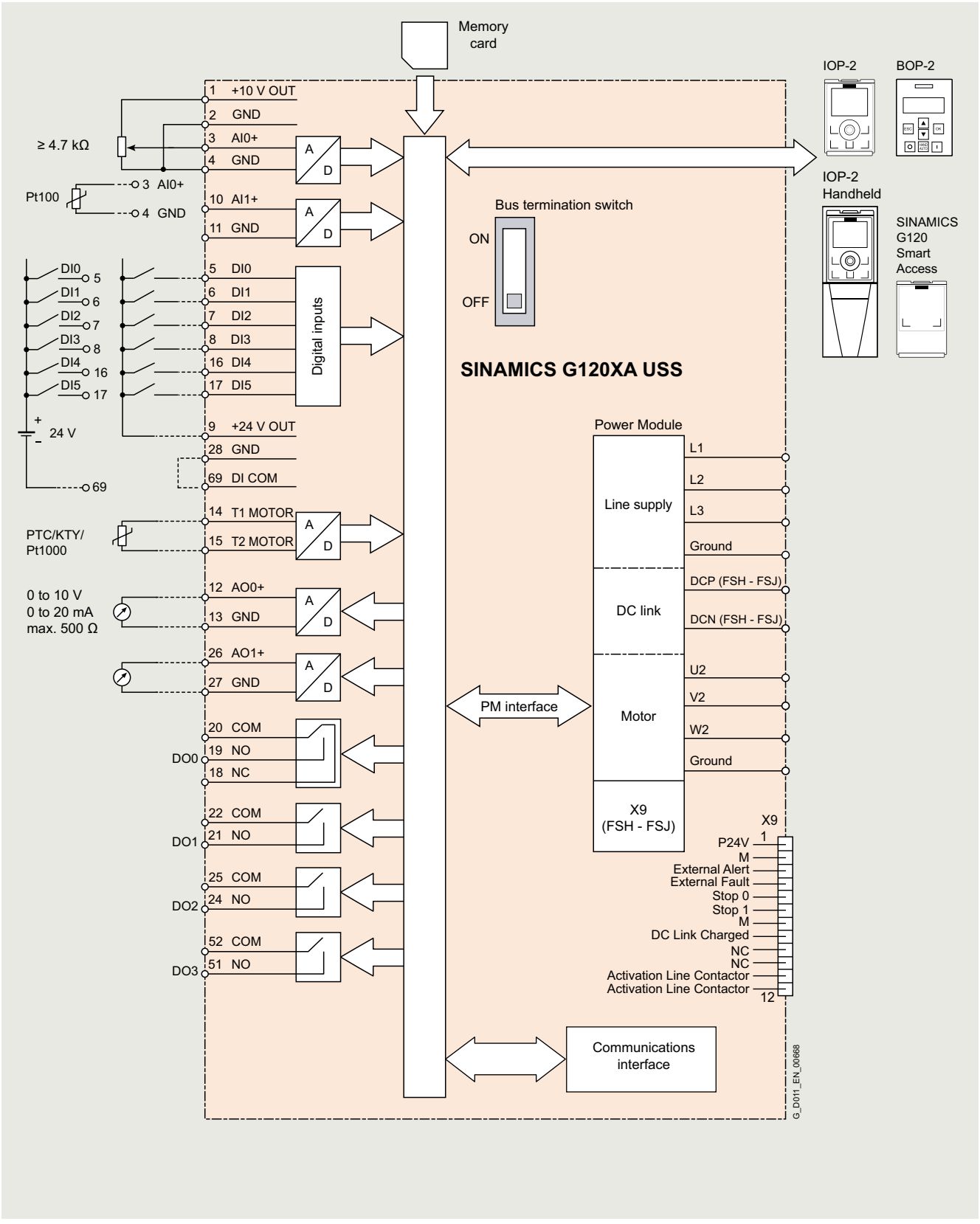
Integration



SINAMICS G120XA, USS version, connection diagram

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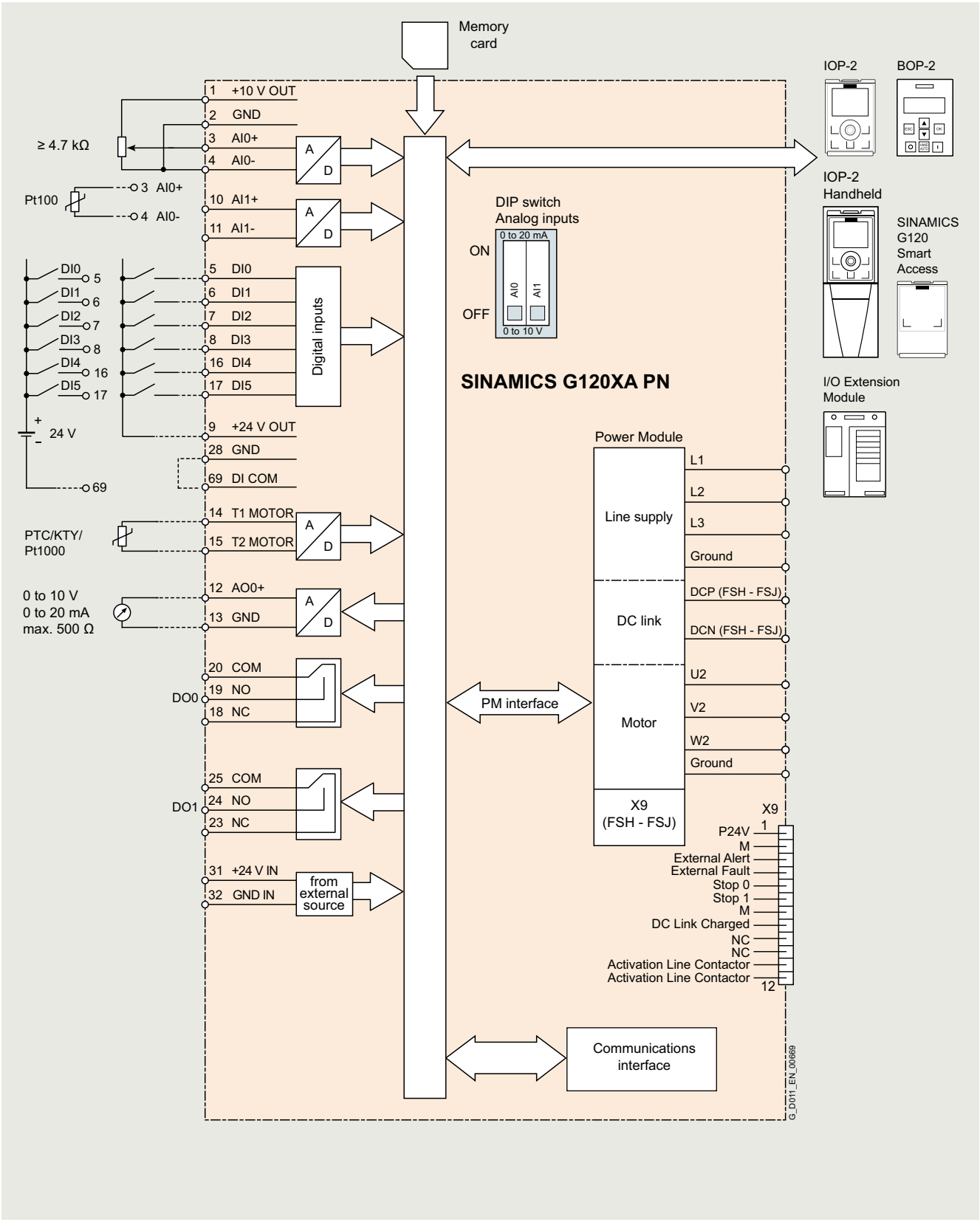
Integration



SINAMICS G120XA, PN version, connection diagram

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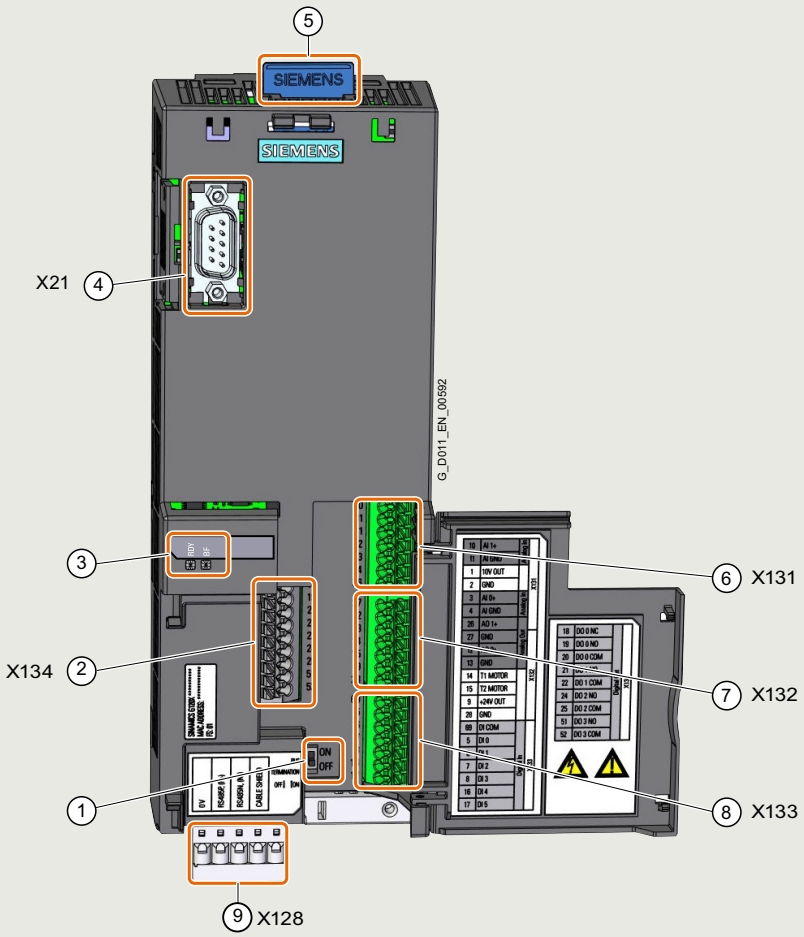
Integration



①	Bus terminating resistor
②	Terminal strip
③	Status LED
④	Connection to Operator Panel or SINAMICS G120 Smart Access
⑤	Memory card slot
⑥ ⑦ ⑧	Terminal strips
⑨	Fieldbus interfaces on the bottom

SINAMICS G120XA, USS version, interface overview

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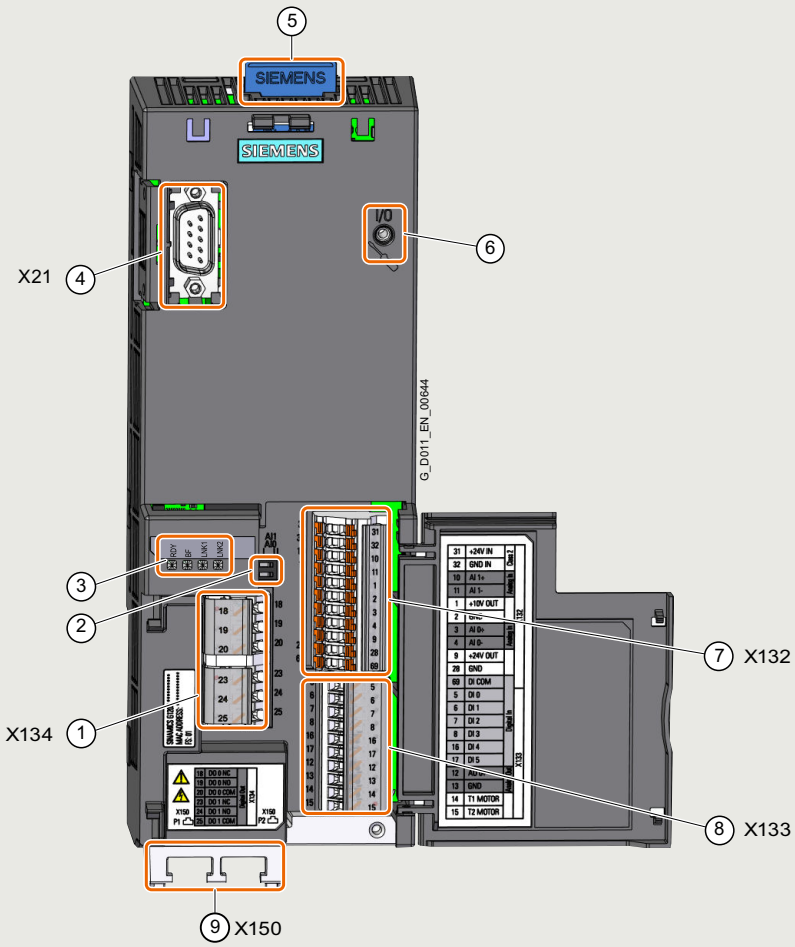
Integration



1. Terminal strip
2. Switch for AI 0 and AI 1 (I/V)
3. Status LED
4. Connection to Operator Panel, Smart Access or I/O Extension Module
5. Memory card slot
6. For mounting the I/O Extension Module
7. 8. Terminal strips
9. Fieldbus interface on the bottom

SINAMICS G120XA, PN version, interface overview

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SINAMICS G120XA, USS and PN versions, infrastructure converters for standard pumps/fans

2

Selection and ordering data

SINAMICS G120XA converters · Degree of protection IP20, IP00 for frame size FSJ ➡ Configuration with line-side components (see right page)

Rated power [1]	Rated output current I_N [2]		Rated input current [3]	Max. output current (Max. output current for 60 s in a 600 s cycle time)	Frame size	SINAMICS G120XA Degree of protection IP20, IP00 for frame size FSJ without integrated line filter	SINAMICS G120XA Degree of protection IP20, IP00 for frame size FSJ with integrated line filter
400 V	400 V	380 V	400 V	400 V			
kW	A	A	A	A		Article No.	Article No.
380 ... 440 V 3 AC · Rated pulse frequency 4 kHz ≤ 90 kW and 2 kHz ≥ 110 kW · Input frequency 47 ... 63 Hz							
0.75	2.2	2.2	2.1	2.4	FSA	**6SL32 2 0-■ YD10- 0 U ■ 0**	**6SL32 2 0-■ YD10- 0 C ■ 0**
1.1	3.1	3.1	2.8	3.4	FSA	**6SL32 2 0-■ YD12- 0 U ■ 0**	**6SL32 2 0-■ YD12- 0 C ■ 0**
1.5	4.1	4.1	3.6	4.5	FSA	**6SL32 2 0-■ YD14- 0 U ■ 0**	**6SL32 2 0-■ YD14- 0 C ■ 0**
2.2	5.6	5.6	5.3	6.2	FSA	**6SL32 2 0-■ YD16- 0 U ■ 0**	**6SL32 2 0-■ YD16- 0 C ■ 0**
3	7.3	7.3	6.6	8	FSA	**6SL32 2 0-■ YD18- 0 U ■ 0**	**6SL32 2 0-■ YD18- 0 C ■ 0**
4	8.8	9.3	8.5	9.7	FSB	**6SL32 2 0-■ YD20- 0 U ■ 0**	**6SL32 2 0-■ YD20- 0 C ■ 0**
5.5	12.5	12.5	11.5	13.8	FSB	**6SL32 2 0-■ YD22- 0 U ■ 0**	**6SL32 2 0-■ YD22- 0 C ■ 0**
7.5	16.5	16.5	15.8	18.2	FSB	**6SL32 2 0-■ YD24- 0 U ■ 0**	**6SL32 2 0-■ YD24- 0 C ■ 0**
11	25	25	25.8	27.5	FSC	**6SL32 2 0-■ YD26- 0 U ■ 0**	**6SL32 2 0-■ YD26- 0 C ■ 0**
15	31	31	28.5	34.1	FSC	**6SL32 2 0-■ YD28- 0 U ■ 0**	**6SL32 2 0-■ YD28- 0 C ■ 0**
18.5	37	37.5	41	41	FSD	**6SL32 2 0-■ YD30- 0 U ■ 0**	**6SL32 2 0-■ YD30- 0 C ■ 0**
22	43	45	46	48	FSD	**6SL32 2 0-■ YD32- 0 U ■ 0**	**6SL32 2 0-■ YD32- 0 C ■ 0**
30	58	59	56	64	FSD	**6SL32 2 0-■ YD34- 0 U ■ 0**	**6SL32 2 0-■ YD34- 0 C ■ 0**
37	68	73.5	73	75	FSD	**6SL32 2 0-■ YD36- 0 U ■ 0**	**6SL32 2 0-■ YD36- 0 C ■ 0**
45	82.5	85	84	91	FSD	**6SL32 2 0-■ YD38- 0 U ■ 0**	**6SL32 2 0-■ YD38- 0 C ■ 0**
55	103	108	106	113	FSE	**6SL32 2 0-■ YD40- 0 U ■ 0**	**6SL32 2 0-■ YD40- 0 C ■ 0**
75	136	144	143	150	FSF	**6SL32 2 0-■ YD42- 0 U ■ 0**	**6SL32 2 0-■ YD42- 0 C ■ 0**
90	164	174	164	181	FSF	**6SL32 2 0-■ YD44- 0 U ■ 0**	**6SL32 2 0-■ YD44- 0 C ■ 0**
110	201	205	200	222	FSF	**6SL32 2 0-■ YD46- 0 U ■ 0**	**6SL32 2 0-■ YD46- 0 C ■ 0**
132	237	245	234	261	FSF	**6SL32 2 0-■ YD48- 0 U ■ 0**	**6SL32 2 0-■ YD48- 0 C ■ 0**
160	289	292	278	318	FSG	–	**6SL32 2 0-■ YD50- 0 C ■ 0**
200	364	370	348	401	FSG	–	**6SL32 2 0-■ YD52- 0 C ■ 0**
250	436	468	417	480	FSG	–	**6SL32 2 0-■ YD54- 0 C ■ 0**
315	583	605	617	770	FSH	–	**6SL32 2 0-■ YD56- 0 C ■ 0**
355	644	670	684	870	FSH	–	**6SL32 2 0-■ YD58- 0 C ■ 0**
400	722	750	760	972	FSH	–	**6SL32 2 0-■ YD60- 0 C ■ 0**
450	803	840	870	1107	FSJ	–	**6SL32 2 5-■ YD62- 0 C ■ 0**
500	882	925	959	1225	FSJ	–	**6SL32 2 5-■ YD64- 0 C ■ 0**
560	992	1035	1060	1370	FSJ	–	**6SL32 2 5-■ YD66- 0 C ■ 0**

Article No. supplements

	Without integrated line filter	With integrated line filter
Environmental class/harmful chemical substances acc. to IEC 60721-3-3: 2002		
Class 3C2	**2**	**2**
Operator Panel		
Without Operator Panel	**1**	**1**
With BOP-2 Basic Operator Panel (numeric 2-line display)	**2**	**2**
With IOP-2 Intelligent Operator Panel (graphic color display)	**3**	**3**
Line filter		
Without integrated line filter (for IT systems [4])	**U**	
With integrated line filter Category C3		**C**
Communication		
USS, Modbus RTU, BACnet MS/TP	**B**	**B**
PROFINET, EtherNet/IP *NEW*	**F**	**F**

[1] Rated power based on the rated output current I_N. The rated output current I_N is based on the duty cycle for low overload (LO).

[2] The rated output current I_N is based on the duty cycle for low overload (LO). These current values are valid for 400 V and are specified on the rating plate of the converter.

[3] The input current depends on the motor load and line impedance. The input currents apply for a load at rated power (based on I_N) for a line impedance corresponding to u_K = 1 %. The current values are specified on the rating plate of the converter.

[4] Non-filtered devices are designed for operation in IT systems or in conjunction with an RCD. The customer must provide suitable RI suppression equipment to ensure that these devices comply with the limits defined for Category C3.

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Line-side components (Configuration with load-side power components see next double page)

Line filters Category C3 Mandatory for converter without integrated line filter Article No.	**Line harmonics filters** [1] (THD (I) typically 10 %) for converter without integrated line filter The prefix "**UAC:**" is part of a Siemens internal order code that does not belong to the product number of the original manufacturer Schaffner EMV AG. Article No.	**Line reactors** Article No.	**Recommended line-side overcurrent protection devices** Fuses IEC-compliant Further information at https://support.industry.siemens.com/cs/cn/en/view/109762896 Current A	Article No.
6SL3203-0BE17-7BA0	–	A DC link reactor is integrated for frame sizes FSA to FSG – therefore no line reactor is required.	16	**3NA3805**
	–		16	**3NA3805**
	–		16	**3NA3805**
	–		16	**3NA3805**
	–		16	**3NA3805**
6SL3203-0BE21-8BA0	**UAC:FS428421044**		32	**3NA3812**
	UAC:FS428421344		32	**3NA3812**
	UAC:FS428421644		32	**3NA3812**
6SL3203-0BE23-8BA0	**UAC:FS428422433**		50	**3NA3820**
	UAC:FS428423233		50	**3NA3820**
	UAC:FS428423833		63	**3NA3822**
	UAC:FS428424533		80	**3NA3824**
6SL3203-0BE27-5BA0	**UAC:FS428426034**		100	**3NA3830**
	UAC:FS428427534		100	**3NA3830**
6SL3203-0BE31-1BA0	**UAC:FS428429035**		125	**3NA3832**
	UAC:FS4284211035		160	**3NA3836**
6SL3203-0BE31-8BA0	**UAC:FS4284215040**		200	**3NA3140**
	UAC:FS4284218040		224	**3NA3142**
	UAC:FS4284221040		300	**3NA3250**
–	**UAC:FS4284226099**		315	**3NA3252**
–	–		355	**3NA3254**
–	–		400	**3NA3260**
–	–		630	**3NA3372**
–	–	**6SL3000-0CE36-3AA0**	710	**3NE1437-2**
–	–	**6SL3000-0CE37-7AA0**	800	**3NE1438-2**
–	–		850	**3NE1448-2**
–	–	**6SL3000-0CE38-7AA0**	2 × 500	**3NE1334-2** 2 fuses
–	–	**6SL3000-0CE41-0AA0**	2 × 560	**3NE1435-2** 2 fuses
–	–		2 × 630	**3NE1436-2** 2 fuses

[1] Voltage 380 V -10 % to 440 V +10 %, frequency 50 Hz ± 1 Hz, pulse frequency 2 kHz to 4 kHz. Operation in Vector Control permitted. V/f must not be used.

