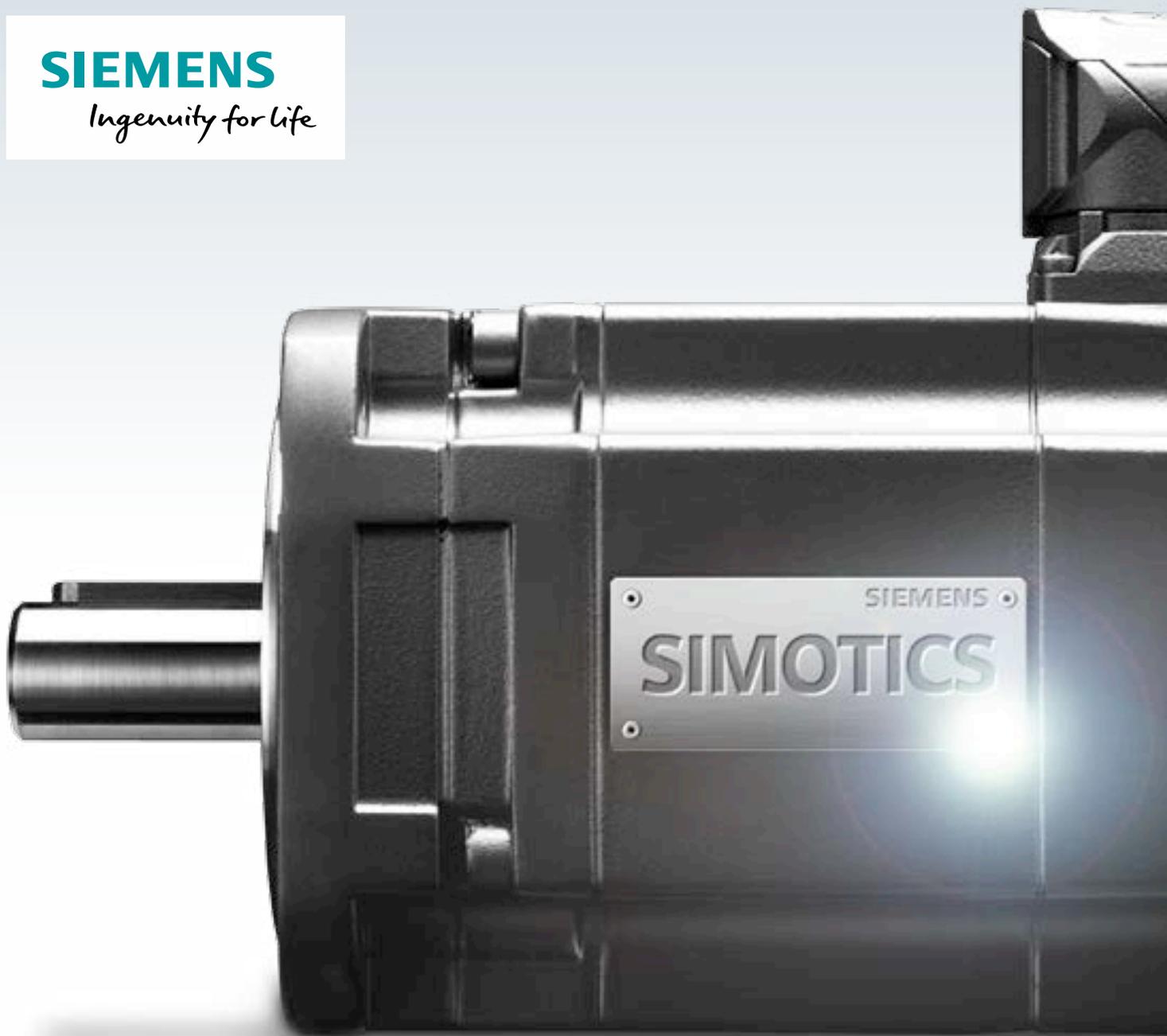


SIEMENS
Ingenuity for life



Dynamic and precise – SIMOTICS

The optimum motor for
every motion control task

[siemens.com/motion-control-motors](https://www.siemens.com/motion-control-motors)

Whatever proves itself in the line of duty also deserves a name – SIMOTICS

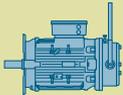
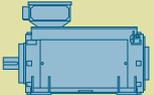
The history of today's most comprehensive range of motors started approximately 150 years ago as Werner von Siemens developed the dynamo-electric principle in 1866. This formed the basis for designing powerful electric motors, therefore allowing them to become widely established in industry. Since then, motor development has remained a core business of the company – and Siemens with more than 100 years of experience is still the leader when it comes to innovative motor technology.

