

SIEMENS



# SINAMICS S120 Cabinet Modules







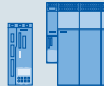



The drive system for multi-motor applications,  
modular and powerful

[siemens.com/sinamics-s120-cabinet-modules](https://www.siemens.com/sinamics-s120-cabinet-modules)

Answers for industry.

# SINAMICS – the optimum drive for every task

The drive family for leading-edge drive solutions

Low voltage							Direct current	Medium voltage	
AC							DC	AC	
For basic applications		For higher-value applications			For basic servo applications	For demanding applications		For basic applications and demanding applications	For applications with high power ratings
									
SINAMICS G110	SINAMICS G110D	SINAMICS G120	SINAMICS G120D	SINAMICS G130/G150	SINAMICS S110	SINAMICS S120	SINAMICS S150	SINAMICS DCM	SINAMICS GM150/SM150/GL150/SL150
V/f open-loop control	V/f open-loop control/FCC	V/f open-loop/vector control			Servo control	V/f open-loop/vector control/servo control		Closed-loop speed / control/torque control	V/f open-loop/vector control
0.12 – 3 kW	0.75 – 7.5 kW	0.37 – 250 kW	0.75 – 7.5 kW	75 – 1500 kW	0.12 – 90 kW	0.12 – 4500 kW	75 – 1200 kW	6 kW – 30 MW	0.8 – 120 MW
Pumps, fans, conveyor belts	Conveyor technology	Pumps, fans, conveyor belts, compressors, mixers, crushers, extruders			Single-axis positioning applications in machinery and plant building	Production machines (packaging machines, textile and printing machines, paper machines, plastics machines), machine tools, plants, process lines and rolling mills		Test stands, cross cutters, centrifuges	Rolling mill drives, wire drawing machines, extruders, kneaders, cable railways and lifts, test stand drives
Pumps, fans, compressors, mixers, extruders, crushers, rolling mills, mine winders, excavators, test stands									
Common Engineering Tools									
SIZER – for simple planning and engineering					STARTER – for fast commissioning, optimization and diagnostics				

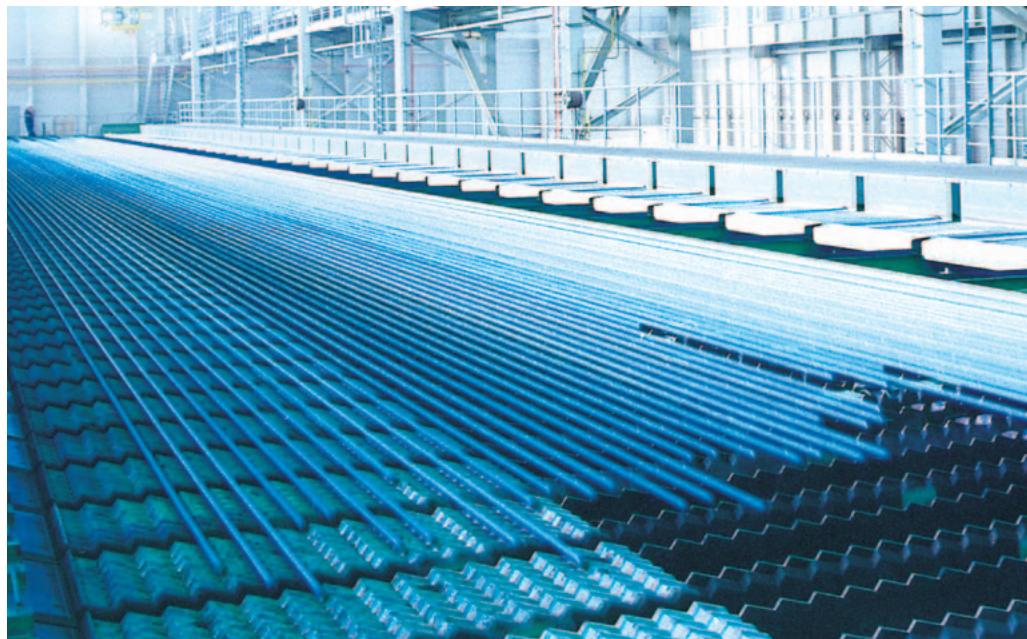
SINAMICS offers the optimum drive for each and every drive application – and all of the drives can be engineered, parameterized, commissioned and operated in the same standard way.

SINAMICS – to tackle any drive application

- Wide range of power ratings from 0.12 kW to 120 MW
- Both in low-voltage as well as medium-voltage versions
- Standard functionality using common hardware and software platforms
- One standard engineering process using just two tools for all drives: SIZER for engineering and STARTER for parameterizing and commissioning
- High degree of flexibility and combinability

# Fast and reliably to the perfect drive

SINAMICS S120 Cabinet Modules – a finely scalable modular system



## Individuality through modularity

SINAMICS S120 Cabinet Modules are drive converters that can be engineered for the particular drive application using a modular principle – so that almost any drive solution can be optimally implemented. This modular system is especially suited for multi-motors with central line supply infeed and common DC link busbars. For instance, these are typically found in paper machines, rolling mills, test stands, cranes and lifting equipment.