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SINAMICS G120XA, USS and PN versions, infrastructure converters for standard pumps/fans

Selection and ordering data

SINAMICS G120XA converters · Degree of protection IP20, IP00 for frame size FSJ ➡ Configuration with load-side components (see right page)

Rated power [1]	Rated output current I_N [2]		Rated input current [3]	Max. output current (Max. output current for 60 s in a 600 s cycle time)	Frame size	SINAMICS G120XA Degree of protection IP20, IP00 for frame size FSJ without integrated line filter	SINAMICS G120XA Degree of protection IP20, IP00 for frame size FSJ with integrated line filter
400 V	400 V	380 V	400 V	400 V			
kW	A	A	A	A		Article No.	Article No.
380 ... 440 V 3 AC · Rated pulse frequency 4 kHz ≤ 90 kW and 2 kHz ≥ 110 kW · Input frequency 47 ... 63 Hz							
0.75	2.2	2.2	2.1	2.4	FSA	**6SL32 2 0-■ YD10- 0 U ■ 0**	**6SL32 2 0-■ YD10- 0 C ■ 0**
1.1	3.1	3.1	2.8	3.4	FSA	**6SL32 2 0-■ YD12- 0 U ■ 0**	**6SL32 2 0-■ YD12- 0 C ■ 0**
1.5	4.1	4.1	3.6	4.5	FSA	**6SL32 2 0-■ YD14- 0 U ■ 0**	**6SL32 2 0-■ YD14- 0 C ■ 0**
2.2	5.6	5.6	5.3	6.2	FSA	**6SL32 2 0-■ YD16- 0 U ■ 0**	**6SL32 2 0-■ YD16- 0 C ■ 0**
3	7.3	7.3	6.6	8.0	FSA	**6SL32 2 0-■ YD18- 0 U ■ 0**	**6SL32 2 0-■ YD18- 0 C ■ 0**
4	8.8	9.3	8.5	9.7	FSB	**6SL32 2 0-■ YD20- 0 U ■ 0**	**6SL32 2 0-■ YD20- 0 C ■ 0**
5.5	12.5	12.5	11.5	13.8	FSB	**6SL32 2 0-■ YD22- 0 U ■ 0**	**6SL32 2 0-■ YD22- 0 C ■ 0**
7.5	16.5	16.5	15.8	18.2	FSB	**6SL32 2 0-■ YD24- 0 U ■ 0**	**6SL32 2 0-■ YD24- 0 C ■ 0**
11	25	25	25.8	27.5	FSC	**6SL32 2 0-■ YD26- 0 U ■ 0**	**6SL32 2 0-■ YD26- 0 C ■ 0**
15	31	31	28.5	34.1	FSC	**6SL32 2 0-■ YD28- 0 U ■ 0**	**6SL32 2 0-■ YD28- 0 C ■ 0**
18.5	37	37.5	41	41	FSD	**6SL32 2 0-■ YD30- 0 U ■ 0**	**6SL32 2 0-■ YD30- 0 C ■ 0**
22	43	45	46	48	FSD	**6SL32 2 0-■ YD32- 0 U ■ 0**	**6SL32 2 0-■ YD32- 0 C ■ 0**
30	58	59	56	64	FSD	**6SL32 2 0-■ YD34- 0 U ■ 0**	**6SL32 2 0-■ YD34- 0 C ■ 0**
37	68	73.5	73	75	FSD	**6SL32 2 0-■ YD36- 0 U ■ 0**	**6SL32 2 0-■ YD36- 0 C ■ 0**
45	82.5	85	84	91	FSD	**6SL32 2 0-■ YD38- 0 U ■ 0**	**6SL32 2 0-■ YD38- 0 C ■ 0**
55	103	108	106	113	FSE	**6SL32 2 0-■ YD40- 0 U ■ 0**	**6SL32 2 0-■ YD40- 0 C ■ 0**
75	136	144	143	150	FSF	**6SL32 2 0-■ YD42- 0 U ■ 0**	**6SL32 2 0-■ YD42- 0 C ■ 0**
90	164	174	164	181	FSF	**6SL32 2 0-■ YD44- 0 U ■ 0**	**6SL32 2 0-■ YD44- 0 C ■ 0**
110	201	205	200	222	FSF	**6SL32 2 0-■ YD46- 0 U ■ 0**	**6SL32 2 0-■ YD46- 0 C ■ 0**
132	237	245	234	261	FSF	**6SL32 2 0-■ YD48- 0 U ■ 0**	**6SL32 2 0-■ YD48- 0 C ■ 0**
160	289	292	278	318	FSG	–	**6SL32 2 0-■ YD50- 0 C ■ 0**
200	364	370	348	401	FSG	–	**6SL32 2 0-■ YD52- 0 C ■ 0**
250	436	468	417	480	FSG	–	**6SL32 2 0-■ YD54- 0 C ■ 0**
315	583	605	617	770	FSH	–	**6SL32 2 0-■ YD56- 0 C ■ 0**
355	644	670	684	870	FSH	–	**6SL32 2 0-■ YD58- 0 C ■ 0**
400	722	750	760	972	FSH	–	**6SL32 2 0-■ YD60- 0 C ■ 0**
450	803	840	870	1107	FSJ	–	**6SL32 2 5-■ YD62- 0 C ■ 0**
500	882	925	959	1225	FSJ	–	**6SL32 2 5-■ YD64- 0 C ■ 0**
560	992	1035	1060	1370	FSJ	–	**6SL32 2 5-■ YD66- 0 C ■ 0**

Article No. supplements

	Without integrated line filter	With integrated line filter
Environmental class/harmful chemical substances acc. to IEC 60721-3-3: 2002		
Class 3C2	**2**	**2**
Operator Panel		
Without Operator Panel	**1**	**1**
With BOP-2 Basic Operator Panel (numeric 2-line display)	**2**	**2**
With IOP-2 Intelligent Operator Panel (graphic color display)	**3**	**3**
Line filter		
Without integrated line filter (for IT systems [4])	**U**	
With integrated line filter Category C3		**C**
Communication		
USS, Modbus RTU, BACnet MS/TP	**B**	**B**
PROFINET, EtherNet/IP *NEW*	**F**	**F**

[1] Rated power based on the rated output current I_N. The rated output current I_N is based on the duty cycle for low overload (LO).

[2] The rated output current I_N is based on the duty cycle for low overload (LO). These current values are valid for 400 V and are specified on the rating plate of the converter.

[3] The input current depends on the motor load and line impedance. The input currents apply for a load at rated power (based on I_N) for a line impedance corresponding to u_K = 1 %. The current values are specified on the rating plate of the converter.

[4] Non-filtered devices are designed for operation in IT systems or in conjunction with an RCD. The customer must provide suitable RI suppression equipment to ensure that these devices comply with the limits defined for Category C3.

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Load-side power components (Configuration with line-side components see double page before)

Output reactors Article No.	**Sine-wave filters** When using sine-wave filters, lease note for the pulse frequency of the converter: • ≤ 90 kW: 4 kHz ... 8 kHz • ≥ 110 kW: 4 kHz Article No.	**dv/dt filters plus VPL** Article No.
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
6SL3202-0AE23-8CA0	**6SL3202-0AE24-6SA0**	–
6SE6400-3TC07-5ED0		–
	6SL3202-0AE26-2SA0	–
	6SL3202-0AE28-8SA0	–
6SE6400-3TC14-5FD0		–
	6SL3202-0AE31-5SA0	–
		–
	6SL3202-0AE31-8SA0	–
6SL3000-2BE32-1AA0	**6SL3000-2CE32-3AA0** [1]	–
6SL3000-2BE32-6AA0		–
6SL3000-2BE33-2AA0	**6SL3000-2CE32-8AA0** [1] [2]	–
6SL3000-2BE33-8AA0	**6SL3000-2CE33-3AA0** [1] [2]	–
6SL3000-2BE35-0AA0	**6SL3000-2CE34-1AA0** [1] [2]	–
6SL3000-2AE36-1AA0	–	**6SL3000-2DE38-4AA0**
6SL3000-2AE38-4AA0	–	
	–	
6SL3000-2AE41-0AA0	–	**6SL3000-2DE41-4AA0**
	–	
6SL3000-2AE41-4AA0	–	

Ordering examples

Basic selection	Example 1	Example 2
SINAMICS G120XA converters · degree of protection IP20 · 380 ... 440 V 3 AC, 15 kW · with integrated line filter	**6SL32 2 0- ■ YD28- 0 C ■ 0**	**6SL32 2 0- ■ YD28- 0 C ■ 0**
Article No. supplements		
Environmental class/harmful chemical substances acc. to IEC 60721-3-3: 2002 Class 3C2	**2**	**2**
Operator Panel With BOP-2 Basic Operator Panel (numeric 2-line display)	**2**	
With IOP-2 Intelligent Operator Panel (graphic color display)		**3**
Line filter With integrated line filter Category C3	**C**	**C**
Communication USS, Modbus RTU, BACnet MS/TP	**B**	
PROFINET, EtherNet/IP		**F**
Complete Article No.	**6SL32 2 0- 2 YD28- 0 C B 0**	**6SL32 2 0- 3 YD28- 0 C F 0**

[1] For converters with a rated power ≥ 110 kW, around 70 % of the current and power is still available when using sine-wave filters due to current derating of the converter.

[2] For 160 kW, 200 kW and 250 kW, only operation in Vector Control is permitted. V/f must not be used.

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Selection and ordering data

Supplementary system components for SINAMICS G120XA

Description	Article No.
IOP-2 Intelligent Operator Panel Operating languages: English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Finnish, Russian, Czech, Polish, Turkish, Chinese Simplified	**6SL3255-0AA00-4JA2**
IOP-2 Handheld	**6SL3255-0AA00-4HA1**
BOP-2 Basic Operator Panel	**6SL3255-0AA00-4CA1**
Door mounting kit for IOP-2/BOP-2	**6SL3256-0AP00-0JA0**
SINAMICS SD card 512 MB, empty	**6SL3054-4AG00-2AA0**
SINAMICS G120 Smart Access for wireless commissioning, operation and diagnostics of the following converters using a smartphone, tablet or laptop	**6SL3255-0AA00-5AA0**
SINAMICS G120X I/O Extension Module NEW for SINAMICS G120XA with Control Unit for PROFINET, EtherNet/IP for direct connection of Pt1000/Ni1000 temperature sensors	**6SL3255-0BE00-0AA0**
Shield connection kits for Power Module for SINAMICS G120XA	
• Frame sizes FSA to FSC	Included in the scope of delivery of the converters, can be ordered as spare part
• Frame size FSD	**6SL3262-1AD02-0DA0**
• Frame size FSE	**6SL3262-1AE02-0DA0**
• Frame size FSF	**6SL3262-1AF02-0DA0**
• Frame size FSG	**6SL3262-1AG02-0DA0**
• Frame sizes FSH to FSJ	Please observe the notes included in the operating instructions
Wiring adapter for optimal and space-saving wiring for SINAMICS G120X and SINAMICS G120XA • Frame size FSG	**6SL3266-2HG00-0BA0**
SINAMICS G120XA USS starter kit • Converter 380 ... 440 V 3 AC, USS/Modbus RTU, BACnet MS/TP, FSA, 0.75 kW • BOP-2 • IOP-2 • SINAMICS G120 Smart Access	**6SL3200-0AE71-0AA0**
SINAMICS G120XA PROFINET starter kit NEW • Converter 380 ... 440 V 3 AC, PROFINET/EtherNet/IP, FSA, 0.75 kW • BOP-2 • IOP-2 • SINAMICS G120 Smart Access	**6SL3200-0AE75-0AA0**
SINAMICS G120XA training case	**6AG1067-2AA00-0AC2**

Further technical specifications and documentation are available on the internet at:
www.siemens.com/sinamics-g120xa/documentation
and via the Siemens Product Configurator in SiePortal:
www.siemens.com/sinamics-g120xa/configuration

Spare parts for SINAMICS G120XA

Description		Article No.
FPI board **(freely-programmable interface board)** for SINAMICS G120X and SINAMICS G120XA		
• Frame sizes FSH and FSJ		**6SL3200-0SP05-0AA0**
PSB board (power supply board) for SINAMICS G120X and SINAMICS G120XA		
• Frame sizes FSH and FSJ		**6SL3200-0SP06-0AA0**
Current transformers for SINAMICS G120X and SINAMICS G120XA		
• 2000 A for frame size FSJ		**6SL3200-0SE01-0AA0**
• 1000 A for frame sizes FSH and FSJ		**6SL3200-0SE02-0AA0**
Spare parts kit for Control Unit for SINAMICS G120X and SINAMICS G120XA		
• Frame sizes FSA to FSJ		**6SL3200-0SK10-0AA0**
Shield connection kit for Control Unit for SINAMICS G120X and SINAMICS G120XA		
• Frame sizes FSD to FSG		**6SL3264-1EA00-0YA0**
Shield connection kits for Power Module for SINAMICS G120XA		
• Frame size FSA		**6SL3262-1AA01-0DA0**
• Frame size FSB		**6SL3262-1AB01-0DA0**
• Frame size FSC		**6SL3262-1AC01-0DA0**
Small parts assembly set for SINAMICS G120X and SINAMICS G120XA		
• Frame sizes FSD to FSG		**6SL3200-0SK08-0AA0**
Terminal cover kits for SINAMICS G120X and SINAMICS G120XA		
• Frame size FSD		**6SL3200-0SM13-0AA0**
• Frame size FSE		**6SL3200-0SM14-0AA0**
• Frame size FSF		**6SL3200-0SM15-0AA0**
• Frame size FSG		**6SL3200-0SM16-0AA0**
External fan units for SINAMICS G120XA		
• Frame size FSA		**6SL3200-0SF52-0AA0**
• Frame size FSB		**6SL3200-0SF53-0AA0**
• Frame size FSC		**6SL3200-0SF54-0AA0**
• Frame size FSD		**6SL3200-0SF15-0AA0**
• Frame size FSE		**6SL3200-0SF16-0AA0**
• Frame size FSF		**6SL3200-0SF17-0AA0**
• Frame size FSG		**6SL3200-0SF18-0AA0**
• Frame size FSH, USS version		
- with hardware version ≤ 02 [1]		**6SL3200-0SF55-0AA0**
- with hardware version ≥ 03 [1]	NEW	**6SL3200-0SF57-0AA0**
• Frame size FSH, PN version	NEW	**6SL3200-0SF57-0AA0**
• Frame size FSJ		**6SL3200-0SF56-0AA0**
Internal fan unit for SINAMICS G120XA		
• Frame sizes FSH and FSJ		**6SL3200-0SF51-0AA0**
SITOP power supply for the external fan unit for SINAMICS G120XA		
• Frame sizes FSH and FSJ		**6EP3446-8SB00-0AY0**
Fuse for the external fan unit for SINAMICS G120XA		
• Frame sizes FSH and FSJ		**6SY7000-0AC46**
Control Units for SINAMICS G120XA		
• Frame sizes FSA to FSJ USS, Modbus RTU, BACnet MS/TP		**6SL3200-0SC00-0BA0**
• Frame sizes FSD to FSJ PROFINET, EtherNet/IP	NEW	**6SL3200-0SC00-0FA0**

[1] The hardware version of the converter is on the rating plate.

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Technical specifications

Unless explicitly specified otherwise, the following technical specifications are valid for all SINAMICS G120XA converters.

General technical specifications	
Mechanical specifications	
Shock and vibration load	
• Frame sizes FSA to FSG	
- Transport in transport packaging acc. to EN 61800-5-1 and EN 60068-2-6	Class 2M3
- Vibration during operation acc. to IEC 60721-3-3: 2002	Class 3M1
• Frame sizes FSH and FSJ	
- Vibration during operation: Test Fc acc. to EN 60068-2-6	0.075 mm at 10 ... 58 Hz 9.81 m/s² (1 × *g*) at > 58 ... 200 Hz
- Shock during operation: Test acc. to EN 60068-2-27	100 m/s² (10 × *g*)/11 ms
- Vibration in product packaging: Test Fc acc. to EN 60068-2-64	30 min/axis, 3 axes 10 ... 200 Hz ASD 1.0 (m²/s³)
- Shock in product packaging: Test Fc acc. to EN 60068-2-27	10 × *g*/11 ms
Degree of protection	
• Frame sizes FSA to FSH	IP20/ UL Open Type
• Frame size FSJ	IP00/ UL Open Type
Permissible mounting position	Vertical wall mounting
Ambient conditions	
External 24 V supply according to IEC 60204-1	Touch-proof SELV or PELV power supply. The supply voltage must not exceed 60 V DC under single-fault conditions.
Protection class according to IEC 61800-5-1	Class I (with protective grounding conductor)
Humidity, max.	<95 %, condensation not permissible
Ambient temperature	
• Storage acc. to EN 60068-2-1	
- Frame sizes FSA to FSG	-40 ... +70 °C (-40 ... +158 °F)
- Frame sizes FSH and FSJ	-25 ... +55 °C (-13 ... +131 °F)
• Transport acc. to EN 60068-2-1	-40 ... +70 °C (-40 ... +158 °F)
• Operation acc. to EN 60068-2-2	
- Frame sizes FSA to FSG	Variant PROFINET, EthernNet/IP: -20 °C ... +55 °C (-4 ... +131 °F) with a side clearance of 5 cm or -20 °C ... +50 °C (-4 ... +122 °F) for side-by-side mounting, >40 °C (104 °F) with derating Variant USS, Modbus RTU, BACnet MS/TP: -20 °C ... +60 °C (-4 ... +140 °F) with a side clearance of 5 cm or -20 °C ... +55 °C (-4 ... +131 °F) for side-by-side mounting, >40 °C (104 °F) with derating
- Frame sizes FSH and FSJ	0 ... 50 °C (32 ... 122 °F), >40 °C (104 °F) with derating
- All frame sizes with operator panel	0 ... 50 °C (32 ... 122 °F) see also derating characteristics
Environmental class in operation	
• Harmful chemical substances	Class 3C2 acc. to IEC 60721-3-3: 2002
• Organic/biological pollutants	Class 3B1 acc. to IEC 60721-3-3: 2002
• Degree of pollution	2 acc. to EN 61800
Standards	
Compliance with standards [1]	CE, RCM, RoHS II, EAC, SEMI F47 for frame sizes FSA to FSG
CE marking acc. to	EMC Directive 2014/30/EU Low Voltage Directive 2014/35/EU Eco-design requirements of EU Directive 2019/1781
EMC Directive [1] acc. to EN 61800-3	
• Interference immunity	The SINAMICS G120XA converters are tested according to the interference immunity requirements for environments according to Category C3.
• Interference emissions	
- Frame sizes FSA to FSF without integrated line filter	[2]
- Frame sizes FSA to FSJ with integrated line filter Category C3	Observance of the limit values for conducted RF emissions according to IEC 61800-3 Category C3
- Frame sizes FSA to FSF without integrated line filter, with optional line filter Category C3	Observance of the limit values for conducted RF emissions according to IEC 61800-3 Category C3
	Note: The EMC product standard EN 61800-3 does not apply directly to a frequency converter but to a PDS (Power Drive System), which comprises the complete circuitry, motor and cables in addition to the converter. The frequency converters on their own do not generally require identification according to the EMC Directive.

[1] Additional information is available in the operating instructions on the internet at: www.siemens.com/sinamics-g120xa/documentation

[2] Non-filtered devices are designed for operation in IT systems or in conjunction with an RCD. The customer must provide suitable RI suppression equipment to ensure that these devices comply with the limits defined for Category C3.