Today, millions and millions of motors from Siemens are ensuring motion and efficient operation in industrial plants and systems around the globe. In all sectors, applications and power classes. Starting with energy-efficient low-voltage motors through motion control motors with a high dynamic performance including powerful high-voltage motors and DC motors. Motors that have proven themselves in countless applications and that are all extremely attractive as a result of their quality, efficiency and compactness. This is the reason that they all have one and the same name: SIMOTICS.

SIMOTICS stands for

- 150 years of experience with electric motors
- The most extensive range of motors worldwide
- Optimum solutions in all sectors, regions and power/performance classes
- Innovative motor technology with the highest quality and reliability
- Highest dynamic performance and precision together with the optimum degree of compactness
- Integration of our motors into the drive train as part of the overall system
- A global network of skill sets and worldwide service around the clock

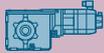
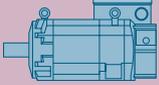
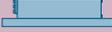
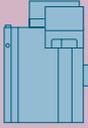
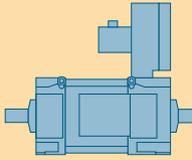
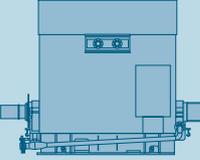


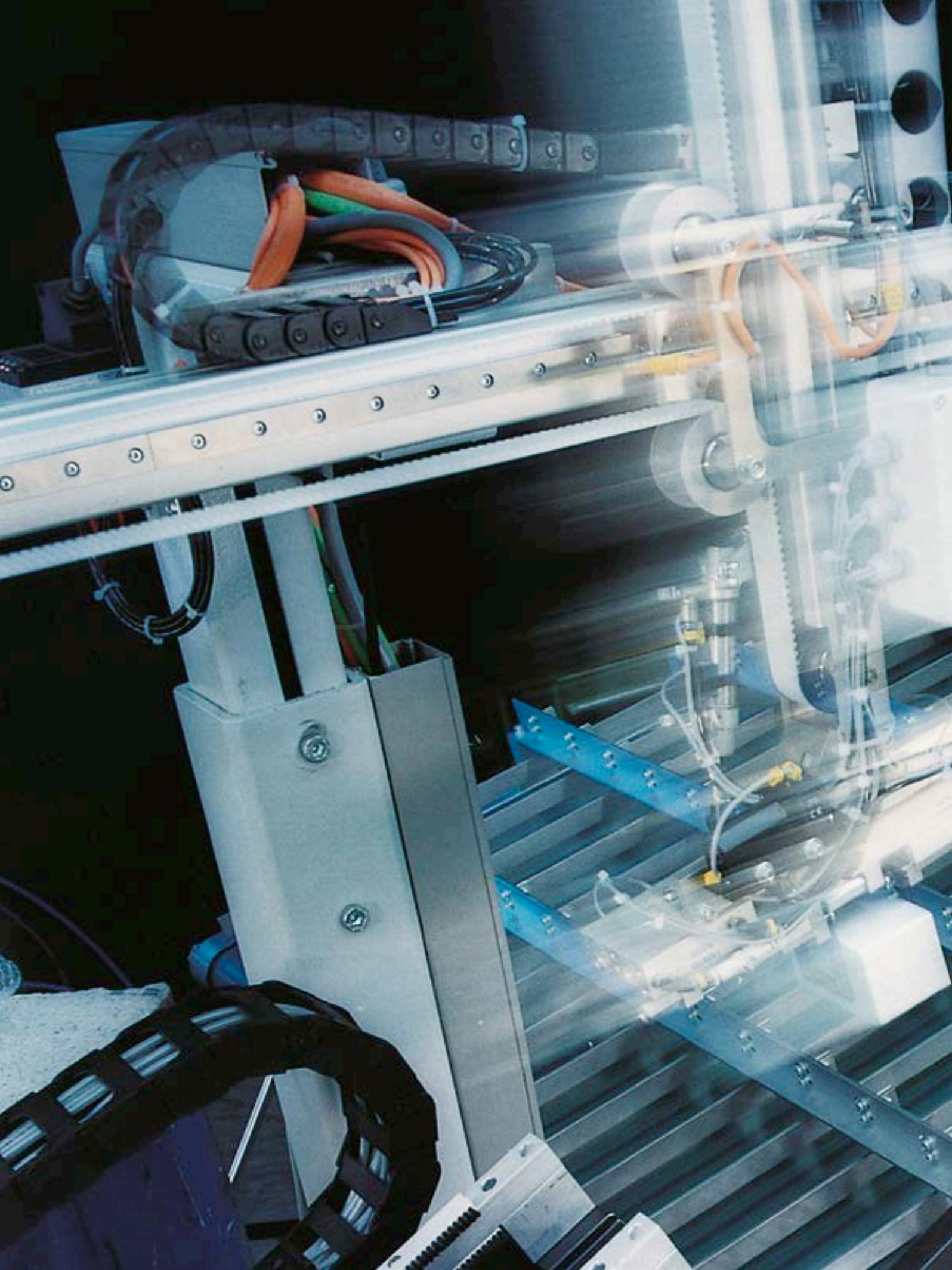
SIMO							
Low-voltage motors for line and converter operation							
General Purpose SIMOTICS GP	Severe Duty SIMOTICS SD	Explosion Protected SIMOTICS XP	Definite Purpose SIMOTICS DP	Flexible Duty SIMOTICS FD	Transstandard SIMOTICS TN	High Torque SIMOTICS HT	
							