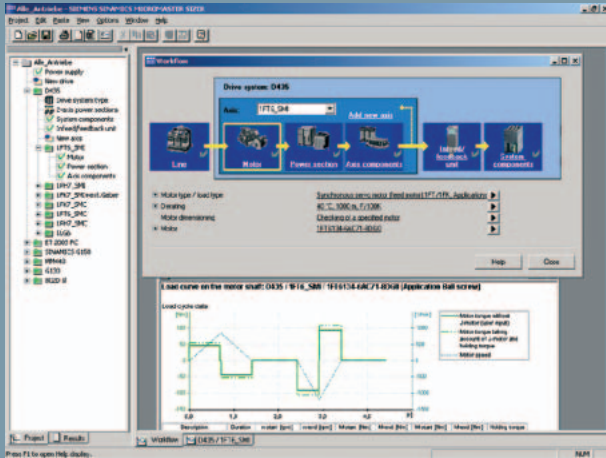
## Simple planning, simple service

SINAMICS S120 Cabinet Modules are a completely new development. They are convincing in every phase of the product life cycle as a result of their cost-effectiveness and simplicity – from planning and procurement through installation and commissioning up to day-to-day operation and service. SINAMICS S120 Cabinet Modules offer an outstanding price-performance ratio and they can be integrated into any automation solution.

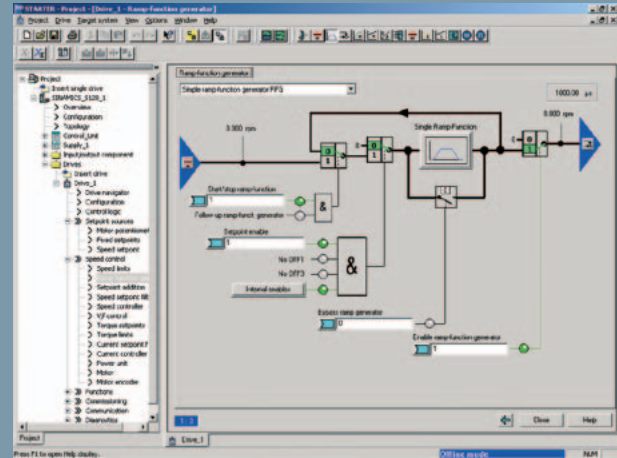
## SINAMICS S120 Cabinet Modules at a glance

- Modular system of cabinet modules for every drive task
- High degree of flexibility through finely scalable power rating and performance
- Standardized interfaces
- Ready to power-up cabinet systems
- Extremely reliable
- Energy-efficient
- Maximum operating safety and reliability
- Very service-friendly
- Extremely compact and quiet
- Extensive range of options

# The ideal module combination is easily configured



SIZER tool



STARTER tool

## Simple configuration using standardized interfaces

The type-tested cabinet modules can be quickly and simply linked together to address almost any plant or system configuration. Standardized interfaces for the power and control connections simplify engineering and installation. Prefabricated busbar sets are used to establish the power connections between the various modules. Communications between the power modules and the central control unit – from where all of the axes are controlled – are realized via DRIVE-CLiQ. DRIVE-CLiQ is a serial interface inside the drive. Also using prefabricated cables with different lengths, it allows the complete drive group to be quickly and easily configured.

## The optimum configuration – quickly and reliably: SIZER engineering tool

Using SINAMICS, a drive system is engineered quickly and reliably as never before. This is because the SIZER engineering tool includes all of the components required to engineer a drive system and permits the user to simply dimension the drive to specifically address the application. SIZER is easy to learn and can be intuitively handled thanks to its graphic operator interface and the integrated Wizards.

This means that users are optimally supported when engineering and selecting SINAMICS S120 Cabinet Modules.

## Speeds up commissioning: STARTER tool

STARTER is the standard commissioning tool for all drives belonging to the SINAMICS family. The commissioning engineer can transparently configure and optimize even complex systems in an extremely short time. STARTER is available in three installation versions: As stand-alone version, integrated in Drive ES for applications with SIMATIC or integrated in SCOUT for applications with SIMOTION.

## SINAMICS S120 Cabinet Modules – freely combinable modules

**Line Connection Modules** to connect to the line supply: These include the line-side components such as contactors, fuses and circuit breakers as well as line reactors for applications without regenerative feedback into the line supply

### Line Modules for the infeed

Basic Line Modules	for 2-quadrant operation if regenerative feedback into the line supply is not required
Smart Line Modules	for 4-quadrant operation if it makes sense to regenerate braking energy back into the line supply
Active Line Modules	for 4-quadrant operation if, in addition to the regenerative feedback into the line supply, the line harmonics are to be reduced to a minimum and voltage fluctuations are to be compensated

**Central Braking Modules** to electrically brake the motor

**Motor Modules** to control the speed of the connected motor

Booksize version	for axes with low power ratings
Chassis version	for axes with high power ratings

**Auxiliary Power Supply Modules** for the auxiliary voltage



## Prepared and shipped ready to be connected up

SINAMICS S120 Cabinet Modules have all of the connections and connecting elements required. Standardized interfaces for all of the versions of the drive units help when it comes to connecting up and analyzing. With a well-conceived configuration, they are ready to be connected up when supplied. The individual modules can already be combined in the factory to form prefabricated transport units with a total length of up to 2400 mm. Prepared in this way, they can be simply and easily combined in the plant to create a total system.

