

**SIEMENS**

*Ingenuity for life*



# SINAMICS DCM





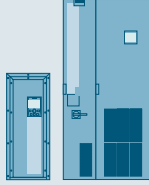

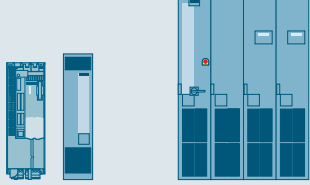
Universal. Scalable. Rugged.



[usa.siemens.com/sinamics-dcm](http://usa.siemens.com/sinamics-dcm)

# The SINAMICS family for all performance classes

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

Frequency converters for standard applications				Sector-specific frequency converters		Low voltage
						
V20	G120C	G120	G130/G150	G120P	G180	S120
0.12 – 30 kW	0.55 – 132 kW	0.55 – 250 kW	75 – 2,700 kW	0.37 – 630 kW	2.2 – 6,600 kW	0.55 – 6,840 kW

## SINAMICS – versatility for maximum efficiency



### Extensive portfolio

Customized power, performance, and functionality: SINAMICS converters are tremendously flexible and also provide you with a future-proof solution for your applications.




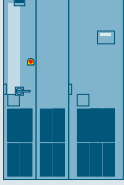




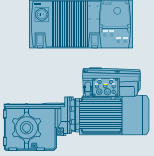
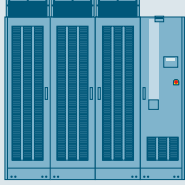
### Digitalization

SINAMICS converters are ready for the digital age. Operating data can be directly transferred to cloud platforms via MindConnect. The information collected there can help you make your plant or system more productive in the future and minimize downtime.



### Efficient engineering

Powerful tools support you throughout the entire lifecycle when you're configuring, engineering, commissioning, troubleshooting, and optimizing the processes of your SINAMICS drive solution.

Frequency converters for high-performance applications			Servo converters		Distributed frequency converters		Medium voltage For demanding applications with high power ratings		
									
S150	DCM (DC)		V90	S210	S120M	G110D / G120D / G110M	GL150/SL150	SM120 CM / SM150 / GM150	GH150/GH180
75 – 1,200 kW	6 kW – 30 MW		0.05 – 7 kW	0.05 – 7 kW*	0.25 – 1.1 kW	0.37 – 7.5 kW	2.8 – 85 MW	0.8 – 58 MW	0.15 – 28.5 MW

\* In preparation



### Safety Integrated

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



### Drive-system solution

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



### Services across the complete lifecycle

From spare parts management to the optimized maintenance concept: With our customized service offerings for your SINAMICS converters, you can sustainably guarantee the maximum availability and productivity of your plants and systems.

# SINAMICS DCM: the scalable product range for basic and sophisticated applications



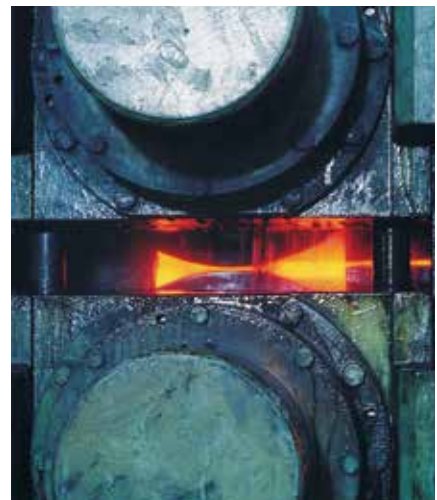
DC drives have been proving their worth in daily use for many years. Thanks to its dynamic performance, ruggedness, and cost-effectiveness, DC technology continues to be the most favorably priced drive solution for many applications today – with numerous advantages in terms of reliability, operating convenience, and operational performance.

In many areas of industry, DC drives continue to make sense, both technologically and economically.