www.siemens.com/simotics



TICS

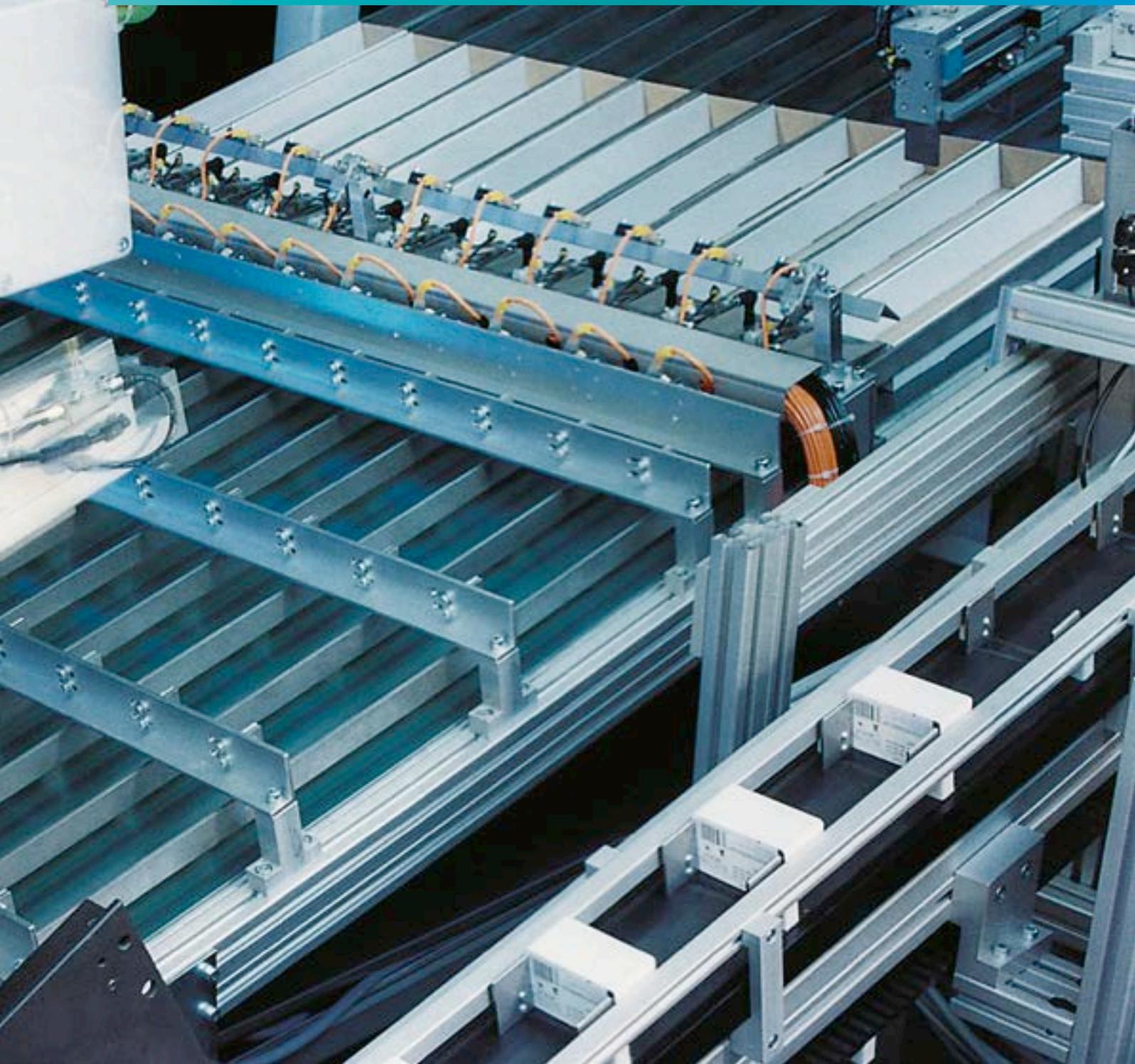
Motion control motors				DC motors	High-voltage motors	
Servomotors SIMOTICS S		Main motors SIMOTICS M	Linear motors SIMOTICS L	Torque motors SIMOTICS T	SIMOTICS DC	SIMOTICS HV
Servomotors	Servo geared motors					
						