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Technical specifications

SINAMICS G120XA converters		
Integrated bus interface	**Variant USS, Modbus RTU, BACnet MS/TP**	**Variant PROFINET, EtherNet/IP**
Fieldbus protocols	• USS • Modbus RTU • BACnet MS/TP	• PROFINET • EtherNet/IP
Hardware	RS485 connected at a terminal, isolated, USS: max. 187.5 kBaud Modbus RTU: 19.2 kBaud, BACnet MS/TP: max. 187.5 kBaud, bus terminating resistor can be switched in	2 × RJ45, device name can be stored on the device, max. 100 Mbit/s (full duplex)
I/O interfaces	**Variant USS, Modbus RTU, BACnet MS/TP**	**Variant PROFINET, EtherNet/IP**
Signal cable cross-section	0.15 ... 1.5 mm^2 (28 ... 16 AWG)	
Digital inputs	6 isolated inputs Optically isolated; Free reference potential (own potential group) NPN/PNP logic can be selected using the wiring	
• Switching level: 0 → 1	11 V	
• Switching level: 1 → 0	5 V	
Digital outputs	1 relay changeover contact 250 V AC, 1 A (inductive load), 30 V DC, 1 A (ohmic load) 3 relay NO contacts 250 V AC, 1 A (inductive load), 30 V DC, 1 A (ohmic load)	2 relay changeover contacts 250 V AC, 2 A (inductive load), 30 V DC, 2 A (ohmic load)
Analog inputs	2 analog inputs Non-isolated input Switchable between voltage (-10 ... +10 V) and current (0/4 ... 20 mA) using a parameter 12-bit resolution Can be used as additional digital input	2 analog inputs Differential input Switchable between voltage (-10 ... +10 V) and current (0/4 ... 20 mA) using a DIP switch 12-bit resolution Can be used as additional digital input
• Switching threshold: 0 → 1	4 V	4 V
• Switching threshold: 1 → 0	1.6 V	1.6 V
Analog outputs	2 analog outputs	1 analog output
	Non-isolated output Switchable between voltage (0 ... 10 V) and current (0/4 ... 20 mA) using a parameter Voltage mode: 10 V, min. burden 10 kΩ Current mode: 20 mA, max. burden 500 Ω The analog outputs have short-circuit protection	
PTC/KTY/Pt100/Pt1000 interface	1 motor temperature sensor input Connectable sensors PTC, Pt1000, KTY and bimetal Note: Connection and evaluation of a recommended, optional Pt100 temperature sensor possible by using a free analog input and output	
Voltage supply for the integrated Control Unit	24 V DC via the Power Module	24 V DC via the Power Module or by connecting to an external 20.4 ... 28.8 V DC power supply Typical input current: 500 mA at 24 V DC
Tool interfaces		
Memory card	Optional SINAMICS SD card	
Operator panels	Optional BOP-2 Basic Operator Panel or IOP-2 Intelligent Operator Panel or SINAMICS G120 Smart Access	

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Technical specifications

SINAMICS G120XA converters	
Open-loop/closed-loop control techniques	
V/f linear/quadratic/parameterizable	✓
V/f with flux current control (FCC)	✓
V/f ECO linear/quadratic	✓
Vector control, sensorless	✓
Software functions	
Setpoint input, can be parameterized	✓
Fixed frequencies	16, parameterizable
JOG	✓
Digital motorized potentiometer (MOP)	✓
Ramp smoothing	✓
Extended ramp-function generator (with ramp smoothing OFF3)	✓
Slip compensation	✓
Switchable drive data sets (DDS)	✓ (4)
Switchable command data sets (CDS)	✓ (2)
Free function blocks (FFB) for for logical and arithmetic operations	✓ (for frame sizes FSA to FSG)
Flying restart	✓
Automatic restart after line supply failure or operating fault (AR)	✓
Technology controller (internal PID)	✓
Energy saving display	✓
3 additional, free PID controllers	✓
Hibernation mode with internal/ external PID controller	✓
Belt monitoring with and without sensor (load torque monitoring)	✓
Dry-running/overload protection monitoring (load torque monitoring)	✓
Deragging	✓
Thermal motor protection	✓ (I^2t, sensor: PTC, Pt100, Pt1000, KTY and bimetal)
Thermal converter protection	✓
Motor identification	✓
Auto-ramping (V_{dc_max} controller)	✓
Kinetic buffering (V_{dc_min} controller)	✓
Braking functions	
• DC braking	✓
• Compound braking	✓

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Technical specifications

General technical specifications of the power electronics			
System operating voltage			
• Frame sizes FSA to FSG	380 ... 440 V 3 AC +10 % -20 %		
• Frame sizes FSH and FSJ	380 ... 440 V 3 AC +10 % -15 %		
Line supply requirements Line impedance u_K			
• Frame sizes FSA to FSC	2 %		
• Frame sizes FSD to FSG	No restriction		
• Frame sizes FSH and FSJ	A line reactor (u_K = 2 %) must be connected in series, if the short-circuit power ratio R_{SC} > 33 (315 ... 500 kW) or R_{SC} > 20 (560 kW)		
Input frequency	47 ... 63 Hz		
Output frequency			
• Frame sizes FSA to FSG	Control mode V/f: 0 ... 550 Hz, Control mode Vector: 0 ... 240 Hz		
• Frame sizes FSH and FSJ	Control mode V/f: 0 ... 100 Hz, Control mode Vector: 0 ... 100 Hz		
Pulse frequency			
• Frame sizes FSA to FSG	4 kHz for converters with a rated power ≤90 kW 2 kHz for converters with a rated power ≥110 kW Higher pulse frequencies up to 16 kHz see derating data		
• Frame sizes FSH and FSJ	2 kHz Self-adjusting up to 4 kHz see derating data		
Power factor cos phi $_1$	0.99		
Converter efficiency acc. to IEC 61800-9-2	96.2 ... 98.1 %		
Efficiency class acc. to IEC 61800-9-2	IE2		
Output voltage, max. as % of line voltage	97 %		
Overload capability			
• Low overload LO	1.1 × base-load current I_L (i. e. 110 % overload) for 60 s within a cycle time of 600 s		
Cooling	Air cooling using an integrated fan		
Installation altitude	Up to 1000 m (3281 ft) above sea level without derating, >1000 m (3281 ft) see derating characteristics		
Short Circuit Current Rating (SCCR), max.	100 kA see Recommended line-side overcurrent protection devices – the value depends on the fuses and circuit breakers used For more information, see: https://support.industry.siemens.com/cs/cn/en/view/109762896		
Protection functions	• Undervoltage • Overvoltage • Overcurrent/overload • Ground fault	• Short-circuit • Stall protection • Motor blocking protection • Motor overtemperature	• Converter overtemperature • Parameter locking

Maximum permissible motor cable lengths SINAMICS G120XA

The values specified in the table below apply with low-capacitance CY cables and with pulse frequencies set in the factory.

	Maximum permissible motor cable lengths (shielded/unshielded) in m (ft)			
	FSA to FSC	**FSD and FSE**	**FSF and FSG**	**FSH and FSJ**
Without compliance to the EMC category				
Converters without optional power components	150/300 (492/984)	200/300 (656/984)	300/450 (984/1476)	150/200 (492/656)
Converters with optional output reactor	–	200/300 (656/984) [1]	300/450 (984/1476) [1]	300/450 (984/1476)
Converters with optional dv/dt filter plus VPL	–	–	–	300/450 (984/1476)
With compliance to the EMC category				
Converters with integrated line filter Category C3 for observance of the limit values for conducted RF emissions according to IEC 61800-3 Category C3	50/– (164/–)	100/– (328/–)	150/– (492/–)	100/– (328/–)
Converters without integrated line filter with external line filter Category C3 for observance of the limit values for conducted RF emissions according to IEC 61800-3 Category C3	50/– (164/–)	50/– (164/–)	FSF: 50/– (164/–) FSG: –	–

[1] For frame sizes FSD to FSG the maximum permissible cable lengths are not increased with an output reactor. By means of the output reactor, the loading of the motor windings is reduced by lower rates of voltage rise (*dv/dt*). By means of two output reactors connected in series, the maximum permissible cable lengths for frame sizes FSD and FSE are increased to 350 m (1148 ft) (shielded) and 525 m (1723 ft) (unshielded), and for frame sizes FSF and FSG to 525 m (1723 ft) (shielded) and 800 m (2625 ft) (unshielded).

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Technical specifications

SINAMICS G120XA converters · Degree of protection IP20, IP00 for frame size FSJ · 380 ... 440 V 3 AC

		6SL3220-.YD10-0C.0 6SL3220-.YD10-0U.0	6SL3220-.YD12-0C.0 6SL3220-.YD12-0U.0	6SL3220-.YD14-0C.0 6SL3220-.YD14-0U.0	6SL3220-.YD16-0C.0 6SL3220-.YD16-0U.0
Type of voltage		3 AC	3 AC	3 AC	3 AC
Line voltage	V	380 ... 440	380 ... 440	380 ... 440	380 ... 440
Output current					
• rated value at 400 V	A	2.2	3.1	4.1	5.6
• rated value at 380 V	A	2.2	3.1	4.1	5.6
• maximum	A	2.4 Max. output current for 60 s in a 600 s cycle time	3.4 Max. output current for 60 s in a 600 s cycle time	4.5 Max. output current for 60 s in a 600 s cycle time	6.2 Max. output current for 60 s in a 600 s cycle time
Supplied active power at rated value of output voltage with low overload	kW	0.75	1.1	1.5	2.2
Pulse frequency	kHz	4	4	4	4
Efficiency		0.962	0.966	0.966	0.968
Power loss [1]	kW	0.043	0.055	0.072	0.093
Cooling air flow	m^3/s (ft^3/h)	0.005 (635.66406)	0.005 (635.66406)	0.005 (635.66406)	0.005 (635.66406)
1 m measuring surface sound pressure level maximum	dB	55	55	55	55
Input current with low overload rated value	A	2.1	2.8	3.6	5.3
for mains supply line					
• Type of electrical connection		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Number of connections		1	1	1	1
• Connectable conductor cross-section	mm^2	1.5 ... 2.5	1.5 ... 2.5	1.5 ... 2.5	1.5 ... 2.5
• as coded connectable conductor cross section		AWG 16 ... AWG 14	AWG 16 ... AWG 14	AWG 16 ... AWG 14	AWG 16 ... AWG 14
for motor supply line					
• Type of electrical connection		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Number of connections		1	1	1	1
• Connectable conductor cross-section	mm^2	1.5 ... 2.5	1.5 ... 2.5	1.5 ... 2.5	1.5 ... 2.5
• as coded connectable conductor cross section		AWG 16 ... AWG 14	AWG 16 ... AWG 14	AWG 16 ... AWG 14	AWG 16 ... AWG 14
Type of electrical connection for PE conductor		On housing with M4 screw	On housing with M4 screw	On housing with M4 screw	On housing with M4 screw
Cable length for motor					
• shielded maximum [2]	m (ft)	150 (492.12598)	150 (492.12598)	150 (492.12598)	150 (492.12598)
• unshielded maximum [2]	m (ft)	300 (984.25197)	300 (984.25197)	300 (984.25197)	300 (984.25197)
Dimensions					
• Width	mm (in)	73 (2.87402)	73 (2.87402)	73 (2.87402)	73 (2.87402)
• Height	mm (in)	232 (9.13386)	232 (9.13386)	232 (9.13386)	232 (9.13386)
• Depth	mm (in)	209 (8.22835)	209 (8.22835)	209 (8.22835)	209 (8.22835)
Frame size		FSA	FSA	FSA	FSA
Weight, approx. [3]	kg (lb)	3.1 (6.83433)	3.1 (6.83433)	3.1 (6.83433)	3.1 (6.83433)

[1] Typical values acc. to IEC 61800-9-2.
The values apply for converters without integrated line filter.
More information can be found on the internet at
https://support.industry.siemens.com/cs/document/94059311

[2] The values apply without compliance to the EMC category.
For more information, see Maximum permissible motor cable lengths SINAMICS G120XA and on the internet at
www.siemens.com/sinamics-g120xa/documentation

[3] The values apply for converters without integrated line filter.
For more information, see on the internet at
www.siemens.com/sinamics-g120xa/documentation

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Technical specifications

		6SL3220-.YD18-0C.0 6SL3220-.YD18-0U.0	6SL3220-.YD20-0C.0 6SL3220-.YD20-0U.0	6SL3220-.YD22-0C.0 6SL3220-.YD22-0U.0	6SL3220-.YD24-0C.0 6SL3220-.YD24-0U.0
Type of voltage		3 AC	3 AC	3 AC	3 AC
Line voltage	V	380 ... 440	380 ... 440	380 ... 440	380 ... 440
Output current					
• rated value at 400 V	A	7.3	8.8	12.5	16.5
• rated value at 380 V	A	7.3	9.3	12.5	16.5
• maximum	A	8.0 Max. output current for 60 s in a 600 s cycle time	9.7 Max. output current for 60 s in a 600 s cycle time	13.8 Max. output current for 60 s in a 600 s cycle time	18.2 Max. output current for 60 s in a 600 s cycle time
Supplied active power at rated value of output voltage with low overload	kW	3	4	5.5	7.5
Pulse frequency	kHz	4	4	4	4
Efficiency		0.966	0.974	0.974	0.975
Power loss [1]	kW	0.128	0.121	0.179	0.232
Cooling air flow	m^3/s (ft^3/h)	0.005 (635.66406)	0.005 (635.66406)	0.0092 (1169.62187)	0.0092 (1169.62187)
1 m measuring surface sound pressure level maximum	dB	55	63	63	63
Input current with low overload rated value	A	6.6	8.5	11.5	15.8
for mains supply line					
• Type of electrical connection		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Number of connections		1	1	1	1
• Connectable conductor cross-section	mm^2	1.5 ... 2.5	1.5 ... 6	1.5 ... 6	1.5 ... 6
• as coded connectable conductor cross section		AWG 16 ... AWG 14	AWG 16 ... AWG 10	AWG 16 ... AWG 10	AWG 16 ... AWG 10
for motor supply line					
• Type of electrical connection		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Number of connections		1	1	1	1
• Connectable conductor cross-section	mm^2	1.5 ... 2.5	1.5 ... 6	1.5 ... 6	1.5 ... 6
• as coded connectable conductor cross section		AWG 16 ... AWG 14	AWG 16 ... AWG 10	AWG 16 ... AWG 10	AWG 16 ... AWG 10
Type of electrical connection for PE conductor		On housing with M4 screw	On housing with M4 screw	On housing with M4 screw	On housing with M4 screw
Cable length for motor					
• shielded maximum [2]	m (ft)	150 (492.12598)	150 (492.12598)	150 (492.12598)	150 (492.12598)
• unshielded maximum [2]	m (ft)	300 (984.25197)	300 (984.25197)	300 (984.25197)	300 (984.25197)
Dimensions					
• Width	mm (in)	73 (2.87402)	100 (3.93701)	100 (3.93701)	100 (3.93701)
• Height	mm (in)	232 (9.13386)	275 (10.82677)	275 (10.82677)	275 (10.82677)
• Depth	mm (in)	209 (8.22835)	209 (8.22835)	209 (8.22835)	209 (8.22835)
Frame size		FSA	FSB	FSB	FSB
Weight, approx. [3]	kg (lb)	3.1 (6.83433)	5.6 (12.34589)	5.6 (12.34589)	5.6 (12.34589)

[1] Typical values acc. to IEC 61800-9-2.
The values apply for converters without integrated line filter.
More information can be found on the internet at
https://support.industry.siemens.com/cs/document/94059311

[2] The values apply without compliance to the EMC category.
For more information, see Maximum permissible motor cable lengths SINAMICS G120XA and on the internet at
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[3] The values apply for converters without integrated line filter.
For more information, see on the internet at
www.siemens.com/sinamics-g120xa/documentation

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Technical specifications

		6SL3220-.YD26-0C.0 6SL3220-.YD26-0U.0	6SL3220-.YD28-0C.0 6SL3220-.YD28-0U.0	6SL3220-.YD30-0C.0 6SL3220-.YD30-0U.0	6SL3220-.YD32-0C.0 6SL3220-.YD32-0U.0
Type of voltage		3 AC	3 AC	3 AC	3 AC
Line voltage	V	380 ... 440	380 ... 440	380 ... 440	380 ... 440
Output current					
• rated value at 400 V	A	25	31	37	43
• rated value at 380 V	A	25	31	37.5	45
• maximum	A	27.5 Max. output current for 60 s in a 600 s cycle time	34.1 Max. output current for 60 s in a 600 s cycle time	41 Max. output current for 60 s in a 600 s cycle time	48 Max. output current for 60 s in a 600 s cycle time
Supplied active power at rated value of output voltage with low overload	kW	11	15	18.5	22
Pulse frequency	kHz	4	4	4	4
Efficiency		0.976	0.976	0.974	0.974
Power loss [1]	kW	0.329	0.422	0.535	0.634
Cooling air flow	m^3/s (ft^3/h)	0.0185 (2351.95680)	0.0185 (2351.95680)	0.055 (6992.30465)	0.055 (6992.30465)
1 m measuring surface sound pressure level maximum	dB	67	67	62.2	62.2
Input current with low overload rated value	A	25.8	28.5	41	46
for mains supply line					
• Type of electrical connection		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Number of connections		1	1	1	1
• Connectable conductor cross-section	mm^2	1.5 ... 16	1.5 ... 16	10 ... 35	10 ... 35
• as coded connectable conductor cross section		AWG 16 ... AWG 6	AWG 16 ... AWG 6	AWG 8 ... AWG 2	AWG 8 ... AWG 2
for motor supply line					
• Type of electrical connection		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Number of connections		1	1	1	1
• Connectable conductor cross-section	mm^2	1.5 ... 16	1.5 ... 16	10 ... 35	10 ... 35
• as coded connectable conductor cross section		AWG 16 ... AWG 6	AWG 16 ... AWG 6	AWG 8 ... AWG 2	AWG 8 ... AWG 2
Type of electrical connection for PE conductor		On housing with M4 screw	On housing with M4 screw	Screw-type terminals	Screw-type terminals
Cable length for motor					
• shielded maximum [2]	m (ft)	150 (492.12598)	150 (492.12598)	200 (656.16798)	200 (656.16798)
• unshielded maximum [2]	m (ft)	300 (984.25197)	300 (984.25197)	300 (984.25197)	300 (984.25197)
Dimensions					
• Width	mm (in)	140 (5.51181)	140 (5.51181)	200 (7.87402)	200 (7.87402)
• Height	mm (in)	295 (11.61417)	295 (11.61417)	472 (18.58268)	472 (18.58268)
• Depth	mm (in)	209 (8.22835)	209 (8.22835)	239 (9.40945)	239 (9.40945)
Frame size		FSC	FSC	FSD	FSD
Weight, approx. [3]	kg (lb)	7 (15.43236)	7 (15.43236)	16.2 (35.71489)	16.2 (35.71489)

[1] Typical values acc. to IEC 61800-9-2.
The values apply for converters without integrated line filter.
More information can be found on the internet at
https://support.industry.siemens.com/cs/document/94059311

[2] The values apply without compliance to the EMC category.
For more information, see Maximum permissible motor cable lengths SINAMICS G120XA and on the internet at
www.siemens.com/sinamics-g120xa/documentation

[3] The values apply for converters without integrated line filter.
For more information, see on the internet at
www.siemens.com/sinamics-g120xa/documentation

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Technical specifications

		6SL3220-.YD34-0C.0 6SL3220-.YD34-0U.0	6SL3220-.YD36-0C.0 6SL3220-.YD36-0U.0	6SL3220-.YD38-0C.0 6SL3220-.YD38-0U.0	6SL3220-.YD40-0C.0 6SL3220-.YD40-0U.0
Type of voltage		3 AC	3 AC	3 AC	3 AC
Line voltage	V	380 ... 440	380 ... 440	380 ... 440	380 ... 440
Output current					
• rated value at 400 V	A	58	68	82.5	103
• rated value at 380 V	A	59	73.5	85	108
• maximum	A	64 Max. output current for 60 s in a 600 s cycle time	75 Max. output current for 60 s in a 600 s cycle time	91 Max. output current for 60 s in a 600 s cycle time	113 Max. output current for 60 s in a 600 s cycle time
Supplied active power at rated value of output voltage with low overload	kW	30	37	45	55
Pulse frequency	kHz	4	4	4	4
Efficiency		0.972	0.974	0.973	0.973
Power loss [1]	kW	0.924	0.971	1.26	1.55
Cooling air flow	m^3/s (ft^3/h)	0.055 (6992.30465)	0.055 (6992.30465)	0.083 (10552.02338)	0.083 (10552.02338)
1 m measuring surface sound pressure level maximum	dB	62.2	62.2	62.2	66.5
Input current with low overload rated value	A	56	73	84	106
for mains supply line					
• Type of electrical connection		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Number of connections		1	1	1	1
• Connectable conductor cross-section	mm^2	10 ... 35	10 ... 35	10 ... 35	25 ... 70
• as coded connectable conductor cross section		AWG 8 ... AWG 2	AWG 8 ... AWG 2	AWG 8 ... AWG 2	AWG 6 ... AWG 3/0
for motor supply line					
• Type of electrical connection		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
• Number of connections		1	1	1	1
• Connectable conductor cross-section	mm^2	10 ... 35	10 ... 35	10 ... 35	25 ... 70
• as coded connectable conductor cross section		AWG 8 ... AWG 2	AWG 8 ... AWG 2	AWG 8 ... AWG 2	AWG 6 ... AWG 3/0
Type of electrical connection for PE conductor		Screw-type terminals	Screw-type terminals	Screw-type terminals	Screw-type terminals
Cable length for motor					
• shielded maximum [2]	m (ft)	200 (656.16798)	200 (656.16798)	200 (656.16798)	200 (656.16798)
• unshielded maximum [2]	m (ft)	300 (984.25197)	300 (984.25197)	300 (984.25197)	300 (984.25197)
Dimensions					
• Width	mm (in)	200 (7.87402)	200 (7.87402)	200 (7.87402)	275 (10.82677)
• Height	mm (in)	472 (18.58268)	472 (18.58268)	472 (18.58268)	551 (21.69291)
• Depth	mm (in)	239 (9.40945)	239 (9.40945)	239 (9.40945)	239 (9.40945)
Frame size		FSD	FSD	FSD	FSE
Weight, approx. [3]	kg (lb)	16.2 (35.71489)	18.4 (40.56506)	16.6 (36.59674)	27 (59.52481)

[1] Typical values acc. to IEC 61800-9-2.
The values apply for converters without integrated line filter.
More information can be found on the internet at
https://support.industry.siemens.com/cs/document/94059311

[2] The values apply without compliance to the EMC category.
For more information, see Maximum permissible motor cable lengths SINAMICS G120XA and on the internet at
www.siemens.com/sinamics-g120xa/documentation

[3] The values apply for converters without integrated line filter.
For more information, see on the internet at
www.siemens.com/sinamics-g120xa/documentation