- Inexpensive 4Q operation
- Continuous operation at low speeds
- Full torque even at low speeds
- High starting torque
- Wide speed control range
- Low space requirements
- Reliability
- Low torque ripple even at low speeds
- High overload capability

## SINAMICS DCM highlights at a glance:

- Integration into the SINAMICS drive family
- Interfaces for PROFIBUS (as standard) and PROFINET (optional)
- Variance of the control units
- Field power supply in line with market requirements
- Electronics power supply for connection to 24 V DC
- Power unit and voltage measurement from power unit insulated against ground
- Free function blocks and Drive Control Chart (DCC)
- Expandable functionality using SINAMICS components
- Single-phase operation possible
- Coated printed circuit boards and nickel-plated copper busbars
- Wide temperature range



# Innovative solutions based on tradition

Users worldwide have been relying on DC drives from Siemens for decades. And with good reason: Many years of experience, concentrated expertise, and consistent, ongoing development guarantee state-of-the-art solutions with the highest degree of reliability.



## The right choice for every application

With its highly precise closed-loop motor speed control, our SINAMICS DC MASTER series of converters always ensures optimal processes and distinguishes itself through its highly dynamic performance. The current and torque rise times are significantly shorter than 10 milliseconds. SINAMICS DC MASTER is used wherever DC drives continue to be in demand.

- Rolling mills
- Cross-cutters and shears
- Wire-drawing machines
- Extruders and kneaders
- Presses
- Elevator and crane systems
- Cableways and lifts
- Mine hoists
- Test stand drives
- Heating applications
- Magnet applications

## SINAMICS DCM DC converters

As ready-to-connect converter chassis units with rated DC currents from 15 to 3,000 A and rated input voltages extending from 3-phase 400 up to 950 V AC, and as two-quadrant as well as four-quadrant drives: Thanks to optimal current and voltage increments, overload capability, large permissible tolerances in terms of input quantities, and numerous options, users can select the perfect unit for their particular application – just like custom-made.

### Feature/function:

- Integrated field power supply up to 85 A
- Standard tool for commissioning
- Optimized cooling concept
- Multilevel performance structure with low variance of the control units
- 2Q field with integrated overvoltage protection

## SINAMICS DCM Control Module

The SINAMICS DCM Control Module makes retrofitting extremely easy. Old is transformed into new easily and economically. It's the ideal solution for retrofitting and modernizing existing DC drives, with fully digital closed-loop control and all the advantages of state-of-the-art open-loop control technology. Only the closed-loop control section is replaced, whereas the motor, mechanical system, and power unit remain unchanged. As a result, an existing DC drive is improved with a full range of functions.

### Feature/function:

- Strong firing pulses
- Flexible adaptation of sensors to the power unit
- Detachable housing and externally expandable firing pulse transformer
- Control of up to three power units
- Same functionality and appearance as a DC converter

# Well-conceived down to the smallest detail

## SINAMICS DCM – possible combinations



With SINAMICS DCM, DC technology users benefit from the perfect combination of a well-proven solution and extremely innovative highlights. This pioneering converter is remarkable for its highly developed technology and an abundance of well-conceived features.

### Perfectly scalable

Thanks to its scalability, our series of converters excels both in basic applications and in sophisticated and demanding tasks. For standard closed-loop control tasks, SINAMICS DC MASTER is equipped with a standard control unit DC (CUD).