Installation is as simple as it gets as even large cable cross sections can be easily connected. If the comprehensive standard version isn't sufficient, then a whole raft of options is available that have been specifically developed to address the requirements of a multi-motor system. Whether with a unique DC link coupling or extended safety interfaces, SINAMICS S120 Cabinet Modules can be adapted to each and every requirement. Installation is also simplified as SINAMICS S120 Cabinet Modules are supplied in standard cabinets in a 200 mm grid dimension.

SINAMICS S120 Cabinet Modules can be easily integrated into higher-level automation systems. PROFIBUS and PROFINET interfaces provided as standard as well as various other analog and digital interfaces ensure this high degree of connectivity.

# Reliable and service-friendly

Operational reliability over the long term



## Rugged and straightforward for the highest degree of reliability

SINAMICS S120 Cabinet Modules are extremely reliable as a result of their rugged, straightforward design. A special mechanical design of the cabinet guarantees mechanical endurance and strength. This is supplemented, among other things, by the fact that all of the standard busbars as well as the electronic boards and modules are protected against environmental effects. This is achieved by consequentially using nickel-plated copper busbars as well as coated boards and modules. It goes without saying that all of the components – from the production of individual parts up to ready-to-connect cabinets – are subject to exhaustive checks during the complete production process. This guarantees high functional safety during installation, commissioning and in operation.

## Service-friendly design

The easily accessible individual modules and power components can be easily and quickly replaced; this further increases the plant and system availability. SINAMICS S120 Cabinet Modules have the highest level of service-friendliness and a compact design – especially due to the fact that functions are combined to form function blocks and modules. In fact, when originally designing the units, top priority was given to ensuring good accessibility and the ability to quickly replace all of the modules in the drive unit. Individual modules such as the fan assembly, closed-loop control electronics, customer interfaces and power components can be easily replaced when service is required. This in turn secures the high degree of availability. The spare parts that are available can be easily and individually viewed at any time using the “Spares On Web” Internet tool.

## SINAMICS S120 Cabinet Modules

### Line supply voltage $V_{\text{line supply}}$ /power ranges

3-ph. 380 ... 480 V AC	1.6 ... 3,000 kW (2 ... 4,000 HP)
3-ph. 500 ... 690 V AC	75 ... 4,500 kW (100 ... 6,000 HP)

## Integrated operational safety and reliability

All of the SINAMICS S120 Cabinet Modules were developed according to the specifications of the zone concept. This is the reason that they provide the highest possible degree of operational reliability and safety. EMC measures have been consequentially implemented. Partitions to guide and route the airflow and to maintain temperature levels were designed with the help of computer-aided simulation.



### **Cost-saving through high energy efficiency**

Variable-speed operation of the Cabinet Modules frequently reduces the energy demand in the double-digit percentage range. In addition, frequency converter modules are also available in a version that is capable of energy recovery. This means that the energy that is generated when braking can be used by other electric loads. This eliminates the usual waste when converting the regenerative power into heat in pulsed resistors.

If the drive system includes motors that operate both in the motor and generator modes, then these can be coupled through a common DC link so that they can exchange energy between one another. This allows additional energy to be saved and harmonics fed back into the line supply reduced.

In certain cases, the line supply infeed of the drive group can even be dimensioned smaller than would be required for the total power of the individual modules connected to the common DC link.

### **Quiet and compact using the new technology concept**

A modular mechanical design, IGBT semiconductors with the lowest power loss and innovative cooling make SINAMICS S120 Cabinet Modules the quietest and most compact drive converters in a standard cabinet.

In order to reduce the noise level, the cooling air routing through the unit was optimized using state-of-the-art thermo simulation techniques. A lower cooling requirement has also been able to be achieved by consequentially using new, low-loss components. The tangential fans located in the lower area of the cabinet are very quiet and blow the cooling air upwards through the drive converter. As a consequence, all of the power elements have the same intake temperature. Result: When compared to conventional cabinet units, the noise level is significantly lower.

### **Low space requirement – simplified planning and mounting**

The footprint of SINAMICS S120 Cabinet Modules is up to 50% less than that of a conventional drive unit. The cabinet widths decrease in a 200 mm grid dimension. The degree of protection can be subsequently increased up to IP54 thanks to the new, specifically developed filter elements that can be added at any time without having to change the mounting footprint.

## You will find additional information on SINAMICS under

[www.siemens.com/sinamics](http://www.siemens.com/sinamics)

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