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Technical specifications

		6SL3220-.YD42-0C.0 6SL3220-.YD42-0U.0	6SL3220-.YD44-0C.0 6SL3220-.YD44-0U.0	6SL3220-.YD46-0C.0 6SL3220-.YD46-0U.0	6SL3220-.YD48-0C.0 6SL3220-.YD48-0U.0
Type of voltage		3 AC	3 AC	3 AC	3 AC
Line voltage	V	380 ... 440	380 ... 440	380 ... 440	380 ... 440
Output current					
• rated value at 400 V	A	136	164	201	237
• rated value at 380 V	A	144	174	205	245
• maximum	A	150 Max. output current for 60 s in a 600 s cycle time	181 Max. output current for 60 s in a 600 s cycle time	222 Max. output current for 60 s in a 600 s cycle time	261 Max. output current for 60 s in a 600 s cycle time
Supplied active power at rated value of output voltage with low overload	kW	75	90	110	132
Pulse frequency	kHz	4	4	2	2
Efficiency		0.978	0.977	0.980	0.979
Power loss [1]	kW	1.72	2.16	2.27	2.86
Cooling air flow	m^3/s (ft^3/h)	0.153 (19451.32021)	0.153 (19451.32021)	0.153 (19451.32021)	0.153 (19451.32021)
1 m measuring surface sound pressure level maximum	dB	73.1	73.1	73.1	73.1
Input current with low overload rated value	A	143	164	200	234
for mains supply line					
• Type of electrical connection		M10 screw	M10 screw	M10 screw	M10 screw
• Number of connections		2	2	2	2
• Connectable conductor cross-section	mm^2	35 ... 120	35 ... 120	35 ... 120	35 ... 120
• as coded connectable conductor cross section		AWG 1 ... AWG 2 × 4/0	AWG 1 ... AWG 2 × 4/0	AWG 1 ... AWG 2 × 4/0	AWG 1 ... AWG 2 × 4/0
for motor supply line					
• Type of electrical connection		M10 screw	M10 screw	M10 screw	M10 screw
• Number of connections		2	2	2	2
• Connectable conductor cross-section	mm^2	35 ... 120	35 ... 120	35 ... 120	35 ... 120
• as coded connectable conductor cross section		AWG 1 ... AWG 2 × 4/0	AWG 1 ... AWG 2 × 4/0	AWG 1 ... AWG 2 × 4/0	AWG 1 ... AWG 2 × 4/0
Type of electrical connection for PE conductor		M10 screw	M10 screw	M10 screw	M10 screw
Cable length for motor					
• shielded maximum [2]	m (ft)	300 (984.25197)	300 (984.25197)	300 (984.25197)	300 (984.25197)
• unshielded maximum [2]	m (ft)	450 (1476.37795)	450 (1476.37795)	450 (1476.37795)	450 (1476.37795)
Dimensions					
• Width	mm (in)	305 (12.00787)	305 (12.00787)	305 (12.00787)	305 (12.00787)
• Height	mm (in)	709 (27.91339)	709 (27.91339)	709 (27.91339)	709 (27.91339)
• Depth	mm (in)	360 (14.17323)	360 (14.17323)	360 (14.17323)	360 (14.17323)
Frame size		FSF	FSF	FSF	FSF
Weight, approx. [3]	kg (lb)	60.3 (132.93874)	60.3 (132.93874)	64 (141.09585)	64 (141.09585)

[1] Typical values acc. to IEC 61800-9-2.
The values apply for converters without integrated line filter.
More information can be found on the internet at
https://support.industry.siemens.com/cs/document/94059311

[2] The values apply without compliance to the EMC category.
For more information, see Maximum permissible motor cable lengths SINAMICS G120XA and on the internet at
www.siemens.com/sinamics-g120xa/documentation

[3] The values apply for converters without integrated line filter.
For more information, see on the internet at
www.siemens.com/sinamics-g120xa/documentation

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2

Technical specifications

		6SL3220-.YD50-0C.0	6SL3220-.YD52-0C.0	6SL3220-.YD54-0C.0	6SL3220-.YD56-0C.0
Type of voltage		3 AC	3 AC	3 AC	3 AC
Line voltage	V	380 ... 440	380 ... 440	380 ... 440	380 ... 440
Output current					
• rated value at 400 V	A	289	364	436	583
• rated value at 380 V	A	292	370	468	605
• maximum	A	318 Max. output current for 60 s in a 600 s cycle time	401 Max. output current for 60 s in a 600 s cycle time	480 Max. output current for 60 s in a 600 s cycle time	770 Max. output current for 60 s in a 600 s cycle time
Supplied active power at rated value of output voltage with low overload	kW	160	200	250	315
Pulse frequency	kHz	2	2	2	2
Efficiency		0.980	0.980	0.981	0.979
Power loss [1]	kW	3.19	4.09	4.84	6.89
Cooling air flow	m^3/s (ft^3/h)	0.21 (26697.89049)	0.21 (26697.89049)	0.21 (26697.89049)	0.345 (43860.82008)
1 m measuring surface sound pressure level maximum	dB	74.9	74.9	74.9	72.9
Input current with low overload rated value	A	278	348	417	617
for mains supply line					
• Type of electrical connection		M10 screw	M10 screw	M10 screw	M12 screw
• Number of connections		2	2	2	2
• Connectable conductor cross-section	mm^2	35 ... 185	35 ... 185	35 ... 185	240 ... 240
• as coded connectable conductor cross section		AWG 1 ... MCM 2 × 350	AWG 1 ... MCM 2 × 350	AWG 1 ... MCM 2 × 350	MCM 2 × 500 ... MCM 2 × 500
for motor supply line					
• Type of electrical connection		M10 screw	M10 screw	M10 screw	M12 screw
• Number of connections		2	2	2	2
• Connectable conductor cross-section	mm^2	35 ... 185	35 ... 185	35 ... 185	240 ... 240
• as coded connectable conductor cross section		AWG 1 ... MCM 2 × 350	AWG 1 ... MCM 2 × 350	AWG 1 ... MCM 2 × 350	MCM 2 × 500 ... MCM 2 × 500
Type of electrical connection for PE conductor		M10 screw	M10 screw	M10 screw	M12 screw
Cable length for motor					
• shielded maximum [2]	m (ft)	150 (492.12598)	150 (492.12598)	150 (492.12598)	100 (328.08399)
Dimensions					
• Width	mm (in)	305 (12.00787)	305 (12.00787)	305 (12.00787)	548 (21.5748)
• Height	mm (in)	999 (39.33071)	999 (39.33071)	999 (39.33071)	1487 (58.54331)
• Depth	mm (in)	360 (14.17323)	360 (14.17323)	360 (14.17323)	410 (16.14173)
Frame size		FSG	FSG	FSG	FSH
Weight, approx.	kg (lb)	105 (231.48536)	113 (249.12234)	120 (264.5547)	132 (291.01017)

[1] Typical values acc. to IEC 61800-9-2.
More information can be found on the internet at
https://support.industry.siemens.com/cs/document/94059311

[2] The values apply with compliance to the EMC category.
For more information, see Maximum permissible motor cable lengths SINAMICS G120XA and on the internet at
www.siemens.com/sinamics-g120xa/documentation

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Technical specifications

		6SL3220-.YD58-0C.0	6SL3220-.YD60-0C.0	6SL3225-.YD62-0C.0	6SL3225-.YD64-0C.0	6SL3225-.YD66-0C.0
Type of voltage		3 AC	3 AC	3 AC	3 AC	3 AC
Line voltage	V	380 ... 440	380 ... 440	380 ... 440	380 ... 440	380 ... 440
Output current						
• rated value at 400 V	A	644	722	803	882	992
• rated value at 380 V	A	670	750	840	925	1035
• maximum	A	870 Max. output current for 60 s in a 600 s cycle time	972 Max. output current for 60 s in a 600 s cycle time	1107 Max. output current for 60 s in a 600 s cycle time	1225 Max. output current for 60 s in a 600 s cycle time	1370 Max. output current for 60 s in a 600 s cycle time
Supplied active power at rated value of output voltage with low overload	kW	355	400	450	500	560
Pulse frequency	kHz	2	2	2	2	2
Efficiency		0.978	0.979	0.979	0.979	0.979
Power loss [1]	kW	7.70	8.45	9.55	10.1	11.6
Cooling air flow	m^3/s (ft^3/h)	0.345 (43860.82008)	0.345 (43860.82008)	0.345 (43860.82008)	0.345 (43860.82008)	0.345 (43860.82008)
1 m measuring surface sound pressure level maximum	dB	72.9	72.9	75.4	75.4	75.4
Input current with low overload rated value	A	684	760	870	959	1060
for mains supply line						
• Type of electrical connection		M12 screw	M12 screw	M12 screw	M12 screw	M12 screw
• Number of connections		2	2	4	4	4
• Connectable conductor cross-section	mm^2	240 ... 240	240 ... 240	240 ... 240	240 ... 240	240 ... 240
• as coded connectable conductor cross section		MCM 2 × 500 ... MCM 2 × 500	MCM 2 × 500 ... MCM 2 × 500	MCM 4 × 500 ... MCM 4 × 500	MCM 4 × 500 ... MCM 4 × 500	MCM 4 × 500 ... MCM 4 × 500
for motor supply line						
• Type of electrical connection		M12 screw	M12 screw	M12 screw	M12 screw	M12 screw
• Number of connections		2	2	4	4	4
• Connectable conductor cross-section	mm^2	240 ... 240	240 ... 240	240 ... 240	240 ... 240	240 ... 240
• as coded connectable conductor cross section		MCM 2 × 500 ... MCM 2 × 500	MCM 2 × 500 ... MCM 2 × 500	MCM 4 × 500 ... MCM 4 × 500	MCM 4 × 500 ... MCM 4 × 500	MCM 4 × 500 ... MCM 4 × 500
Type of electrical connection for PE conductor		M12 screw	M12 screw	M12 screw	M12 screw	M12 screw
Cable length for motor						
• shielded maximum [2]	m (ft)	100 (328.08399)	100 (328.08399)	100 (328.08399)	100 (328.08399)	100 (328.08399)
Dimensions						
• Width	mm (in)	548 (21.5748)	548 (21.5748)	801 (31.53543)	801 (31.53543)	801 (31.53543)
• Height	mm (in)	1487 (58.54331)	1487 (58.54331)	1438 (56.61417)	1438 (56.61417)	1438 (56.61417)
• Depth	mm (in)	410 (16.14173)	410 (16.14173)	410 (16.14173)	410 (16.14173)	410 (16.14173)
Frame size		FSH	FSH	FSJ	FSJ	FSJ
Weight, approx.	kg (lb)	134 (295.41941)	137 (302.03328)	204 (449.74299)	210 (462.97072)	218 (480.6077)

[1] Typical values acc. to IEC 61800-9-2.
More information can be found on the internet at
https://support.industry.siemens.com/cs/document/94059311

[2] The values apply with compliance to the EMC category.
For more information, see Maximum permissible motor cable lengths SINAMICS G120XA and on the internet at
www.siemens.com/sinamics-g120xa/documentation

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Configuration

The following electronic configuring aids and engineering tools are available for the SINAMICS G120XA:

SINAMICS Selector app

Mobile selection guide for frequency converters

Siemens has developed the SINAMICS Selector app as a practical tool for finding article numbers for your SINAMICS converters in the power range from 0.1 kW to 630 kW quickly and easily. Whether for SINAMICS V20, SINAMICS V90, SINAMICS G120C, SINAMICS G120P, SINAMICS G120X, SINAMICS G120XA, SINAMICS G120, SINAMICS G220, SINAMICS S200 or SINAMICS S210:
The app will provide you with the correct article numbers conveniently.

How does it work? Simply select your application, the frequency converter you require, the rated power and device options as well as the necessary accessories.

Then you can save your selection and send it by email. Your preselection is the basis for an order specification with the dealer/Siemens.

You will find the free downloads for Android and for iOS at the following link:
www.siemens.com/sinamics-selector

Siemens Product Configurator

The Siemens Product Configurator helps you to configure the optimum drive technology products for a number of applications – starting with gear units, motors, converters as well as the associated options and components and ending with controllers, software licenses and connection systems.

The Siemens Product Configurator can be used on the internet without requiring any installation. The Siemens Product Configurator can be found in SiePortal at the following address:

www.siemens.com/sinamics-g120xa/configuration

You can find further information on the Siemens Product Configurator in the section Engineering tools.

SinaSave energy efficiency tool

Use SinaSave to calculate potential energy savings. The web-based tool SinaSave can be used to estimate the potential savings which can be achieved over the entire lifecycle, e.g. for pump and fan applications, thanks to SINAMICS. The tool takes into consideration all important plant-specific quantities, such as the power and load data of the application, the relevant control mode and the operation profile for the application in question.

The result delivered by the tool specifies the potential energy savings which can be achieved with the specific application in conjunction with all drive components. The tool also provides a monetary evaluation of the potential savings and estimates the payback period.

You can find more information about the amortization calculator for energy-efficient drive systems at:

www.siemens.com/sinasave

You can find further information on the SinaSave energy efficiency tool in the Engineering tools section.

SINAMICS web server for SINAMICS G120XA via SINAMICS G120 Smart Access

Web server for efficient commissioning, diagnostics and maintenance

Thanks to the optionally available SINAMICS G120 Smart Access, the SINAMICS G120XA drive system offers a web server for efficient commissioning, diagnostics and maintenance options. The web server provides access to a multi-faceted range of new options for parameter assignment and drive diagnostics for laptops, tablets and smartphones.

You can find further information on the SINAMICS web server for SINAMICS G120XA via SINAMICS G120 Smart Access in the section Engineering tools.

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Characteristic curves

Derating data

Pulse frequency

Frame size	Rated power [1] at 50 Hz 400 V 3 AC	**Rated output current in A** (at an ambient temperature of 40 °C (104 °F)) for a pulse frequency of															
		2 kHz		4 kHz		6 kHz		8 kHz		10 kHz		12 kHz		14 kHz		16 kHz	
	kW	400 V	380 V	400 V	380 V	400 V	380 V	400 V	380 V	400 V	380 V	400 V	380 V	400 V	380 V	400 V	380 V
FSA	0.75	2.2	2.2	**2.2**	**2.2**	1.87	1.87	1.54	1.54	1.32	1.32	1.1	1.1	0.99	0.99	0.88	0.88
	1.1	3.1	3.1	**3.1**	**3.1**	2.64	2.64	2.17	2.17	1.86	1.86	1.55	1.55	1.4	1.4	1.24	1.24
	1.5	4.1	4.1	**4.1**	**4.1**	3.49	3.49	2.87	2.87	2.46	2.46	2.05	2.05	1.85	1.85	1.64	1.64
	2.2	5.6	5.6	**5.6**	**5.6**	4.76	4.76	3.92	3.92	3.36	3.36	2.8	2.8	2.52	2.52	2.24	2.24
	3	7.3	7.3	**7.3**	**7.3**	6.21	6.21	5.11	5.11	4.38	4.38	3.65	3.65	3.29	3.29	2.92	2.92
FSB	4	8.8	9.3	**8.8**	**9.3**	7.48	7.91	6.16	6.51	5.28	5.58	4.4	4.65	3.96	4.19	3.52	3.72
	5.5	12.5	12.5	**12.5**	**12.5**	14.03	14.03	8.75	8.75	7.5	7.5	6.25	6.25	5.63	5.63	5	5
	7.5	16.5	16.5	**16.5**	**16.5**	15.3	15.3	11.48	11.48	9.9	9.9	8.25	8.25	7.43	7.43	6.6	6.6
FSC	11	25	25	**25**	**25**	21.25	21.25	17.5	17.5	15	15	12.5	12.5	11.25	11.25	10	10
	15	31	31	**31**	**31**	26.35	26.35	21.7	21.7	18.6	18.6	15.5	15.5	13.95	13.95	12.4	12.4
FSD	18.5	37	37.5	**37**	**37.5**	31.4	31.8	25.9	26.25	22.2	22.5	18.5	18.8	16.6	16.82	14.8	15
	22	43	45	**43**	**45**	36.5	38.2	30.1	31.5	25.8	27	21.5	22.5	19.3	20.2	17.2	18
	30	58	59	**58**	**59**	49.3	50.2	40.6	41.3	34.8	35.4	29	29.5	26.1	26.6	23.2	23.6
	37	68	73.5	**68**	**73.5**	57.8	62.5	47.6	51.45	40.8	44.1	34	36.8	30.6	33.1	27.2	29.4
	45	82.5	85	**82.5**	**85**	70.1	72.2	57.7	59.45	49.4	50.9	41.2	42.4	37.1	38.2	33	34
FSE	55	103	108	**103**	**108**	87.5	91.7	72.1	75.6	61.8	64.8	51.5	54	46.3	48.5	41.2	43.2
FSF	75	136	144	**136**	**144**	115.6	122.4	95.2	100.8	81.6	86.4	68	72	61.2	64.8	54.4	57.6
	90	164	174	**164**	**174**	139.4	147.9	114.8	121.8	98.4	104.4	82	87	73.8	78.3	65.6	69.6
	110	**201**	**205**	141	143.8	101	103	80.4	82	–	–	–	–	–	–	–	–
	132	**237**	**245**	166	171.6	119	123	94.8	98	–	–	–	–	–	–	–	–
FSG	160	**289**	**292**	194	196	139	140.4	111	112.2	–	–	–	–	–	–	–	–
	200	**364**	**370**	244	248	174	176.9	139	141.3	–	–	–	–	–	–	–	–
	250	**436**	**468**	305	327.4	218	234	174	186.8	–	–	–	–	–	–	–	–
FSH [2]	315	**583**	**605**	466	483.6	–	–	–	–	–	–	–	–	–	–	–	–
	355	**644**	**670**	515	535.8	–	–	–	–	–	–	–	–	–	–	–	–
	400	**722**	**750**	578	600.4	–	–	–	–	–	–	–	–	–	–	–	–
FSJ [2]	450	**803**	**840**	642	671.6	–	–	–	–	–	–	–	–	–	–	–	–
	500	**882**	**925**	705	739.4	–	–	–	–	–	–	–	–	–	–	–	–
	560	**992**	**1035**	793	827.4	–	–	–	–	–	–	–	–	–	–	–	–

The rated output currents in **bold** apply for the standard pulse frequency.

[1] Rated power based on the rated output current I_N. The rated output current I_N is based on the duty cycle for low overload (LO).

[2] With the factory setting these converters start at a pulse frequency of 4 kHz and automatically reduce the pulse frequency under load to the corresponding required frequencies. The pulse frequency increases automatically up to 4 kHz with decreasing load. The rated current values refer to a pulse frequency of 2 kHz and are reached at any time by automatic adaptation of the output pulse frequency.

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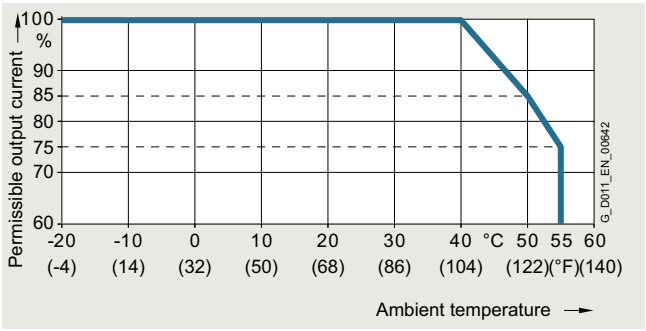
Characteristic curves

Ambient temperature

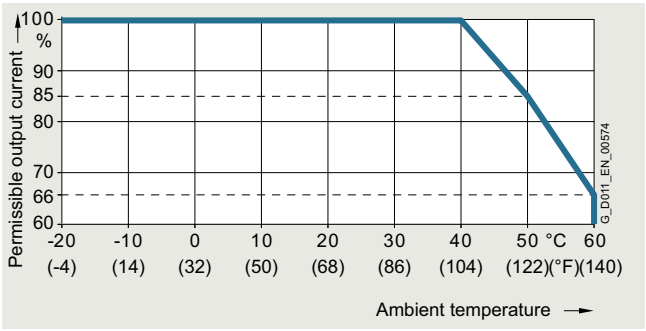
Frame sizes FSA to FSG:

- Variant PROFINET, EthernNet/IP:



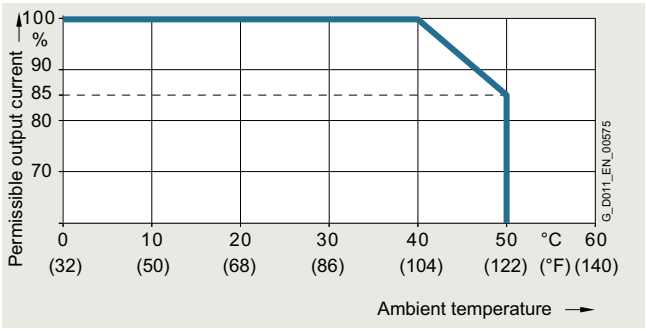
Permissible output current as a function of the ambient temperature for frame sizes FSA to FSG at low overload (LO)

- Variant USS, Modbus RTU, BACnet MS/TP:



Permissible output current as a function of the ambient temperature for frame sizes FSA to FSG at low overload (LO)

Frame sizes FSH and FSJ:

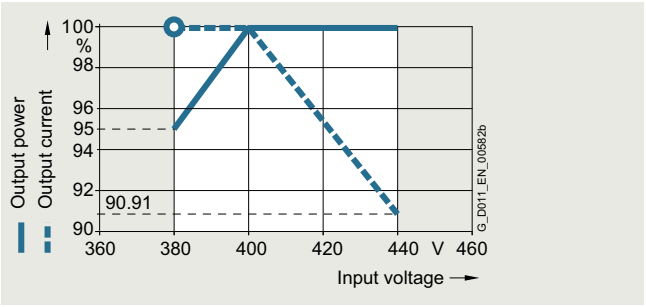


Permissible output current as a function of the ambient temperature for frame sizes FSH and FSJ at low overload (LO)

The operating temperature ranges of the operator panels should be taken into account.

System operating voltage

Frame sizes FSA to FSG:



Permissible output current and output power as a function of the input voltage for frame sizes FSA to FSG at low overload (LO)

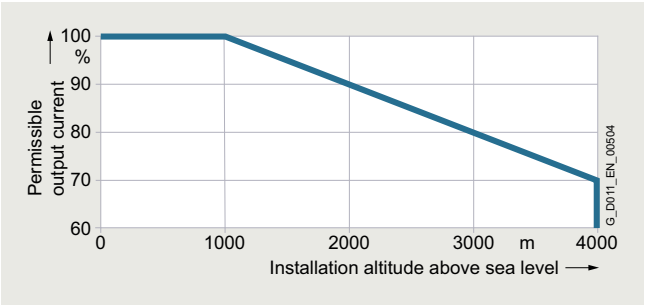
Note:
The values for the output current at 380 V are shown in the selection and ordering data on page 2/10.