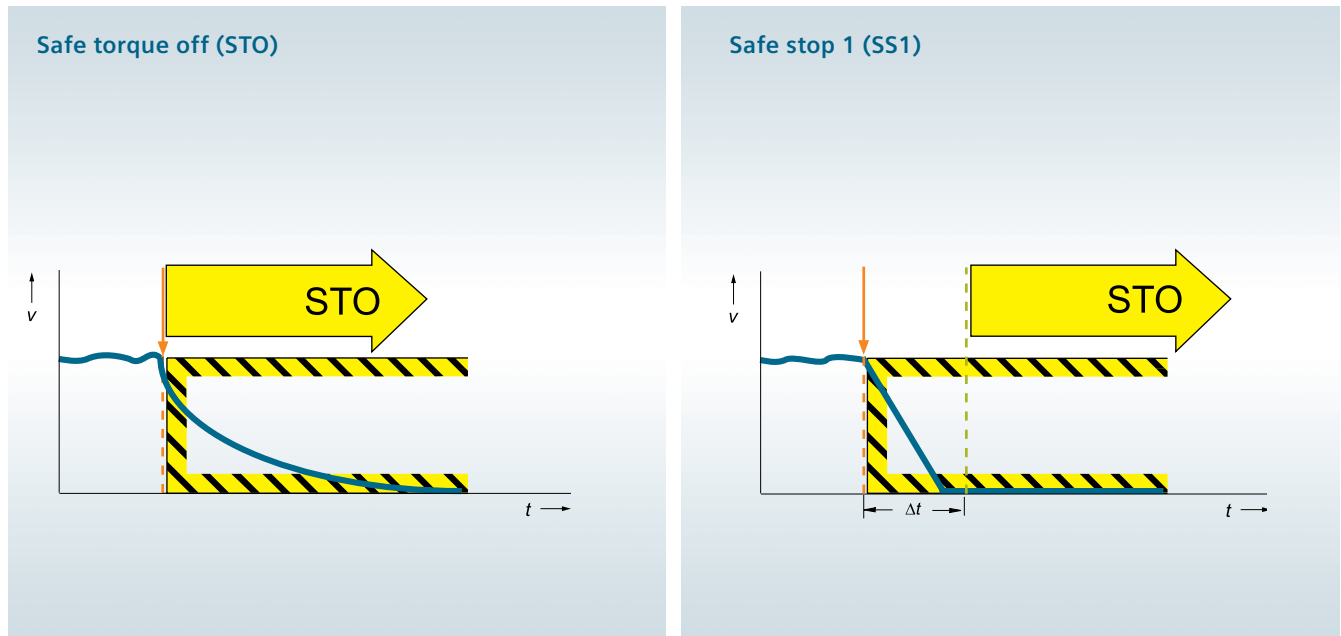
The closed-loop control capacity can be expanded using the advanced CUD for applications that place higher demands on computational performance and interfaces. The ability to select among various options – standard CUD, advanced CUD, or a combination of the two – means that computational performance and speed can be optimally adapted to your specific requirements. Depending on the specific application, the units are available in a two-quadrant or four-quadrant version and with an integrated field power unit. The rated DC current ranges from 15 A to 3,000 A and can be increased by connecting DC converters in parallel.

### Flexibly expandable

SINAMICS DC MASTER can be flexibly expanded on a modular basis from the standard to a high-performance solution. The comprehensive range of products and the abundance of options allow the drive system to be optimally adapted, both technologically and economically, to specific plant or system requirements. The interfaces of the CUD and the number of digital inputs and outputs can be supplemented as needed: for example, using supplementary SINAMICS modules like the TM15, TM31, and TM150 terminal modules, the SMC10 and SMC30 sensor modules, the CBE20 communication board, or an additional CU302-2 control unit (see illustration above).

# SINAMICS DCM Functional Safety

## Functions for safely stopping the drive



### Maximum safety

With the new Functional Safety feature, the SINAMICS DCM can now access the entire SIL 3 and PL e power range for STO (safe torque off) and SS1 (safe stop 1) with just one main contactor or circuit breaker.

The operating instructions also describe the appropriate circuits for Emergency Off and Emergency Stop according to EN 60204-1.

With Functional Safety, SINAMICS DCM offers a consistent, uniform solution for applications up to the safety integrity level SIL 3 and performance level PL e. At the same time, only one main contactor or one circuit breaker is required. The application offers substantial savings in terms of space as well as investment and service costs.