Servomotors

The perfect servomotor for every application

No matter whether positioning, angular synchronism, cyclic drives or path control in machine tools: SIMOTICS servomotors from Siemens are the first choice wherever a high dynamic response and precise motion is demanded. Users profit from a high dynamic performance, precision, compactness, efficiency and ruggedness.



Compact servomotors for motion control applications

Our non-ventilated SIMOTICS S-1FK7 servomotors are the perfect answer when it comes to simply and cost-effectively implementing precision motion sequences with a high dynamic performance. Depending on your requirements relating to dynamic performance, control behavior, precision and space, there are three versions to select from – when required, also in combination with a gearbox.

Compact: for universal use

Thanks to the highest power density in the smallest space, SIMOTICS S-1FK7 compact motors are the optimum solution to address a wide range of applications – and with their short length, they are predestined for applications where space is restricted. Their compact design makes them the standard motor in the torque range from 0.18 up to 48 Nm. As a result of the high overload capability, they provide motion control axes with an outstanding dynamic response. The motor range includes 22 types with 7 shaft heights and rated speeds up to 6,000 rpm.

High Dynamic: top marks when it comes to dynamic performance

The low rotor diameter ensures an extremely low intrinsic moment of inertia and a high acceleration performance. As a consequence, these motors with a high dynamic performance are especially suitable for use in applications with very short cycle times – e.g. in packaging machines.

With their high overload capability, they ensure maximum dynamic performance for motion control axes.

High Inertia: for a rugged control behavior

Our high inertia motors are convincing as a result of the higher intrinsic moment of inertia and therefore their extremely rugged control behavior. They are especially suitable for applications with high and variable load moments of inertia. The result: a very high surface quality without any complex adaptation.