Frame sizes FSH and FSJ:

Frame size	Rated power [1]	Rated output current	Base-load current [2]	Rated output current in % at a line voltage of			
	kW	A	A	380 V	400 V	415 V	440 V
FSH	315	605	590	100 %	96.3 %	93.5 %	88.8 %
	355	670	645	100 %	96.1 %	93.2 %	88.3 %
	400	750	725	100 %	96.3 %	93.6 %	89 %
FSJ	450	840	820	100 %	95.6 %	92.3 %	86.8 %
	500	925	895	100 %	95.3 %	91.7 %	85.8 %
	560	1035	1015	100 %	95.8 %	92.7 %	87.5 %

Installation altitude

Frame sizes FSA to FSJ:



Permissible output current as a function of the installation altitude at low overload (LO) at an ambient temperature of 40 °C (104 °F), derating 70 % at 4000 m (13124 ft)

The connected motors, power elements and components must be considered separately.

Permissible line supplies as a function of the installation altitude

- Installation altitude up to 2000 m (6562 ft) above sea level
  - Connection to every supply system permitted for the converter
- Installation altitudes between 2000 m (6562 ft) and 4000 m (13124 ft) above sea level
  - Connection only to a TN system with grounded neutral point
  - TN systems with grounded line conductor are not permitted
  - The TN system with grounded neutral point can also be supplied using an isolation transformer
  - The phase-to-phase voltage does not have to be reduced

[1] Rated power based on the rated output current I_N. The rated output current I_N is based on the duty cycle for low overload (LO).

[2] The base-load current is based on the duty cycle for low overload (LO).

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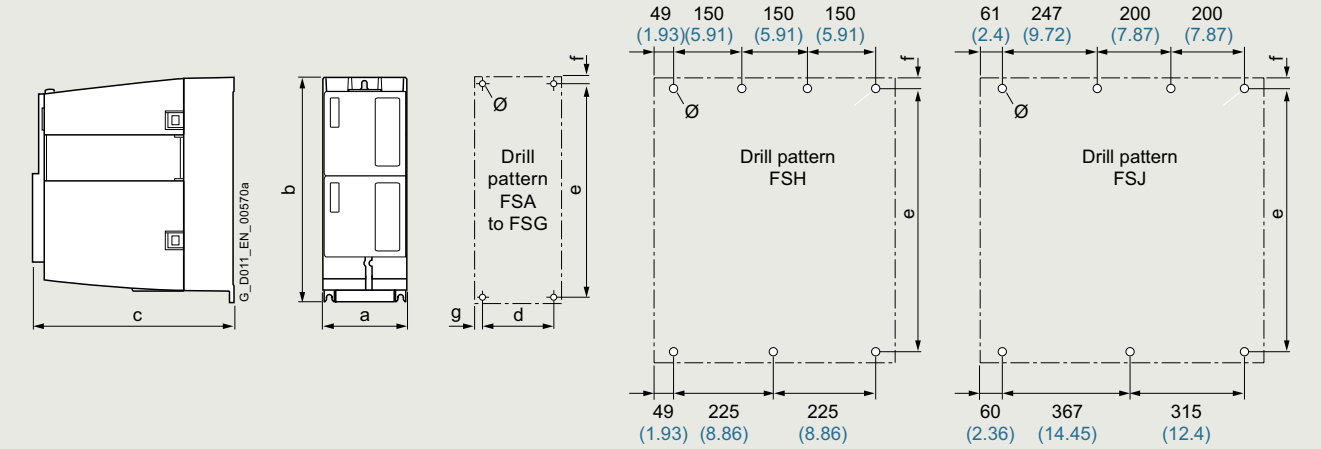
Dimensional drawings



Principle dimension drawing and drill pattern for SINAMICS G120XA

Frame size	Dimensions in mm (inches)			Drilling dimensions in mm (inches)					Mounting	Cooling clearance [2] in mm (inches)		
	a (width)	b (height)	c (depth) [1]	d	e	f	g	Ø	With screws (plus washers and nuts)	top	bottom	front
FSA	73 (2.87)	232 (9.13)	209 (8.23)	55 (2.17)	221.5 (8.72)	5.5 (0.22)	9 (0.35)	5 (0.2)	4 × M4	80 (3.15)	100 (3.94)	0 (0)
FSB	100 (3.94)	275 (10.83)	209 (8.23)	80 (3.15)	265 (10.43)	7 (0.28)	10 (0.39)	5 (0.2)	4 × M4	80 (3.15)	100 (3.94)	0 (0)
FSC	140 (5.51)	295 (11.61)	209 (8.23)	118 (4.65)	283 (11.14)	7 (0.28)	11 (0.43)	5.5 (0.22)	4 × M5	80 (3.15)	100 (3.94)	0 (0)
FSD	200 (7.87)	472 (18.58)	239 (9.41)	170 (6.69)	430 (16.93)	15 (0.59)	15 (0.59)	6 (0.24)	4 × M5	300 (11.81)	350 (13.78)	0 (0)
FSE	275 (10.83)	551 (21.69)	239 (9.41)	230 (9.06)	509 (20.04)	11 (0.43)	22.5 (0.89)	6.5 (0.26)	4 × M6	300 (11.81)	350 (13.78)	0 (0)
FSF	305 (12.01)	709 (27.91)	360 (14.17)	270 (10.63)	680 (26.77)	16.6 (0.65)	17.5 (0.69)	8.5 (0.33)	4 × M8	300 (11.81)	350 (13.78)	0 (0)
FSG	305 (12.01)	999 (39.33)	360 (14.17)	265 (10.43)	970.5 (38.21)	18.5 (0.73)	20 (0.79)	12 (0.47)	4 × M10	300 (11.81)	350 (13.78)	0 (0)
FSH	548 (21.57)	1487 (58.54)	410 (16.14)	see above	1444 (56.85)	22 (0.87)	see above	20 (0.79)	7 × M8	200 (7.87)	200 (7.87)	100 (3.94)
FSJ	801 (31.54)	1438 (56.61)	410 (16.14)	see above	1399 (55.08)	18 (0.71)	see above	20 (0.79)	7 × M8	200 (7.87)	200 (7.87)	100 (3.94)

More information

Further documentation, such as the operating instructions, is available free on the internet at:
www.siemens.com/sinamics-g120xa/documentation

Detailed information on the SINAMICS G120XA infrastructure converters for standard pumps/fans, including the latest technical documentation (brochures, tutorials, dimensional drawings, certificates and operating instructions), is available on the internet at:
www.siemens.com.cn/sinamics-g120xa

and is also available via the Siemens Product Configurator on the internet.

The Siemens Product Configurator can be found in SiePortal at the following address:
www.siemens.com/sinamics-g120xa/configuration

[1] Increased depth for frame sizes FSA to FSG:
- When the operator panel is plugged on, the depth increases by 9 mm (0.35 in)
- When the SINAMICS G120 Smart Access is plugged on, the depth increases by 7 mm (0.28 in)
- When the I/O Extension Module is plugged on, the depth increases by 27 mm (1.06 in)
  - when, in addition, the operator panel is plugged on, the depth increases by a further 11.8 mm (0.46 in)
  - when, in addition, SINAMICS G120 Smart Access is plugged on, the depth increases by a further 9.8 mm (0.39 in)

[2] The converters with frame sizes FSA to FSG can be mounted side by side. A side clearance of 1 mm (0.04 in) is recommended for tolerance-related reasons. For frame sizes FSH and FSJ, a side clearance of 30 mm (1.18 in) between the converters is required.

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Overview

Operator panel	IOP-2 and IOP-2 Handheld Intelligent Operator Panel	BOP-2 Basic Operator Panel
Description	 	
	Thanks to the high-contrast color display, menu-based operation and the wizards, commissioning of the standard drives is easy. Application wizards guide the user through the commissioning of important applications such as pumps, fans, compressors, or conveyor systems.	Commissioning of standard drives is easy with the menu-prompted dialog on a 2-line display. Simultaneous display of the parameter and parameter value, as well as parameter filtering, means that basic commissioning of a drive can be performed easily and, in most cases, without a printed parameter list.
Possible applications	• Can be mounted directly on the converter • Can be mounted in a control cabinet door using a door mounting kit (achievable degree of protection is IP55/ UL Type 12 enclosure) • Available as handheld version • The following languages are integrated in the IOP-2: English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Finnish, Russian, Czech, Polish, Turkish, Chinese Simplified • Environmental class/harmful chemical substances Class 3C3 acc. to IEC 60721-3-3: 2002	• Can be mounted directly on the converter • Can be mounted in the control cabinet door using a door mounting kit (achievable degree of protection is IP55/UL Type 12) • Environmental class/harmful chemical substances Class 3C3 acc. to IEC 60721-3-3: 2002
Quick commissioning without expert knowledge	• Standard commissioning using the clone function • For quicker access, the parameter block names can be directly entered respectively changed on the IOP-2 using the virtual keyboard. • User-defined parameter list with a reduced number of self-selected parameters • Simple commissioning of standard applications using Quick Startup and Advanced Startup; it is not necessary to know the parameter structure • Simple local commissioning using the handheld version • Commissioning is possible largely without documentation	• Standard commissioning using the clone function
High degree of operator friendliness and intuitive operation	• Intuitive navigation by operating with a sensor control field • Graphic color display to show status values such as pressure or flow rate in the form of scalar values, bar-type diagrams, or trend displays • Status display with freely selectable units to specify physical values • Direct manual operation of the drive – you can simply toggle between the automatic and manual modes • Simple cloning of specific settings of the IOP-2 user interface.	• 2-line display for showing up to 2 process values with text • Status display of predefined units • Direct manual operation of the drive – you can simply toggle between the automatic and manual modes
Minimization of maintenance times	• Diagnostics using plain text display, can be used locally on-site without documentation • The support function is used to determine the drive data for the Power Module, Control Unit and IOP-2 and makes this available as a two-dimensional code (data matrix/QR code) • Easily upgradable to new functional status via USB interface	• Diagnostics with menu prompting with 7-segment display

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Overview

IOP-2 Intelligent Operator Panel

IOP-2 Intelligent Operator Panel

The Intelligent Operator Panel IOP-2 is a very user-friendly and powerful operator panel for the SINAMICS G120, SINAMICS G120C, SINAMICS G120P, SINAMICS G120X, SINAMICS G120XA, SINAMICS G120D and SIMATIC ET 200pro FC-2.

The IOP-2 supports both newcomers and drive experts. Thanks to the membrane keyboard with a central sensor control field, high-contrast color displays, menu-based operation and simple setup processes, which do not require special drive know-how, it is easy to commission drives. The updated IOP-2 (from V2.3) offers a new concept, which allows faster and easier commissioning of the drive.
The Quick Startup provides with an overview of the basic parameters required to commission and operate the drive in a few minutes.
Advanced Startup supports easier commissioning of more complex applications and provides the parameters on one screen, thus eliminating the need to switch between different areas within the IOP-2.

Advanced Setup provides with a list of categories that needs to be checked and that guides the user by highlighting the status icons of categories, which have been altered by the user. Furthermore, a drive can be essentially commissioned without having to use a printed parameter list – as the parameters are displayed in plain text, and explanatory help texts and the parameter filtering functions are provided.

The status screen allows the graphical visualization of two process values and the numerical visualization of four process values. Process values can also be displayed in technological units.

The IOP-2 supports standard commissioning of identical drives. For this purpose, a parameter list can be copied from a converter into the IOP-2 and downloaded into other drive units of the same type as required.

The IOP-2 can also use a text editor to create a user-defined parameter list and download it directly to the frequency converter using the IOP-2 download process.

The IOP-2 can be installed in control cabinet doors using the optionally available door mounting kit.

Updating the IOP-2

The IOP-2 can be updated and expanded using the integrated USB interface.

Data to support future drive systems can be transferred from the PC to the IOP-2. Further, the USB interface allows user languages and simple setup processes that will become available in the future to be subsequently downloaded and the firmware to be updated for the IOP-2 [1].

The IOP-2 is supplied with power via the USB interface during an update.

IOP-2 Handheld

IOP-2 Handheld

A handheld version of the IOP-2 can be ordered for mobile use. In addition to the IOP-2, it includes a housing with rechargeable batteries, a charging unit, an RS232 connecting cable, and a USB cable. The charging unit is supplied with connector adapters for Europe, the US and UK. When the batteries are fully charged, the operating time is up to 10 hours.

To connect the IOP-2 Handheld to SINAMICS G120D and SIMATIC ET 200pro FC-2, the RS232 connecting cable with optical interface is required in addition.

[1] Information on updates for the IOP-2 is available at https://support.industry.siemens.com/cs/document/67273266

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Selection and ordering data

Description	Article No.
IOP-2 Intelligent Operator Panel For use with SINAMICS G120 SINAMICS G120C SINAMICS G120P SINAMICS G120X SINAMICS G120XA SINAMICS G120D SIMATIC ET 200pro FC-2 Operating languages: English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Finnish, Russian, Czech, Polish, Turkish, Chinese Simplified	**6SL3255-0AA00-4JA2**
IOP-2 Handheld For use with SINAMICS G120 SINAMICS G120C SINAMICS G120P SINAMICS G120X SINAMICS G120XA SINAMICS G120D SIMATIC ET 200pro FC-2 Included in the scope of delivery: • IOP-2 • Handheld housing • Rechargeable batteries (4 × AA) • Charging unit (international) • RS232 connecting cable [1] 3 m (9.84 ft) long, can be used in combination with SINAMICS G120 SINAMICS G120C SINAMICS G120P SINAMICS G120X SINAMICS G120XA • USB cable 1 m (3.28 ft) long	**6SL3255-0AA00-4HA1**
Accessories	
Door mounting kit For mounting an operator panel in control cabinet doors with sheet steel thicknesses of 1 ... 3 mm (0.04 in ... 0.12 in) Degree of protection IP55 Included in the scope of delivery: • Seal • Mounting material • Connecting cable 5 m (16.4 ft) long, also supplies voltage to the IOP-2 directly via the converter	**6SL3256-0AP00-0JA0**
RS232 connecting cable 2.5 m (8.20 ft) long, with optical interface for connecting the IOP-2 Handheld to SINAMICS G120D SIMATIC ET 200pro FC-2	**3RK1922-2BP00**

Benefits

- New device design
  - Intuitive user interface – membrane keyboard with central sensor control field
  - High-contrast color display with a range of display options
  - IOP-2 device design open for future functional expansions (e.g. device functions, commissioning setups, languages)
  - Easily upgradable to new functional status via USB interface
- Commissioning
  - Simple commissioning via Quick Startup and Advanced Startup
  - Quick Startup allows easy and fast access to all basic parameters required for the commissioning of simple applications
  - Advanced Startup provides the parameters necessary for the commissioning of more complex applications and eliminates the need to switch between different areas of the IOP-2
  - I/O Setup supports quick and easy configuration of the digital and analog inputs and outputs
  - Fieldbus Setup allows easy configuration of the Ethernet/IP and PROFINET interface protocols
  - Fast standard commissioning of converters thanks to the cloning function
  - For quicker access, the parameter data set names can be directly entered respectively changed on the IOP-2 using the virtual keyboard. Extended help functions support the user during commissioning.
  - Simple local commissioning on-site using the handheld version
- Operator control and monitoring
  - Simple, individual local drive control (start/stop, setpoint value specification, change in direction of rotation)
  - Application-specific scenarios such as operator concepts with additional external operating elements can be implemented easily
  - Simple cloning of specific settings of the IOP-2 user interface, such as status screen, language settings, lighting duration, date/time settings, parameter backup mode and "My Parameters" – settings made once can such be easily transferred to many further IOP-2 Intelligent Operator Panels
  - Easy creation of a user-defined parameter list and direct download to the frequency converter using the IOP-2 download process
- Diagnostics
  - Rapid diagnostics thanks to on-site plain text display
  - Integrated plain text help function for local display and resolution of fault messages
- Support function
  - Used to determine the drive data for the Power Module, Control Unit and IOP-2 (article number, serial number, firmware version, error statuses) and makes this available as a two-dimensional code (data matrix/QR code)
  - Allows easy contact with Customer Support via a data matrix/QR code generated on the IOP-2
  - Quick access via mobile devices (e.g. smartphones, tablets) to product information, documentation, FAQs, contact persons via a two-dimensional code generated on the IOP-2 (data matrix/QR code)
  - Scanning and evaluating of the two-dimensional data matrix code using the Industry Online Support app (https://support.industry.siemens.com/cs/ww/en/sc/2067), see also: https://support.industry.siemens.com/cs/document/109748340

[1] For use in conjunction with SINAMICS G120D and SIMATIC ET 200pro FC-2, the RS232 connecting cable with optical interface is required (Article No.: **3RK1922-2BP00**). The cable must be ordered separately.

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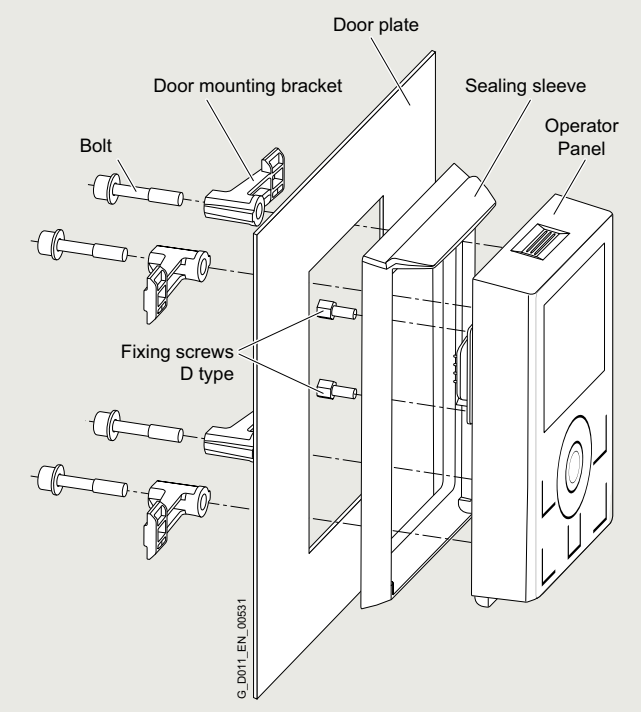
Integration

Using the IOP-2 with the converters

	• **SINAMICS G120 with CU230P-2, CU240E-2 or CU250S-2** • **SINAMICS G120C** • **SINAMICS G120P with CU230P-2** • **SINAMICS G120X and SINAMICS G120XA**	• **SINAMICS G120D** • **SIMATIC ET 200pro FC-2**
Plugging the IOP-2 onto the converter (Voltage supply via converter)	✓	–
Door mounting of the IOP-2 with the door mounting kit (Voltage supply via converter. For this purpose, the IOP-2 must be connected up by means of the connecting cable supplied with the door mounting kit.)	✓	–
Mobile use of the IOP-2 Handheld (supplied from rechargeable batteries)	✓	✓ (RS232 connecting cable with optical interface required, article number 3RK1922-2BP00)

Door mounting

Using the optionally available door mounting kit, an operator panel can be simply mounted in a control cabinet door with just a few manual operations. In the case of door mounting, the IOP-2 Operator Panel achieves degree of protection IP55/UL Type 12 enclosure.



Door mounting kit with plugged-on IOP-2

Technical specifications

	IOP-2 6SL3255-0AA00-4JA2	**IOP-2 Handheld** 6SL3255-0AA00-4HA1
Display	High-contrast color display, a variety of display options	
• Resolution	320 × 240 pixels	
Operator panel	Membrane keyboard with central sensor control field	
Operating languages	English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Finnish, Russian, Czech, Polish, Turkish, Chinese Simplified	
Ambient temperature		
• During transport and storage	-40 ... +70 °C (-40 ... +158 °F)	-20 ... +55 °C (-4 ... +131 °F)
• During operation	For direct mounting on the converter: 0 ... 50 °C (32 ... 122 °F) For installation with door mounting kit: 0 ... 55 °C (32 ... 131 °F)	0 ... 40 °C (32 ... 104 °F)
Humidity	Relative humidity < 95 %, non-condensing	
Degree of protection	For direct mounting on the converter: IP20 For installation with door mounting kit: IP55, UL Type 12 enclosure	IP20
Dimensions (H × W × D)	106.86 × 70 × 19.65 mm (4.21 × 2.76 × 0.77 in)	195.04 × 70 × 37.58 mm (7.68 × 2.76 × 1.48 in)
Weight, approx.	0.134 kg (0.3 lb)	0.724 kg (1.6 lb)
Compliance with standards	CE, UKCA, RCM, cULus, EAC, KC-REM-S49-SINAMICS	
Environmental class in operation		
• Harmful chemical substances	Class 3C3 acc. to IEC 60721-3-3: 2002	

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Overview

BOP-2 Basic Operator Panel

The Basic Operator Panel BOP-2 can be used to commission drives, monitor drives in operation and input individual parameter settings.

Commissioning of standard drives is easy with the menu-prompted dialog on a 2-line display. Simultaneous display of the parameter and parameter value, as well as parameter filtering, means that basic commissioning of a drive can be performed easily and, in most cases, without a printed parameter list.

The drives are easily controlled manually using directly assigned navigation buttons. The BOP-2 has a dedicated switchover button to switch from automatic to manual mode.

Diagnostics can easily be performed on the connected converter by following the menus.

Up to two process values can be numerically visualized simultaneously.

BOP-2 supports standard commissioning of identical drives. For this purpose, a parameter list can be copied from a converter into the BOP-2 and when required, downloaded into other drive units of the same type.

The operating temperature of the BOP-2 is 0 °C ... 50 °C (32 °F ... 122 °F).

The environmental class/harmful chemical substances of BOP-2 is class 3C3 acc. to IEC 60721-3-3: 2002.