### High degree of plant or system availability

SINAMICS DC MASTER plays a decisive role when it comes to high plant or system availability: It doesn't just happen by chance. The converter as a whole as well as its individual components feature a maximum reliability, both individually and in interaction with one another. All the components are subject to exhaustive checks and tests throughout the entire production process. This guarantees high functional safety during installation, commissioning, and operation.

If service does become necessary, the components can be quickly and easily replaced.

An additional advantage is that SINAMICS DC MASTER allows redundant operation. This means that in the extremely unlikely event of a master or slave unit failing, the whole system continues to function.

### Quick and easy commissioning

All members of the SINAMICS family can be quickly and easily commissioned and parameterized – either menu-assisted via the AOP30 advanced operator panel or PC-supported using the STARTER commissioning tool. Because SINAMICS DC MASTER is already preconfigured ex-works, unit-specific parameters don't have to be set. Adaptation to the current application is performed fully electronically by means of parameters. This means that the units can continue to be used when service is required.

## Limitless communication



Like all SINAMICS family members, SINAMICS DCM fulfills every requirement in terms of communication options in new and retrofit business.

Whether you use PROFIBUS or PROFINET, our innovative converter is equipped with all the corresponding IT standards for connecting to higher-level automation systems.

### **PROFIBUS:** number 1 in older industrial plants

SINAMICS DC MASTER supports PROFIBUS DP as standard. The standard field bus permits high-performance, end-to-end communication between all the components in an automation solution.

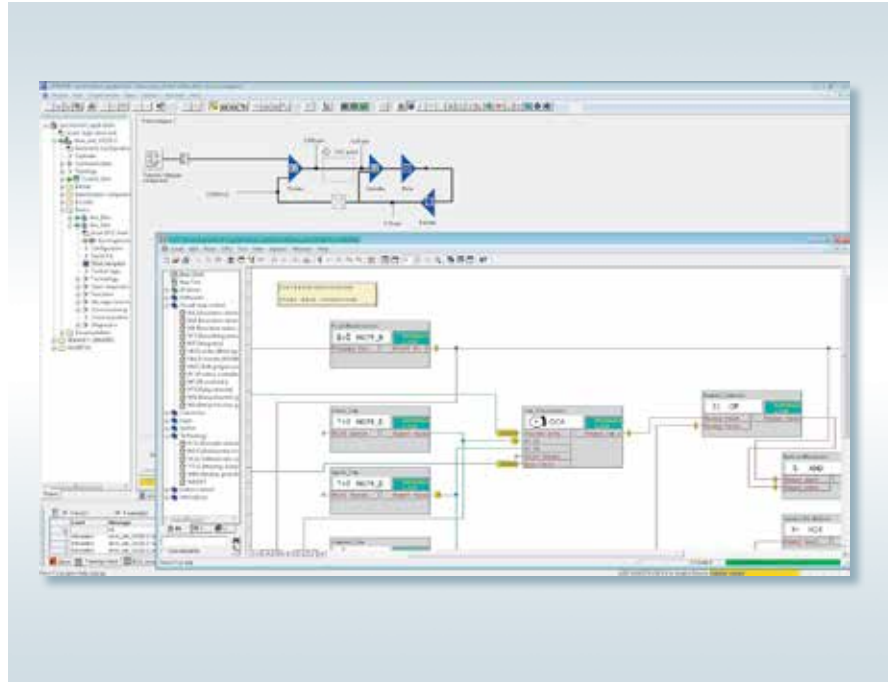
### **Ethernet/PROFINET: for higher performance and open IT communication**

SINAMICS DC MASTER is also optionally available with an Ethernet interface. The open Industrial Ethernet standard enables a high-speed exchange of closed-loop control data. As a result, the converter can also be used in multi-axis applications that demand the highest performance. Ethernet supports PROFINET, Ethernet/IP, and Modbus TCP with no restrictions and therefore allows direct access from the management level down to the field level. Both vertical and horizontal integration are guaranteed.

Photos above,  
source: Audi, Ingolstadt/Germany



# Efficient engineering across the entire lifecycle



## Select products using the DT Configurator

The Drive Technology Configurator (DT Configurator) helps you select the optimal SINAMICS DCM.

### Efficient drive configuration:

- Quick and easy converter selection
- Optimized design based on customer-specific duty cycle
- Comprehensive documentation
- Support for retrofit
- Direct ordering via the Industry Mall

You'll find more information at:

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

under  
**Selection and Engineering Tools**

## STARTER commissioning software

STARTER is available for commissioning all SINAMICS drives. This intelligent tool provides support when it comes to the simple configuration and commissioning of the drive components – menu-assisted and graphically supported. What's especially helpful is the fact that STARTER allows all the relevant data to be imported from the drive components' electronic rating plates. This significantly reduces the associated costs, speeds up parameterization, and prevents potential incorrect entries. Integrated test functions serve to check entries and optimize parameters.

### Even stronger in a team

STARTER can run as a separate Windows application and is linked to the drives via a serial interface, PROFIBUS DP, or PROFINET. STARTER can be integrated into both SCOUT – the engineering system of our SIMOTION motion control system – and STEP 7 – the engineering software of our SIMATIC industrial automation system.

This well-conceived concept pays off when service becomes necessary, because it permits simple diagnostics and troubleshooting either on site or remotely.

### Drive Control Chart

The optional SINAMICS Drive Control Chart (SINAMICS DCC) engineering tool for the STARTER commissioning software allows you to create your own and complex technology functions based on graphical signal processing charts with interconnected blocks. With a simple graphical configuration, the device functionality can be individually expanded with close-loop control, mathematical functions, and logic functions for optimal adaptation to the drive application.

# SINAMICS DCM:

## An overview of the technical data and options

### Technical data

Rated data					Two-quadrant operation	Four-quadrant operation		
Armature circuit			Field circuit					
Rated supply voltage V	Rated DC voltage V	Rated DC current A	Rated supply voltage V	Rated DC current A				
3 AC 400	485 for 2Q 420 for 4Q	15	2 AC 400	3	–	X		
		30		5	–	X		
	60	10		X	X			
	90	10		X	X			
	125	10		X	X			
	210	15		X	X			
	280	15		X	X			
	400	25		X	X			
	600	25		X	X			
	850	30		X	X			
	1200	2 AC 480		40	X	X		
	1600			40	X	X		
	2000			40	X	X		
	3000	40	X	X				
3 AC 480	575 for 2Q 500 for 4Q	15	2 AC 480	3	–	X		
		30		5	–	X		
	60	10		X	X			
	90	10		X	X			
	125	10		X	X			
	210	15		X	X			
	280	15		X	X			
	450	25		X	X			
	600	25		X	X			
	850	30		X	X			
	1200	40		X	X			
	3 AC 575	690 for 2Q 600 for 4Q		60	2 AC 480	10	X	X
				125		10	X	X
210		15	X	X				
400		25	X	X				
600		25	X	X				
850		30	X	X				
1100		40	X	X				
1600		40	X	X				
2000		40	X	X				
2200		40	X	X				
2800		40	X	X				
3 AC 690		830 for 2Q 725 for 4Q	720	2 AC 480		30	X	–
			760			30	–	X
	1000	40	X		X			
	1500	40	X		X			
	2000	40	X		X			
	2600	40	X		X			
3 AC 830	1000 for 2Q 875 for 4Q	950	2 AC 480	40	X	X		
		1500		40	X	X		
	1900	40		X	X			
3 AC 950	1140 for 2Q 1000 for 4Q	2200		40	X	X		
		2200		40	X	X		

### Options

#### Control unit

Advanced control unit, left
Standard control unit, right
Advanced control unit, right
CBE20 communication board, left
CBE20 communication board, right
Memory card, left
Memory card, right