Selection and ordering data

Description	Article No.
BOP-2 Basic Operator Panel	**6SL3255-0AA00-4CA1**
Accessories	
Door mounting kit For mounting an operator panel in control cabinet doors with sheet steel thicknesses of 1 ... 3 mm (0.04 ... 0.12 in) Degree of protection IP55 Included in the scope of delivery: • Seal • Mounting material • Connecting cable 5 m/16.4 ft long, also supplies voltage to the operator panel directly via the converter	**6SL3256-0AP00-0JA0**

Benefits

- Shorten commissioning times – Easy commissioning of standard drives using basic commissioning wizards (setup)
- Minimize standstill times – Fast detection and rectification of faults (Diagnostics)
- Greater transparency in the process – The status display of the BOP-2 makes process variable monitoring easy (Monitoring)
- Direct mounting on the converter
- User-friendly user interface:
  - Easy navigation using clear menu structure and clearly assigned control keys
  - Two-line display

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Overview

SINAMICS SD memory card

The parameter settings for a converter can be stored on the SINAMICS SD memory card. When service is required, e.g. after the converter has been replaced and the data have been downloaded from the memory card, the drive system is immediately ready for use again.

- Parameter settings can be written from the memory card to the converter or saved from the converter to the memory card.
- Up to 100 parameter sets can be stored.
- The memory card supports standard commissioning without the use of an operator panel such as the IOP-2 or BOP-2.
- If firmware is stored on the memory card, the firmware can be upgraded/downgraded during power-up.

Note:

The memory card is not required for operation and does not have to remain inserted.

Selection and ordering data

Description	Article No.
SINAMICS SD card 512 MB, empty	**6SL3054-4AG00-2AA0**

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Overview

SINAMICS G120 Smart Access

It is also easy and convenient to commission and operate the SINAMICS G115D, SINAMICS G120, SINAMICS G120C, SINAMICS G120X and SINAMICS G120XA converters of firmware V4.7 SP6 and higher using the web server module SINAMICS G120 Smart Access and a connected smartphone, tablet or laptop.

Benefits

- Wireless commissioning, operation and diagnostics via mobile device or laptop thanks to the optional SINAMICS G120 Smart Access
- Intuitive user interface and commissioning wizard
- Free choice of terminal devices as the web server works with all common web browsers, such as iOS, Android, Microsoft Windows, Linux and Mac OS

Function

- Commissioning using commissioning wizard
- Setting and saving parameters
- Testing motor in JOG mode
- Monitoring of converter data
- Quick diagnostics
- Saving the settings and restoring to factory settings

Selection and ordering data

Description	Article No.
SINAMICS G120 Smart Access For wireless commissioning, operation and diagnostics of the following converters using a smartphone, tablet or laptop • SINAMICS G115D together with the interface kit for SINAMICS G120 Smart Access • SINAMICS G120C • SINAMICS G120 together with the CU230P-2 and CU240E-2 Control Units (without fail-safe versions) • SINAMICS G120P together with the CU230P-2 Control Units • SINAMICS G120X and SINAMICS G120XA	**6SL3255-0AA00-5AA0**

Technical specifications

	SINAMICS G120 Smart Access 6SL3255-0AA00-5AA0
Operating system	iOS, Android, Microsoft Windows, Linux, Mac OS
Languages	Support of six languages: English, French, German, Italian, Spanish, Chinese
Ambient temperature	
• During storage and transport	-40 ... +70 °C (-40 ... +158 °F)
• During operation	0 ... 50 °C (32 ... 122 °F), if the Smart Access is plugged directly into the converter
Humidity	< 95 %, non-condensing
Degree of protection	Depending on the degree of protection of the converter, max. IP55/UL Type 12 enclosure
Dimensions	
• Width	70 mm (2.76 in)
• Height	108.9 mm (4.29 in)
• Depth	17.3 mm (0.68 in)
Weight, approx.	0.08 kg (0.18 lb)
Compliance with standards	CE, UKCA, FCC, SRRC, WPC, ANATEL, BTK

Integration

SINAMICS G120XA frame size FSD with plugged-on SINAMICS G120 Smart Access

The optional SINAMICS G120 Smart Access is simply plugged onto the converter and is available for the following converters of firmware V4.7 SP6 and higher.

- SINAMICS G115D together with the interface kit for SINAMICS G120 Smart Access
- SINAMICS G120C
- SINAMICS G120 together with the CU230P-2 and CU240E-2 Control Units (without fail-safe versions)
- SINAMICS G120P together with the CU230P-2 Control Units
- SINAMICS G120X and SINAMICS G120XA

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Overview

SINAMICS G120X I/O Extension Module

The SINAMICS G120X I/O Extension Module increases the number of I/O terminals of the converter and therefore allows for additional converter control functionalities. It also allows for the connection to an operator panel or the SINAMICS G120 Smart Access.

The optional SINAMICS G120X I/O Extension Module has 2 DI, 2 AO, 4 DO (relay), and up to 2 Pt1000/Ni1000 temperature sensors can be directly connected.

Selection and ordering data

Description	Article No.
SINAMICS G120X I/O Extension Module NEW for SINAMICS G120XA with Control Unit for PROFINET, EtherNet/IP for the direct connection of Pt1000/Ni1000 temperature sensors	**6SL3255-0BE00-0AA0**

More information

Further information and documentation is available on the internet at:
www.siemens.com/sinamics-g120x/documentation

Technical specifications

Article No.	6SL3255-0BE00-0AA0
Analog inputs	
Number of analog inputs	2
Design of the sensor to detect the ambient temperature connectable	2 analog inputs for connecting temperature sensors Pt1000/Ni1000. One of them can be used as an analog input.
Connectable conductor cross-section at the analog input	0.5 ... 1.5 mm^2
AWG number as coded connectable conductor cross-section at the analog input	21 ... 16
Input current	0 ... 20 mA
Analog outputs	
Number of analog outputs	2
Analog outputs Type	Non-isolated output
Connectable conductor cross-section at the analog output	0.5 ... 1.5 mm^2
AWG number as coded connectable conductor cross-section at the analog output	21 ... 16
Output voltage at analog output	0 ... 10 V
Output current at analog output	0 ... 20 mA
Digital inputs	
Number of digital inputs	2
Connectable conductor cross-section at the digital inputs	0.5 ... 1.5 mm^2
AWG number as coded connectable conductor cross-section at the digital inputs	21 ... 16
Digital inputs Input voltage for signal "0" → "1"	11 V
Digital inputs Input voltage for signal "1" → "0"	5 V
Input voltage at digital input maximum	30 V
Digital outputs	
Number of digital outputs	4
Connectable conductor cross-section at the digital outputs maximum	1.5 mm^2
AWG number as coded connectable conductor cross section at the digital outputs maximum	16
Output current at digital output	2 A
Mechanical data	
Width	71 mm
Depth	27 mm
Height	117 mm

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Overview

A shield connection kit is supplied with the SINAMICS G120XA converters, frame sizes FSA to FSC. It is advisable to install the supplied shield connection kit for EMC-compliant configuration of the converter.

The shield connection kits for the Power Module are not included in the scope of delivery for the SINAMICS G120XA converters, frame sizes FSD to FSG, but they can be ordered as an option.

Please observe the notes included in the operating instructions for the SINAMICS G120XA converters, frame sizes FSH and FSJ.

www.siemens.com/sinamics-g120xa/documentation

Selection and ordering data

Description	Article No.
Shield connection kits for Power Module for SINAMICS G120XA	
• Frame sizes FSA to FSC	Included in the scope of delivery of the converters, can be ordered as spare part
• Frame size FSD	**6SL3262-1AD02-0DA0**
• Frame size FSE	**6SL3262-1AE02-0DA0**
• Frame size FSF	**6SL3262-1AF02-0DA0**
• Frame size FSG	**6SL3262-1AG02-0DA0**

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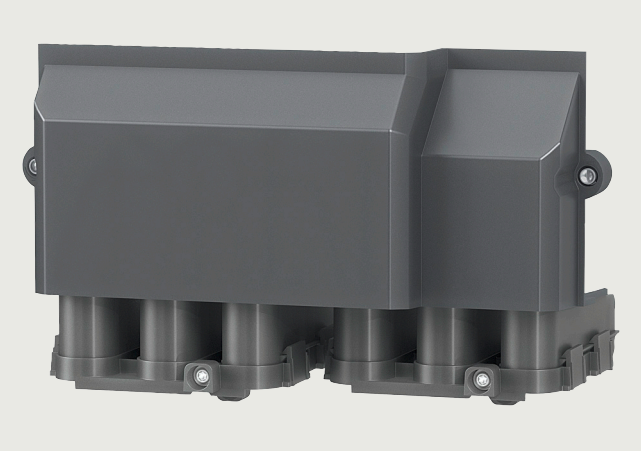
Overview



Wiring adapter for frame size FSG

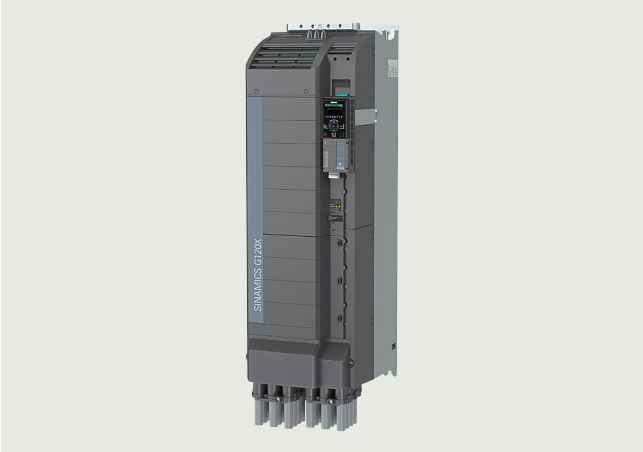
The wiring adapter enables optimal and space-saving wiring of frame size FSG for SINAMICS G120 PM240-2 Power Modules, SINAMICS G120X and SINAMICS G120XA.

Smaller bending radii help where mounting space is constricted: Up to four smaller cables (with a cross section of 120 mm^2 each) can be routed with the adapter for connection to the line supply and to the motor. All cables can be connected on the underside of the adapter, which allows for easy and space-saving wiring.

The scope of delivery of the wiring adapter includes contacts, nuts, a cover and various small components.

Integration

SINAMICS G120 frame size FSG with wiring adapter (and cable outlet)



SINAMICS G120X frame size FSG with wiring adapter (and cable outlet)

Further documentation on SINAMICS G120 is available free on the internet at:
www.siemens.com/sinamics-g120/documentation

Further documentation on SINAMICS G120X is available free on the internet at:
www.siemens.com/sinamics-g120x/documentation

Selection and ordering data

Description	Article No.
Wiring adapter for frame size FSG for optimal and space-saving wiring of SINAMICS G120 PM240-2 Power Modules, SINAMICS G120X and SINAMICS G120XA	**6SL3266-2HG00-0BA0**

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Spare parts > FPI board for frame sizes FSH and FSJ

Overview

The FPI board (freely-programmable interface board) is available as a spare part for the SINAMICS G120X and SINAMICS G120XA converters, frame sizes FSH and FSJ. This is an interface board between Control Unit and Power Module with additional customer terminals (X9, X41).

Selection and ordering data

Description	Article No.
FPI board for SINAMICS G120X and SINAMICS G120XA frame sizes FSH and FSJ	**6SL3200-0SP05-0AA0**

Spare parts > PSB board for frame sizes FSH and FSJ

Overview

The PSB board (power supply board) is available as a spare part for the SINAMICS G120X and SINAMICS G120XA converters, frame sizes FSH and FSJ. This is an internal power supply with ±24 V for the electronics and 56 V for a power unit fan.

Selection and ordering data

Description	Article No.
PSB board for SINAMICS G120X and SINAMICS G120XA frame sizes FSH and FSJ	**6SL3200-0SP06-0AA0**

Spare parts > Current transformers for frame sizes FSH and FSJ

Overview

Current transformers are available as spare parts for the SINAMICS G120X and SINAMICS G120XA converters, frame sizes FSH and FSJ. These are 2000 A or 1000 A current transformers for measuring the motor current at the device output. The current transformers are used for motor control and converter protection.

Selection and ordering data

Description	Article No.
Current transformers for SINAMICS G120X and SINAMICS G120XA	
• 2000 A for frame size FSJ	**6SL3200-0SE01-0AA0**
• 1000 A for frame sizes FSH and FSJ	**6SL3200-0SE02-0AA0**

Spare parts > Spare parts kit for Control Unit

Overview

The spare parts kit contains small parts for the SINAMICS G120X and SINAMICS G120XA Control Unit:

Included in the scope of delivery:

- 1× STO connecting plug for frame sizes FSA to FSC
- 3× replacement doors for the Control Unit
- 4× I/O terminals
- 1× screw for RS485 terminal
- 1× blanking cover
- Label set

Selection and ordering data

Description	Article No.
Spare parts kit for Control Unit for SINAMICS G120X and SINAMICS G120XA	**6SL3200-0SK10-0AA0**

Spare parts > Shield connection kit for Control Unit

Overview

A shield connection kit for the Control Unit is supplied with the SINAMICS G120X and SINAMICS G120XA converters, frame sizes FSD to FSG. It is advisable to install the supplied shield connection kit for EMC-compliant configuration of the converter. This shield connection kit can be ordered as a spare part.

The shield connection kit offers optimum shield connection and strain relief for all signal and communication cables.

The kit contains the following:

- a matching shield connection plate
- all of the necessary connecting and retaining elements for mounting

Selection and ordering data

Description	Article No.
Shield connection kit for Control Unit for SINAMICS G120X and SINAMICS G120XA frame sizes FSD to FSG	**6SL3264-1EA00-0YA0**

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Spare parts > Shield connection kits for Power Module

Overview

A shield connection kit is supplied with the SINAMICS G120XA converters, frame sizes FSA to FSC. It is advisable to install the supplied shield connection kit for EMC-compliant configuration of the converter. This shield connection kit can also be ordered as spare part.

The shield connection kits for the Power Module are not included in the scope of delivery for the SINAMICS G120XA converters, frame sizes FSD to FSG, but they can be ordered as an option.

Please observe the notes included in the operating instructions for the SINAMICS G120XA converters, frame sizes FSH and FSJ.

www.siemens.com/sinamics-g120xa/documentation

Selection and ordering data

Description	Article No.
Shield connection kits for Power Module for SINAMICS G120XA	
• Frame size FSA	**6SL3262-1AA01-0DA0**
• Frame size FSB	**6SL3262-1AB01-0DA0**
• Frame size FSC	**6SL3262-1AC01-0DA0**

Spare parts > Small parts assembly set for frame sizes FSD to FSG

Overview

A **small parts assembly set** can be ordered for SINAMICS G120 PM240-2 Power Modules, SINAMICS G120C, SINAMICS G120X and SINAMICS G120XA. It contains the following parts:

- Cable entries for frame sizes FSD to FSG
- 2 × 2 pin STO mating connector
- 1 set of warning labels in 30 languages

Selection and ordering data

Description	Article No.
Small parts assembly set for SINAMICS G120 Power Modules PM240-2, SINAMICS G120C, SINAMICS G120X and SINAMICS G120XA, frame sizes FSD to FSG	**6SL3200-0SK08-0AA0**

Spare parts > Terminal cover kits for frame sizes FSD to FSG

Overview

The terminal cover kit includes a replacement cover for the connecting terminals.

Terminal cover kits, which are suitable for the following converters in frame sizes FSD to FSG, are available:

- SINAMICS G120 PM240-2 Power Modules
- SINAMICS G120 PM250 Power Modules
- SINAMICS G120C
- SINAMICS G120X and SINAMICS G120XA

Selection and ordering data

Description	Article No.
Terminal cover kits for SINAMICS G120 PM240-2 Power Modules	
• for frame size FSD	**6SL3200-0SM13-0AA0**
• for frame size FSE	**6SL3200-0SM14-0AA0**
• for frame size FSF	**6SL3200-0SM15-0AA0**
• for frame size FSG	**6SL3200-0SM16-0AA0**
Terminal cover kits for SINAMICS G120 PM250 Power Modules	
• for frame sizes FSD and FSE	**6SL3200-0SM11-0AA0**
• for frame size FSF	**6SL3200-0SM12-0AA0**
Terminal cover kits for SINAMICS G120C	
• for frame size FSD	**6SL3200-0SM13-0AA0**
• for frame size FSE	**6SL3200-0SM14-0AA0**
• for frame size FSF	**6SL3200-0SM15-0AA0**
Terminal cover kits for SINAMICS G120X and SINAMICS G120XA	
• for frame size FSD	**6SL3200-0SM13-0AA0**
• for frame size FSE	**6SL3200-0SM14-0AA0**
• for frame size FSF	**6SL3200-0SM15-0AA0**
• for frame size FSG	**6SL3200-0SM16-0AA0**

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Spare parts > Fan units

Overview

The fans of the SINAMICS G120XA converters are designed for extra long service life. For special requirements, replacement fans are available that can be exchanged quickly and easily.

Selection and ordering data

Description		Article No.
External fan units for SINAMICS G120XA		
• Frame size FSA		**6SL3200-0SF52-0AA0**
• Frame size FSB		**6SL3200-0SF53-0AA0**
• Frame size FSC		**6SL3200-0SF54-0AA0**
• Frame size FSD		**6SL3200-0SF15-0AA0**
• Frame size FSE		**6SL3200-0SF16-0AA0**
• Frame size FSF		**6SL3200-0SF17-0AA0**
• Frame size FSG		**6SL3200-0SF18-0AA0**
• Frame size FSH, USS version		
- with hardware version ≤ 02 [1]		**6SL3200-0SF55-0AA0**
- with hardware version ≥ 03 [1]	NEW	**6SL3200-0SF57-0AA0**
• Frame size FSH, PN version	NEW	**6SL3200-0SF57-0AA0**
• Frame size FSJ		**6SL3200-0SF56-0AA0**
Internal fan unit for SINAMICS G120XA		
• Frame sizes FSH and FSJ		**6SL3200-0SF51-0AA0**
Accessories		
SITOP power supply for the external fan unit for SINAMICS G120XA, frame sizes FSH and FSJ		**6EP3446-8SB00-0AY0**
Fuse for the external fan unit for SINAMICS G120XA, frame sizes FSH and FSJ		**6SY7000-0AC46**

Spare parts > Control Units

Overview

Control units are available as spare parts for the SINAMICS G120XA convertes frame sizes FSA to FSJ.

Selection and ordering data

Description		Article No.
Control Units for SINAMICS G120XA		
• frame sizes FSA to FSJ USS, Modbus RTU, BACnet MS/TP		**6SL3200-0SC00-0BA0**
• frame sizes FSD to FSJ PROFINET, EtherNet/IP	NEW	**6SL3200-0SC00-0FA0**

[1] The hardware version of the converter is on the rating plate.

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SINAMICS Selector App
Mobile selection guide for frequency converters

Siemens has developed the SINAMICS Selector app as a practical tool for finding article numbers for your SINAMICS converter in the power range from 0.1 kW to 630 kW quickly and easily. Whether for SINAMICS V20, SINAMICS V90, SINAMICS G120C, SINAMICS G120P, SINAMICS G120X, SINAMICS G120XA, SINAMICS G120, SINAMICS G220, SINAMICS S200 or SINAMICS S210:
The app will provide you with the correct article numbers conveniently.
How does it work? Simply select your application, the frequency converter you require, the rated power and device options as well as the necessary accessories. Then you can save your selection and send it by email. The preselection serves as the basis for an order specification with the dealer/Siemens.
You will find free downloads for Android and iOS here:
www.siemens.com/sinamics-selector

Cybersecurity information
Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.
In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.
Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.
For additional information on industrial cybersecurity measures that may be implemented, please visit
www.siemens.com/cybersecurity-industry.
Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.
To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under
www.siemens.com/cert.

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Siemens Product Configurator

Overview

The Siemens Product Configurator helps you to configure the optimum drive technology products for a number of applications. The product portfolio comprises the full drive technology range of gearbox, motor, converter and connection system as well as corresponding controller with suitable software license. The intuitive user interface in conjunction with product-specific preliminary selectors makes it simple, fast and efficient to configure products. The result is a bill of materials with extensive documentation consisting of technical data sheets, motor characteristic curves, 2D dimensional drawings / 3D CAD models, EPLAN macros and much more. You can order the products directly by transferring the bill of materials to the shopping cart of SiePortal.

Siemens Product Configurator at a glance

- Quick and easy configuration of drive products and associated components – gearboxes, motors, converters, controllers, connection systems
- Extensive documentation for all products and components, such as
  - Data sheets in up to 12 languages
  - Motor characteristic curves
  - 2D dimensional drawings / 3D CAD models in different formats
  - Terminal box drawing and terminal connection diagram
  - Certificates
  - EPLAN macros
- Ability to order products directly through the SiePortal

Access to Siemens Product Configurator

The Siemens Product Configurator can be accessed without the need for registration or logging in:
www.siemens.com/sinamics-g120xa/configuration

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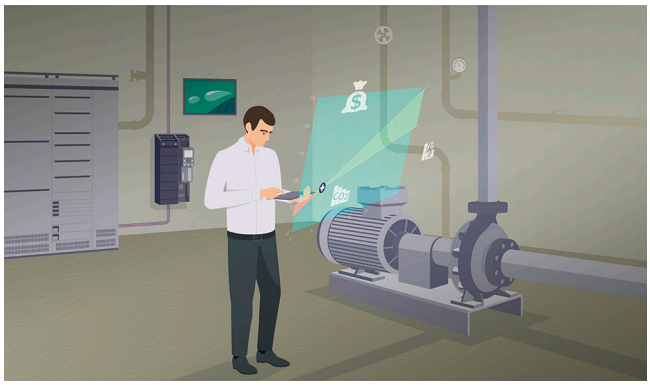
Overview

SinaSave determines the energy saving potential and payback time based on your application setup. SinaSave is a web tool which is intuitive to operate and supports you in an investment decision:

- Is it worthwhile to use more energy efficient systems?
- When will my investment pay off?

SinaSave supports you to find the optimum solution: technically, economically, and ecologically.



In which cases can SinaSave support you?