#### Field

2Q field power unit
Without field power unit
85 A field power unit

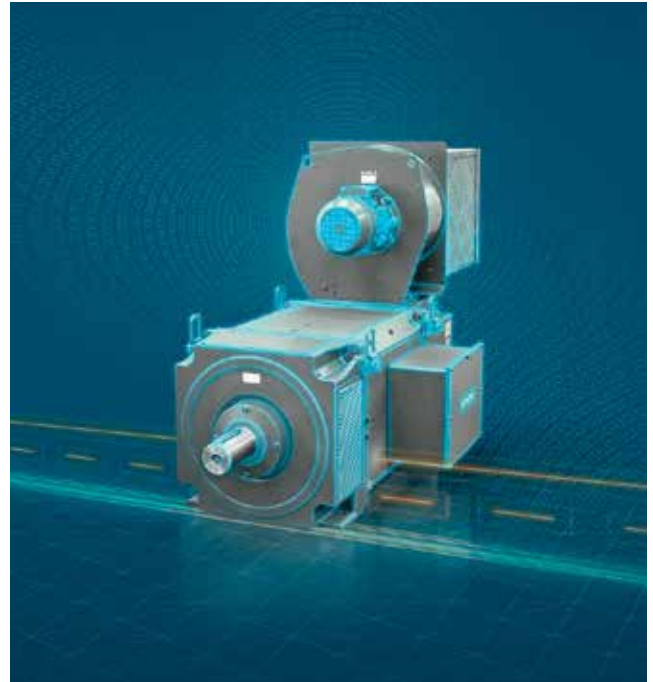
#### Fans

Fan for single-phase power supply
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#### Additional options

Electronics power supply for connection to 24 V DC
Armature circuit voltage with low voltage 10 to 50 V
Coated modules
Nickel-plated copper busbars
External sensors for the mean ambient or intake temperature
Terminal module cabinet

# Ideal partners for SINAMICS DCM: SIMOTICS DC motors from Siemens



**Our SIMOTICS DC motors prove their worth daily world-wide, wherever there's a demand for a high degree of availability.**

**The motors are equipped with the high-quality DURIGNIT® insulation system, available with various degrees of protection, and optimally adapted for use with SINAMICS DCM.**

**The right solution is always available – even for the harshest environmental conditions.**

#### **Highest power density in the smallest space**

The SIMOTICS DC motors permit the implementation of innovative drive concepts and reduce application costs. In order to improve thermal and magnetic utilization as well as the mechanical design, these motors were developed using computer-based simulation techniques. Only materials with outstanding mechanical, magnetic, and electrical properties are used for their production. The result is the highest power densities in combination with an extremely compact design with low shaft heights and minimal space requirements in your application.

#### **Long service life with minimal maintenance costs**

Materials specially tailored to your application increase brush life. This facilitates an extremely smooth running quality, which ensures quiet operation, reduces stress on the motor, and minimizes torque ripple and vibration. In conjunction with the sealed insulation system, this guarantees that the SIMOTICS DC motor will have a long service life with minimal maintenance costs. Even if problems occur, Siemens' global service and support guarantee a high degree of availability.

#### **Extremely quiet**

Noise levels were a top consideration in the design of the SIMOTICS DC motors.

Take, for example, the special main pole shape and the optimized, separately driven fan. These measures in the mechanical and magnetic area plus the optimal fan design guarantee an especially low noise level, which is very beneficial for operating personnel and reduces costs for on-site noise insulation.

#### **First choice in every performance class**

Our DC motors cover a range of power ratings that extends from 31.5 kW to 1,610 kW and come in various versions: compensated, naturally cooled or force-ventilated, with or without fans. The modular structure of our offering permits almost any combination. Not only this, but the DC motors can be optimally integrated into the digital environment via interfaces on the SINAMICS DC converter – remotely, for continuous monitoring, accurate diagnostics, and effective maintenance.