- Motors
  - Calculate your potential energy savings and amortization times with SIMOTICS motors
- Pump systems
  - Calculate your potential energy and CO2 savings with our pump drive systems
- Fan systems
  - Calculate your potential energy and CO2 savings with our fan drive systems

Access to the SinaSave energy efficiency tool

SinaSave can be accessed without the need for registration or logging in:
www.siemens.com/sinasave

Benefits

- **Transparency of overall savings potential and individual amortization plan**
  - SinaSave calculates the expected energy consumption and the resulting savings of energy, CO2 and energy cost, based on your individual energy prices, operating times and load profiles.
- **Support to find the optimum solution to make easy decision**
  - SinaSave directly compares your existing motors with SIMOTICS motors of various energy efficiency classes, for new systems and retrofits.
- **Ease of use and self-explanatory user guidance to calculate savings potential on overall system level**
  - SinaSave compares different drive system configurations for pump or fan applications. Regardless of greenfield or brownfield projects, SinaSave offers the flexibility to choose from different motor types and control modes, including variable speed drives and softstarters.
- **Well-structured SinaSave projects give you transparency of the savings potential of your entire facility**
  - SinaSave lets you combine several items in a single project. That means it's possible to reflect entire facilities and identify the savings potential they offer.

Functions

- Determine savings potential for energy, power costs, and CO2
- Estimate expected amortization and Total Costs of Ownership (TCO)
- Output of system power losses for motor inverter systems as per IEC 61800-9-2
- Calculate possible financing, such as energy performance contracting (EnPC)
- Take government subsidies into account
- Simple design with intuitive usability
- Results presented in graphic form
- Save and load, share a handout e.g with your customer or decision-maker
- Eight languages, 14 currencies, IEC and NEMA standards
- Direct transfer to next processes, e.g. product configuration

More information

Further information about the amortization calculator for energy-efficient drive systems is available on the Internet at:
www.siemens.com/tools-sinasave

Further information about services for energy saving is available on the Internet at:
www.siemens.com/energy-saving

www.siemens.com/energy-efficiency

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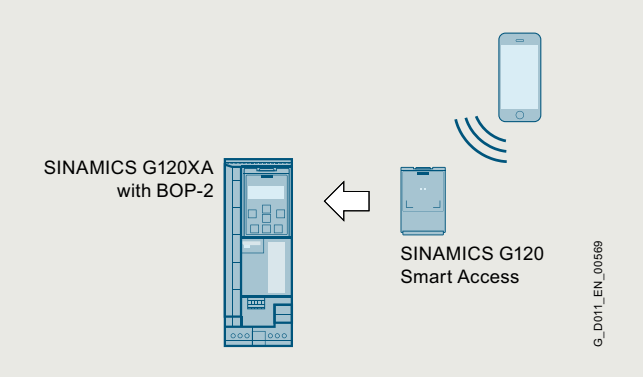
SINAMICS web server for SINAMICS G120XA via SINAMICS G120 Smart Access

Overview

Web server for efficient commissioning, diagnostics and maintenance



SINAMICS G120XA with BOP-2 and SINAMICS G120 Smart Access

Thanks to the optionally available SINAMICS G120 Smart Access, the SINAMICS G120XA drive system offers a web server for efficient commissioning, diagnostics and maintenance options. The web server provides access to a multi-faceted range of new options for parameter assignment and drive diagnostics for laptops, tablets and smartphones, including:

- Simple and fast commissioning
- Drive traversing via the control panel
- Downloading/uploading a configuration
- Providing a status overview of the drive
- Evaluating warnings and fault messages
- Monitoring and adapting parameter settings

Benefits

Simple and fast commissioning

- No installation of additional commissioning software
- Standard pages for limit values and settings
- Comprehensive fault diagnosis

Direct language selection

- English, German, French, Italian, Spanish, Chinese

Accessibility

- Free choice of terminal devices as the web server works with all common web browsers, such as iOS, Android, Microsoft Windows, Linux and Mac OS

Diagnostic functions

- Quick overview of the current configuration and the state of the drive
- Understandable diagnostic information and messages, including the causes of issues and possible remedies, are displayed in plain text in multiple languages

Freely configurable parameter lists

- Monitoring parameters for diagnostic purposes, for example for operating personnel
- Adjustment of the parameter lists using filters, parameter groups and the configuration of personal lists

Access security

- Protection against unauthorized access to the drive information

Application

Easy commissioning, diagnostics and maintenance are possible locally, provided appropriate security measures are applied.

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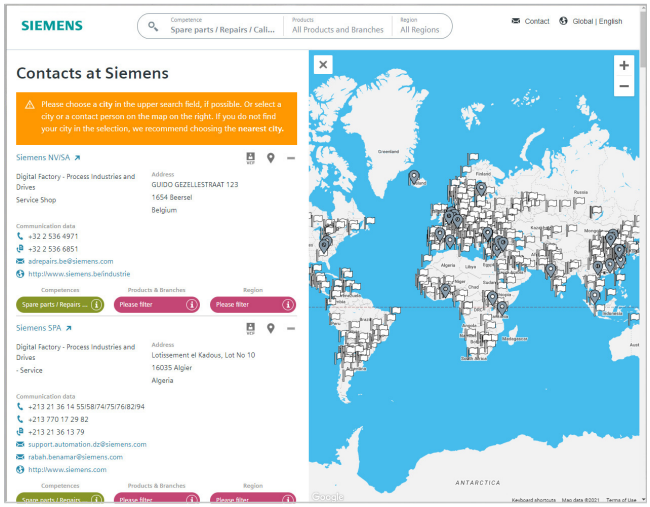
Overview

Partner at Siemens



At your service locally, around the globe for consulting, sales, training, service, support, spare parts on the entire portfolio of Siemens.

Your partner can be found in our Personal Contacts Database at:
www.siemens.com/automation-contact

You start by selecting

- the required competence,
- products and branches,
- a country and a city

or by a

location search or free text search.

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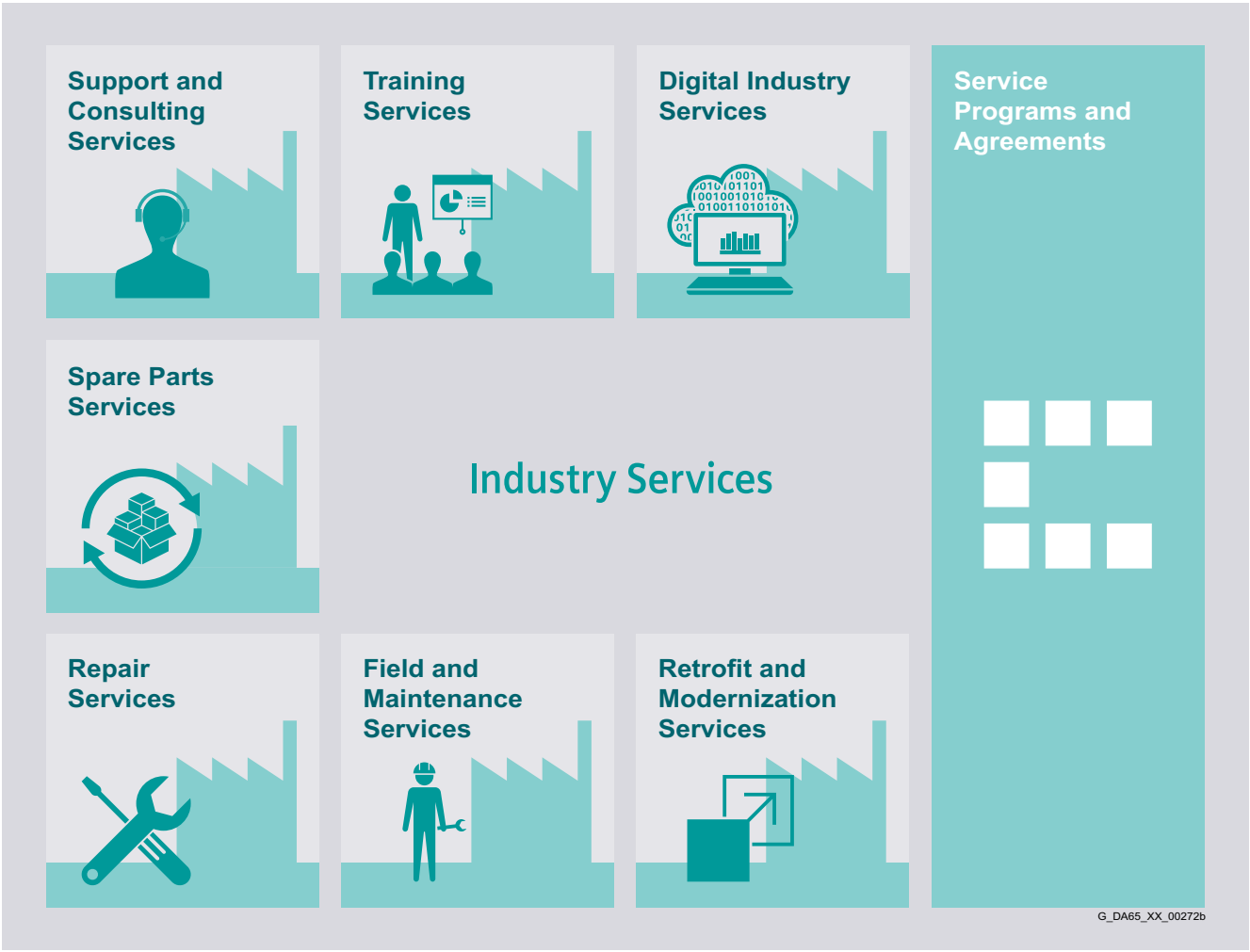
Overview



Keep your business running and shaping your digital future – with Industry Services

Optimizing the productivity of your equipment and operations can be a challenge, especially with constantly changing market conditions. Working with our service experts makes it easier. We understand your industry's unique processes and provide the services needed so that you can better achieve your business goals.

You can count on us to maximize your uptime and minimize your downtime, increasing your operations' productivity and reliability. When your operations have to be changed quickly to meet a new demand or business opportunity, our services give you the flexibility to adapt. Of course, we take care that your production is protected against cyber threats. We assist in keeping your operations as energy and resource efficient as possible and reducing your total cost of ownership. As a trendsetter, we ensure that you can capitalize on the opportunities of digitalization and by applying data analytics to enhance decision making: You can be sure that your plant reaches its full potential and retains this over the longer lifespan.

You can rely on our highly dedicated team of engineers, technicians and specialists to deliver the services you need – safely, professionally and in compliance with all regulations. We are there for you, where you need us, when you need us.

www.siemens.com/digital-enterprise-services

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Industry Services – Portfolio overview

Overview

Digital Industry Services

Digital Industry Services make your industrial processes transparent to gain improvements in productivity, asset availability, and energy efficiency.

Production data is generated, filtered and translated with intelligent analytics to enhance decision-making.

This is done whilst taking data security into consideration and with continuous protection against cyber-attack threats.
www.siemens.com/digital-enterprise-services

Training Services

From the basics and advanced to specialist skills, SITRAIN courses provide expertise right from the manufacturer – and encompass the entire spectrum of Siemens products and systems for the industry.

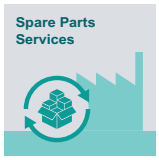
Worldwide, SITRAIN courses are available wherever you need a training course in more than 170 locations in over 60 countries.
https://support.industry.siemens.com/cs/ww/en/sc/2226

Support and Consulting Services

Industry Online Support site for comprehensive information, application examples, FAQs and support requests.

Technical and Engineering Support for advice and answers for all inquiries about functionality, handling, and fault clearance. The Service Card as prepaid support for value added services such as Priority Call Back or Extended Support offers the clear advantage of quick and easy purchasing.

Information & Consulting Services, e.g. SIMATIC System Audit; clarity about the state and service capability of your automation system or Lifecycle Information Services; transparency on the lifecycle of the products in your plants.
https://support.industry.siemens.com/cs/ww/en/sc/2235



Spare Parts

Spare Parts Services are available worldwide for smooth and fast supply of spare parts – and thus optimal plant availability. Genuine spare parts are available for up to ten years. Logistic experts take care of procurement, transport, custom clearance, storage and order management. Reliable logistics processes ensure that components reach their destination as needed.

Since not all spare parts can be kept in stock at all times, Siemens offers a preventive measure for spare parts provisioning on the customer's premises with optimized **Spare Parts Packages** for individual products, custom-assembled drive components and entire integrated drive trains – including risk consulting.

Asset Optimization Services help you design a strategy for parts supply where your investment and carrying costs are reduced and the risk of obsolescence is avoided.
https://support.industry.siemens.com/cs/ww/en/sc/2110

Repair Services

Repair Services are offered on-site and in regional repair centers for fast restoration of faulty devices' functionality.

Also available are extended repair services, which include additional diagnostic and repair measures, as well as emergency services.
https://support.industry.siemens.com/cs/ww/en/sc/2154

Field and Maintenance Services

Siemens specialists are available globally to provide expert field and maintenance services, including commissioning, functional testing, preventive maintenance and fault clearance.

All services can be included in customized service agreements with defined reaction times or fixed maintenance intervals.
https://support.industry.siemens.com/cs/ww/en/sc/2265

Retrofit and Modernization Services

Provide a cost-effective solution for the expansion of entire plants, optimization of systems or upgrading existing products to the latest technology and software, e.g. migration services for automation systems.

Service experts support projects from planning through commissioning and, if desired over the entire extended lifespan, e.g. Retrofit for Integrated Drive Systems for an extended lifetime of your machines and plants.
https://support.industry.siemens.com/cs/ww/en/sc/2286

Service Programs and Agreements

A technical Service Program or Agreement enables you to easily bundle a wide range of services into a single annual or multi-year agreement.

You pick the services you need to match your unique requirements or fill gaps in your organization's maintenance capabilities.

Programs and agreements can be customized as KPI-based and/or performance-based contracts.
https://support.industry.siemens.com/cs/ww/en/sc/2275

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Overview

Siemens Industry and Online Support with some 1.7 million visitors per month is one of the most popular web services provided by Siemens. It is the central access point for comprehensive technical know-how about products, systems and services for automation and drives applications as well as for process industries.

In connection with the challenges and opportunities related to digitalization you can look forward to continued support with innovative offerings.

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SITRAIN – Digital Industry Academy

Introduction

Learn the way you like it – with SITRAIN

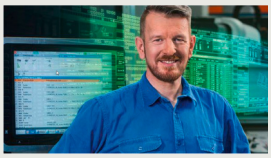
SITRAIN imparts a wide range of technical knowledge for all industries and applications. Our offering is oriented toward the needs of learners and the demands of innovative companies. Get pleasure out of learning - thanks to innovative learning methods, personal support, and knowledge that will help you in your work and further development. For successful, flexible, and continuous learning.

Education and training directly from the manufacturer

SITRAIN provides you with training from the industrial product and solution portfolio from Siemens and benefits from 30 years of expertise in technical training. Take a look at the many options for expanding your knowledge with SITRAIN and find the course that meets your needs! The following training and further education units are available to you for your individual knowledge building:

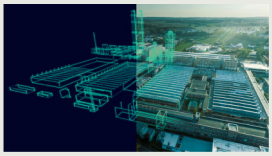
Industrial Automation Systems SIMATIC
Training available for:
SIMATIC S7-1500. TIA Portal, SIMATIC S7-300/400, SIMATIC S7-1200

Drive Technology
Training available for:
SINAMICS S120 and SINAMICS G120 low-voltage converters, SINAMICS G130 / G150 / G180 / S150



SINUMERIK CNC automation system
Training available for:
SINUMERIK 840D, SINUMERIK 840D sl and SINUMERIK ONE

Process Control Systems
Training available for:
SIMATIC PCS 7, SIMATIC PCS neo

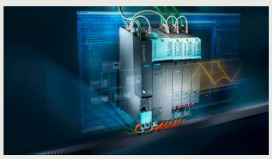


Digital Enterprise
Training available for:
Openness, SIMIT, OPC UA, Industrial Edge, Virtual commissioning

Industrial Communications
Training available for:
PROFINET, SCALANCE, R UGGEDOM, Industrial Ethernet, Fieldbus communication, Industrial Security, Remote communication

Identification and Locating
Training available for:
RFID, RTLS-Systems

Operator Control and Monitoring Systems
Training available for:
SIMATIC WinCC Unified in TIA Portal, SIMATIC WinCC in TIA Portal, SIMATIC WinCC V7x



Motion Control System SIMOTION
Training available for:
SIMOTION (Programming, Commissioning, Diagnostics, Service)

Smart Infrastructure
Training available for:
SIRIUS, SENTRON, SIVACON, ALPHA, SIMOCODE, Circuit breakers

Process Analytics & I nstrumentation
Training is available for process analytics and instrumentation, explosion protection, process gas chromatographs

Additional training offer
SIMOVE with Automated Guided Vehicles (AGV), SIPLUS CMS, Guidelines and standards for control cabinets

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Introduction

Different learning formats and methods for maximum learning success

With our SITRAIN training formats, you learn in the way that best suits your preferences and routine. You decide whether you would rather take online training or face-to-face training. It is up to you whether you would like to study on demand or at fixed times.

With a personal learning consultant, in the team, or on your own – you can explore all the possibilities.

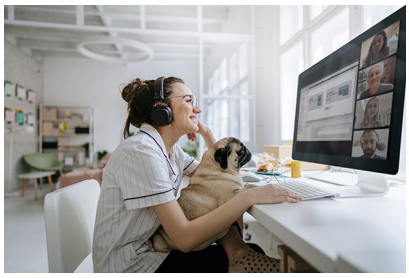
Discover our three learning formats:

Learning Event

SITRAIN Learning Events are the perfect choice when you want to achieve a defined learning goal in the shortest possible time. You learn in a protected learning environment outside of the daily work routine under the guidance of a learning consultant - virtually, in the training center, or at your company.

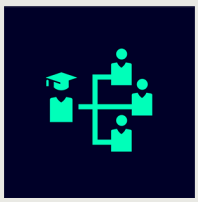
Learning Membership SITRAIN Access

With SITRAIN access, you enter a world of extensive and constantly expanding self-study units on our digital learning platform for industry. With SITRAIN access, you can implement a modern learning culture in your team or company with independent and continuous learning.



Learning Journey

The Learning Journey is the perfect combination of units taken live and self-study units for sustainable learning success. The modular approach enables simple integration into your daily work. This also includes one-year membership for using the SITRAIN access digital learning platform.

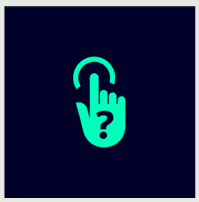


Live

Learn together with others, simultaneously and guided by a learning consultant. Online, in the SITRAIN training center or at your company.

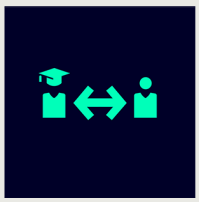
Self-reliant

Expand your knowledge self-determined with industry learning and work on your learning units at your own pace and according to your own schedule.



On demand

Get the knowledge you need, exactly when you need it. Be it to answer a current question or to work on a special topic.



Individual

Talk directly with the learning consultant, clarify detailed questions and get personal coaching for transferring the learned topics to your own application.

Training cases catalog

www.siemens.com/
sitrain-catalog-training-cases

www.siemens.com/sitrain

Find
your local
offer here

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Training courses for SINAMICS low-voltage converters

Overview

Training courses for SINAMICS drive system

This provides an overview of the training courses available for the SINAMICS drive system.

The courses are modular in design and are directed at a variety of target groups as well as individual customer requirements.

The system overview will acquaint decision-makers and sales personnel with the system very quickly.

The engineering course provides all the information you need to configure the drive system.

The courses dedicated to diagnostics and servicing, parameterization and commissioning, communication as well as extended functions such as Safety Integrated are sure to provide all the technical knowledge service engineers will need.

All courses contain as many practical exercises as possible to enable intensive and direct training on the drive system and with the tools in small groups.

Please also take note of the training options available for SIMOTICS motors. You will find more information about course contents and dates on the internet.

Title (all courses are available in English and German)	Target group Planners, decision-makers, sales personnel	 Commissioning engineers, configuring engineers	 Service personnel, maintenance technicians	Duration	Order code
Course Fundamentals and overview					
SINAMICS and SIMOTICS - Basics of drive technology	✓	✓	✓	5 days	DR-GAT
Courses SINAMICS S120					
SINAMICS S120 Designing and Engineering	✓	–	–	5 days	DR-S12-PL
SINAMICS S120 Parameterizing and Commissioning with STARTER	–	✓	–	5 days	DR-S12-PM
SINAMICS S120 Parameterizing and Commissioning in the TIA Portal	–	✓	–	5 days	DR-S12-PMT
SINAMICS S120 Parameterizing Safety Integrated	–	✓	–	4 days	DR-S12-SAF
SINAMICS S120 Parameterizing and Optimization	–	✓	–	5 days	DR-S12-OPT
SINAMICS S120 Diagnostics and Service	–	–	✓	5 days	DR-S12-DG
SINAMICS S120 Diagnostics and Service in the TIA Portal	–	–	✓	5 days	DR-S12-DGT
SINAMICS S120 Diagnostics on Chassis and Cabinet Units	–	✓	✓	3 days	DR-S12-CHA
Course SINAMICS G120 (including SINAMICS G120X, SINAMICS G120D and SINAMICS G115D)					
Parameterizing and Commissioning	–	✓	–	2 days	DR-G12-PM
Courses SINAMICS G130/G150/G180/S150					
SINAMICS G150/G130/S150 - Diagnostics and Service	–	✓	✓	5 days	DR-G15-DG
SINAMICS G180 - Diagnostics and Service	–	–	✓	2.5 days	DR-G18-DG

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Overview

SINAMICS G120XA training case

The SINAMICS G120XA training case is a convincing demonstration system thanks to its compact design. It is suitable for direct customer presentations as well as for tests in technical departments. It enables the functions of SINAMICS G120XA to be demonstrated and tested quickly and easily.

It contains the following components:

- SINAMICS G120XA frequency converter, USS, Modbus RTU, BACnet MS/TP, 0.75 kW
- Operator panels IOP-2 and BOP-2
- SINAMICS G120 Smart Access
- Asynchronous (induction) motor

The SINAMICS G120XA training case is supplied as a trolley with a hood.

Technical specifications

	SINAMICS G120XA training case 6AG1067-2AA00-0AC2
Supply voltage	230 V 1 AC
Dimensions	
• Width	290 mm (11.42 in)
• Height	470 mm (18.50 in)
• Depth	300 mm (11.81 in)
Weight, approx.	16.9 kg (37.26 lb)

Selection and ordering data

Description	Article No.
SINAMICS G120XA training case	**6AG1067-2AA00-0AC2**

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Overview

Our understanding of an application is the customer-specific solution of an automation task based on standard hardware and software components. In this respect, industry knowledge and technological expertise are just as important as expert knowledge about how our products and systems work. We are setting ourselves this challenge with more than 280 application engineers in 20 countries.

Application centers

We currently have application centers in:

- Germany:
  Head Office in Erlangen and in other German regions, e.g. in Munich, Nuremberg, Stuttgart, Mannheim, Frankfurt, Chemnitz, Cologne, Bielefeld, Bremen, Hanover, Hamburg
- Belgium: Brussels
- Brazil: Sao Paulo
- China: Beijing and 12 regions
- Denmark: Ballerup
- France: Paris
- Great Britain: Manchester
- India: Mumbai
- Italy: Bologna, Milan
- Japan: Tokyo, Osaka
- The Netherlands: The Hague
- Austria: Vienna
- Poland: Warsaw
- Sweden: Göteborg
- Switzerland: Zurich, Lausanne
- Spain: Madrid
- South Korea: Seoul
- Taiwan: Taipei
- Turkey: Istanbul
- USA: Atlanta

These application centers specialize in the use of SIMATIC/SIMOTION/SINAMICS. You therefore can rely on automation and drive specialists for implementing successful applications. By involving your personnel at an early stage in the process, we can provide a solid basis for rapid knowledge transfer, maintenance and further development of your automation solution.

Advice on applications and implementation

We offer a variety of consultation services to help you find the optimum solution for the SIMATIC/SIMOTION/SINAMICS application you want to implement:

The quotation phase includes

- clarification of technical questions,
- discussion of machine concepts and customer-specific solutions,
- selection of suitable technology and
- suggestions for implementation.

A technical feasibility study is also performed at the outset. In this way, difficult points of the application can be identified and solved early on. We can also configure and implement your application as a complete solution from a single source.

A large number of proven standard applications are available for use during the implementation phase. This saves engineering costs.

The system can be commissioned by experienced, competent personnel, if required. This saves time and trouble.

If servicing is required, we can support you on site or remotely. For further information about servicing, please see the section "Industry Services".

On-site application training

Training for the implemented applications can also be organized and carried out on site. This training for machine manufacturers and their customers does not deal with individual products, but the entire hardware and software system (for example, automation, drives and visualization).

From an initial concept to successful installation and commissioning: We provide complete support for SIMATIC/SIMOTION/SINAMICS! Contact your Siemens representative.

You can find further information at
www.siemens.com/machinebuilding

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Overview

Siemens Product Partners for Drives Options

Individual options for our drives

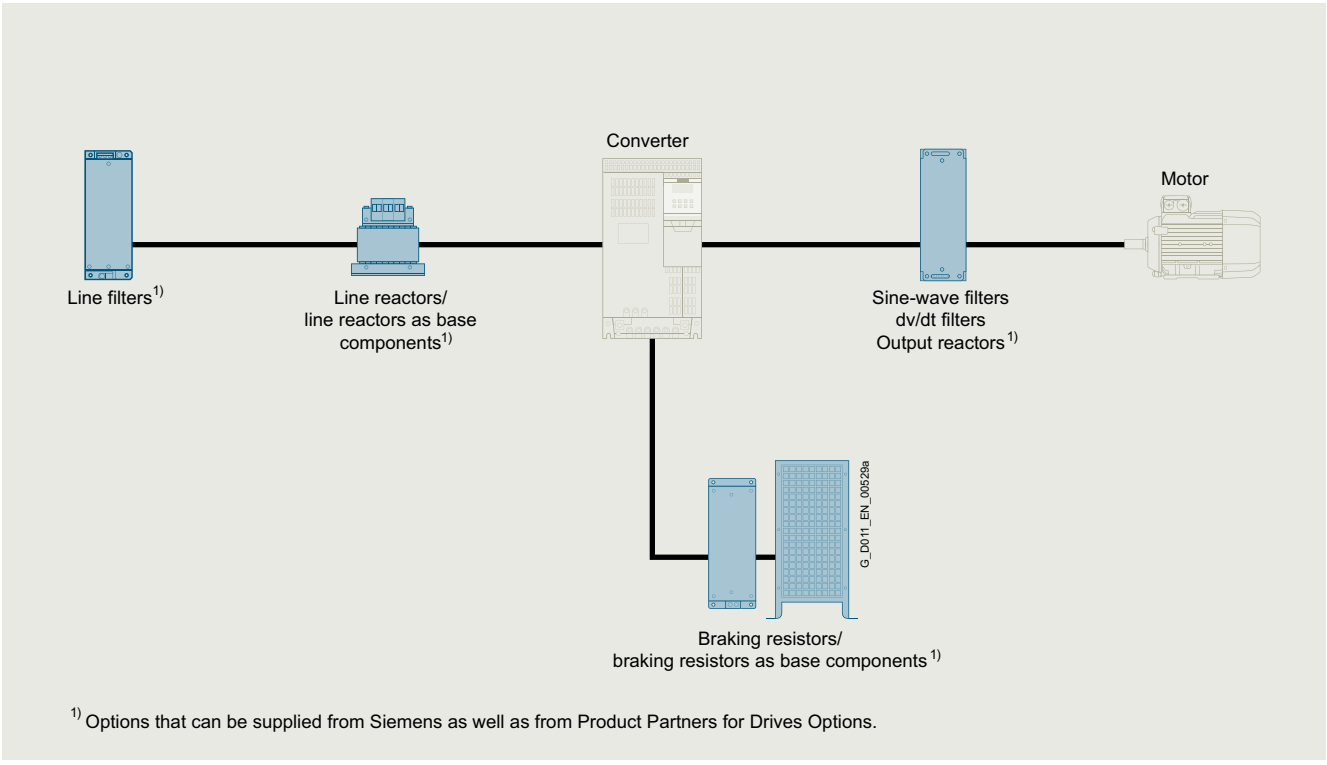
In order to meet as many customer requirements as possible in the field of drive technology, in addition to its own products, Siemens also relies on the individual and complementary services of selected partners.

We are increasingly focusing on the standard drive options, and our Siemens Product Partners for Drives Options supplement our drives with individual drive options.

This gives Siemens a unique flexibility to meet all application requirements. Naturally, we support our Siemens Product Partners for Drives Options in tailoring their options perfectly to our drives.

For you as our customer, there are multiple benefits:

- The Siemens Product Partners for Drives Options meet the same high standards of quality and performance that we place on our own products
- Drive options can be adapted to individual requirements/ designs
- The Siemens Product Partners for Drives Options know our Siemens converter portfolio and can advise you individually and quickly



Schematic circuit diagram

More information

You can find more information on the internet at
www.siemens.com/drives-options-partner

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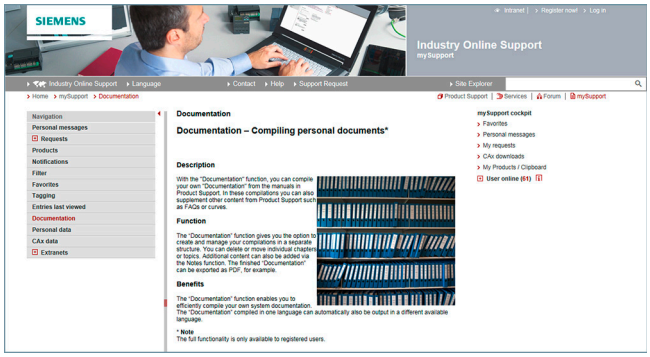
Overview

mySupport documentation – Compiling personal documents



mySupport documentation is a web-based system for generating personalized documentation based on standard documents and is part of the Siemens Industry Online Support portal.

In mySupport, a personal document library can be created in the "Documentation" category. This library can be accessed online in mySupport or also be generated in various formats for offline use.

Previously, this functionality was available in the My Documentation Manager for configurable manuals. Due to the integration in mySupport, all entries of the Industry Online Support can now be imported into the personal document library, including FAQs or product notifications.

If you have already worked with the My Documentation Manager, all of the previously created libraries will continue to be available without restrictions in mySupport.

In addition, the personal library in mySupport can be shared with other mySupport users. In this way, a collection of relevant documents can be created very effectively and used together with other mySupport users all over the world.

You must register/log in for configuring and generating/managing.

Benefits

- Display
  View, print or download standard documents or personalized documents
- Configure
  Transfer standard documents or parts of them to personalized documents
- Generate/Manage
  Generate and manage personalized documents in the formats PDF, RTF or XML in all available languages

Function

Opening mySupport documentation in the Industry Online Support portal

- About the product support, entry type "Manual":
  https://support.industry.siemens.com/cs/ww/en/ps/man
  By clicking on the required version of the manual and then "Show and configure", the manual opens in a modular view, where you can navigate from topic to topic. Here the direct link to a topic can be used and made available to other users. The selected document can be added to the personal library via "mySupport Cockpit" > "Add to mySupport documentation".
- Via the direct link
  https://support.industry.siemens.com/my/ww/en/documentation/advanced
  After logon/registration, the online help is displayed as the current document.

More information

You can find additional information on the internet at

- https://support.industry.siemens.com/my/ww/en/documentation
- https://support.industry.siemens.com/cs/helpcenter/en/index.htm?#persoenliche_bibliothek_aufbauen.htm

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Overview

A high-quality programmable control or drive system can be used to maximum effect only if the user is aware of the performance of the products used as a result of intensive training and good technical documentation.

This is becoming more important due to the shorter innovation cycles of modern automation products and the convergence of electronics and mechanical engineering.

A comprehensive range of documentation is available which includes a Getting Started guide, operating instructions, installation manuals and a list manual.

In addition to technical information for SINUMERIK, SINAMICS, SIMOTION and SIMOTICS, the documentation is available for downloading as a PDF file from the internet:

- SINUMERIK
https://support.industry.siemens.com/cs/document/108464614
- SINAMICS
https://support.industry.siemens.com/cs/document/109807358
- SIMOTION
https://support.industry.siemens.com/cs/document/109479653
- SIMOTICS
https://support.industry.siemens.com/cs/document/109813641

Application

Explanations of the manuals:

- **Operating Instructions**
contain all the information needed to install the device and make electrical connections, information about commissioning and a description of the converter functions.
Phases of use: Control cabinet construction, commissioning, operation, maintenance and servicing.
- **Hardware Installation Manual**
contains all relevant information about the intended use of the components of a system (technical specifications, interfaces, dimensional drawings, characteristics, or possible applications), information about installation and electrical connections and information about maintenance and servicing.
Phases of use: Control cabinet configuration/construction, maintenance and servicing.
- **Operating and Installation Instructions**
(for converter and accessories)
contain all relevant information about the intended use of the components, such as technical specifications, interfaces, dimensional drawings, characteristics, or possible applications.
Phases of use: Control cabinet configuration/construction.
- **Manual/Configuration Manual**
contains all necessary information about the intended use of the components of a system, e.g. technical specifications, interfaces, dimensional drawings, characteristics, or possible applications.
Phases of use: Cabinet configuration/setup, circuit diagram configuration/drawing.
- **Commissioning Manual**
contains all information relevant to commissioning after installation and wiring. It also contains all safety and warning notices relevant to commissioning in addition to overview drawings.
Phases of use: Commissioning of components that have already been connected, configuration of system functions.
- **List Manual**
contains all parameters, function diagrams, and faults/alarms for the product/system as well as their meanings and setting options. It contains parameter data and fault/alarm descriptions with functional correlations.
Phases of use: Commissioning of components that have already been connected, configuration of system functions, fault cause/diagnosis.
- **Getting Started**
provides information about getting started for the first-time user as well as references to additional information. It contains information about the basic steps to be taken during commissioning. The information in the other documentation should be carefully observed for all of the other work required.
Phases of use: Commissioning of components that have already been connected.
- **Function Manual Drive Functions**
contains all the relevant information about individual drive functions: Description, commissioning and integration in the drive system.
Phases of use: Commissioning of components that have already been connected, configuration of system functions.

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Documentation SINAMICS G120XA

Overview

Identification link according to IEC 61406 for SINAMICS G120XA

The ID link contains the article and serial number of the product. As a QR code, it replaces the previous data matrix code on the nameplate and takes you with the URL directly to a product information page on the internet with access to the technical documentation, data sheet, certificates, FAQs, product notifications, and catalogs. Paper package inserts become superfluous since the information is available electronically directly via the QR code, even years later. In this way, we are making a valuable contribution to the preservation of our environment. You don't need an additional app. Simply scan the QR code with your smartphone or tablet. According to IEC 61406, the QR code of an ID link is marked with a frame and a triangle at the bottom right.
With their globally unique identifiers, Siemens products are ready for Industry 4.0.
The ID serves as a connection to the administration shell with which modules of the digital twin can be provided.

Further documentation, such as the operating instructions, is available free on the internet at:
www.siemens.com/sinamics-120xa/documentation

Detailed information on the SINAMICS G120XA infrastructure converters for standard pumps/fans, including the latest technical documentation (brochures, tutorials, dimensional drawings, certificates and operating instructions), is available on the internet at:
www.siemens.com.cn/sinamics-g120xa

and is also available via the Siemens Product Configurator on the internet.

The Siemens Product Configurator can be found in SiePortal at the following address:
www.siemens.com/sinamics-g120xa/configuration

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1 General Provisions

By using this catalog you can purchase hard- and software products as well as services (together hereinafter referred to as "products") described therein from Siemens Aktiengesellschaft subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Note, for products purchased from any Siemens entity having a registered office outside of Germany, the respective terms and conditions of sale and delivery of the respective Siemens entity apply exclusively. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in European Union

For customers with a seat or registered office in European Union, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the text of the product description, these specific terms and conditions shall apply and subordinate thereto,,
- for stand-alone software products and software products forming a part of a product or project, the "General Conditions for Software Products for Infrastructure & Industry Business (German law)"[1] and/or
- for consulting services the "Allgemeine Geschäftsbedingungen für Beratungsleistungen für Infrastructure & Industry Geschäft (Deutsches Recht)"[1] (available only in German) and/or
- for other services, the „Supplementary Terms and Conditions for Services for Infrastructure & Industry Business (German Law) ("BL")"[1] and/or
- for other products the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1].
  In case such products should contain Open Source Software, the conditions of which shall prevail over the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1], the Product will be given a note as to which special conditions apply to this open source software. This shall apply mutatis mutandis for notices referring to other third-party software components.

1.2 For customers with a seat or registered office outside European Union

For customers with a seat or registered office outside European Union, the following terms and conditions apply subordinate to T&C:

- for products, which include specific terms and conditions in the description text, these specific terms and conditions shall apply and subordinate thereto,
- for consulting services the "Standard Terms and Conditions for Consulting Services for Infrastructure & Industry Business (Swiss Law)"[1] and/or
- for other services the "International Terms & Conditions for Services"[1] supplemented by "Software Licensing Conditions"[1] and/or
- for other products the "International Terms & Conditions for Products"[1] supplemented by "Software Licensing Conditions"[1]

1.3 For customers with master or framework agreement

To the extent products offered are covered by an existing master or framework agreement, the terms and conditions of that agreement shall apply instead of T&C.

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

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

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

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials.
A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation. The metal factor, provided it is relevant, can be found in the respective product description.

An exact explanation of the metal factor can be downloaded at:

https://mall.industry.siemens.com/legal/ww/en/terms_of_trade_en.pdf

To calculate the surcharge (except in the cases of copper, dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to copper, the official price from two days prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

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

[1] The text of the Terms and Conditions of Siemens AG can be downloaded at
https://mall.industry.siemens.com/legal/ww/en/terms_of_trade_en.pdf

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4. Export Control and Sanctions Compliance

4.1 General

Customer shall comply with all applicable sanctions, embargoes and (re-)export control laws and regulations, and, in any event, with those of the European Union, the United States of America and any locally applicable jurisdiction (collectively “Export Regulations”).

4.2 Checks for Products

Prior to any transaction by customer concerning products (including hardware, documentation and technology) delivered by Siemens, or products (including maintenance and technical support) performed by Siemens with a third party, customer shall check and certify by appropriate measures that

- (i) the customer’s use, transfer, or distribution of such products, the brokering of contracts or the provision of other economic resources in connection with products will not be in violation of any Export Regulations, also taking into account any prohibitions to circumvent these (e.g., by undue diversion)
- (ii) the products are not intended or provided for prohibited or unauthorized non-civilian purposes (e.g. armaments, nuclear technology, weapons, or any other usage in the field of defense and military);
- (iii) customer has screened all direct and indirect parties involved in the receipt, use, transfer, or distribution of the products against all applicable restricted party lists of the Export Regulations concerning trading with entities, persons and organizations listed therein and
- (iv) products within the scope of items-related restrictions, as specified in the respective annexes to the Export Regulations, will not, unless permitted by the Export Regulations, be
  (a) exported, directly or indirectly (e.g., via Eurasian Economic Union (EAEU) countries), to Russia or Belarus, or
  (b) resold to any third party business partner that does not take a prior commitment not to export such products to Russia or Belarus.

4.3 Non-Acceptable Use of Software and Cloud Services

Customer shall not, unless permitted by the Export Regulations or respective governmental licenses or approvals,

(i) download, install, access or use the products from or in any location prohibited by or subject to comprehensive sanctions or subject or to license requirements according to the Export Regulations;
(ii) grant access to, transfer, (re-)export (including any "deemed (re-)exports"), or otherwise make available the products to any entity, person, or organization identified on a restricted party list of the Export Regulations;
(iii) use the products for any purpose prohibited by the Export Regulations (e.g. use in connection with armaments, nuclear technology or weapons);
(iv) upload to a products platform any customer content unless it is non-controlled (e.g. in the EU: AL = N;
in the U.S.: ECCN = N or EAR99);
(v) facilitate any of the afore mentioned activities by any user. Customer shall provide all users with all information necessary to ensure compliance with the Export Regulations.

4.4 Semiconductor Development

Customer will not, without advance written authorization from Siemens, use offerings for the development or production of integrated circuits at any semiconductor fabrication facility located in China meeting the criteria specified in the U.S. Export Administration Regulations, 15 C.F.R. 744.23.

4.5 Information

Upon request by Siemens, customer shall promptly provide Siemens with all information pertaining to users, the intended use and the location of use or the final destination (in the case of hardware, documentation and technology) of the products. Customer will notify Siemens prior to customer disclosing any information to Siemens that is defense-related or requires controlled or special data handling pursuant to applicable government regulations, and will use the disclosure tools and methods specified by Siemens.

4.6 Reservation

Siemens shall not be obligated to fulfill this agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes or other sanctions. Customer acknowledges that Siemens may be obliged under the Export Regulations to limit or suspend access by customer and/or users to products.

5. Miscellaneous

Errors excepted and subject to change without prior notice.

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Notes

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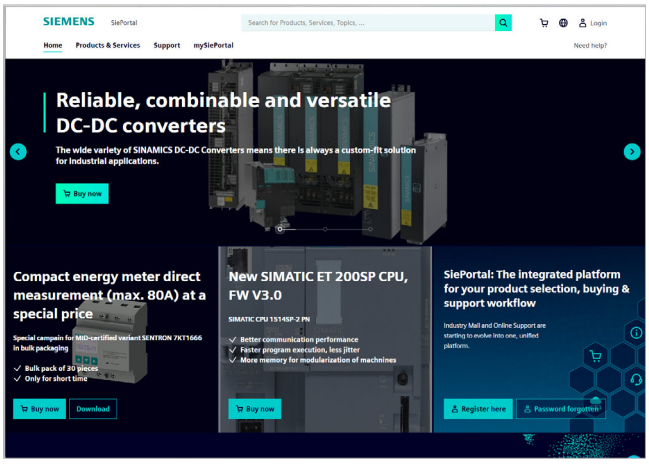


Easy product selection and ordering with SiePortal

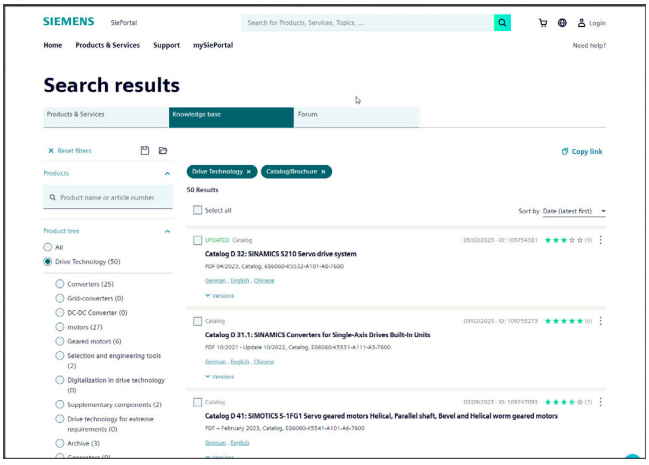
SiePortal > Products & Services

The internet ordering platform of Siemens AG is located in SiePortal. It provides you with online access to a comprehensive product spectrum that is presented in an informative, well-organized way.

Powerful search functions help you select the required products, while configurators enable you to configure complex product and system components quickly and easily. CAx data are also available for you to use.

Data transfer allows the entire procedure, from selection through ordering to tracking and tracing, to be carried out online. Availability checks, individual customer discounting, and quotation preparation are also possible.

https://sieportal.siemens.com



Downloading catalogs

SiePortal > Support > Knowledge base

You can download catalogs and brochures in PDF format from Siemens Industry Online Support without having to register.

The filter box makes it possible to perform targeted searches.

https://sieportal.siemens.com

Cybersecurity information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial cybersecurity measures that may be implemented, please visit
www.siemens.com/cybersecurity-industry

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under **www.siemens.com/cert**

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