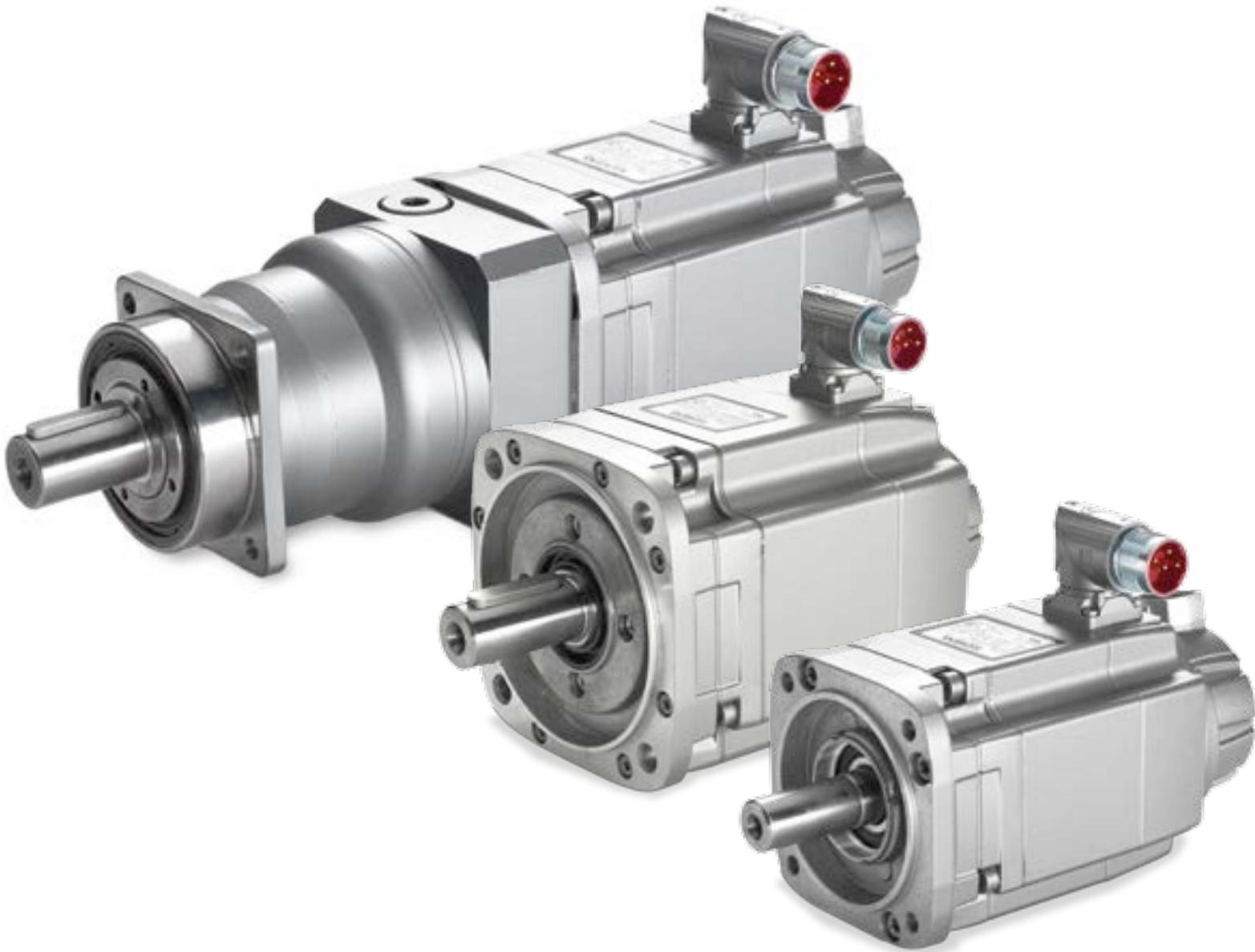
SIMOTICS S-1FK7 with premounted planetary gearbox

When required, we can also supply S-1FK7 motors with a mounted gearbox. High precision and economic planetary gearboxes are available to address a wide range of applications. You profit from high smooth running properties and compactness for motion control applications.



Highlights of the SIMOTICS S-1FK7 motor series

- 3 moment of inertia versions: Compact, High Dynamic, High Inertia
- 300% overload capability
- Compact type of construction
- High degree of efficiency
- Robust against shock and vibration due to the mechanical decoupled encoder system
- Optionally with absolute encoder, incremental encoder or resolver
- Service- and installation-friendly quick-release connector that can be rotated and replaceable encoder
- DRIVE-CLiQ digital interface with electronic rating plate for optimum connection to SINAMICS S110 and SINAMICS S120
- Optionally with different types of gearboxes and backlash-free holding brake



Typical application areas

- Packaging machines
- Plastics and textile machines
- Printing machines
- Wood, glass, ceramic and stone processing machines
- Robots
- Handling systems
- Conveyor technology
- Feed and help axes for machine tools

An overview: SIMOTICS S-1FK7 synchronous motors

SIMOTICS S-1FK7	Torque *	Rated speeds *	Rated power *
CT – Compact	0.18 – 48 Nm	2,000 – 6,000 rpm	0.05 – 8.17 kW
HD – High Dynamic	1.3 – 28 Nm	3,000 – 6,000 rpm	0.57 – 3.77 kW
HI – High Inertia	3 – 48 Nm	2,000 – 6,000 rpm	0.9 – 3.1 kW

* depending on the version and type

Compact servomotors for high-performance applications

Irrespective of whether in packaging, textile, printing or machine tools: With the SIMOTICS S-1FT7 series, Siemens offers a range of synchronous motors that have been specifically designed for use in high-performance motion control and positioning applications. Tailored to the particular requirements, two versions with various cooling methods are available.

Compact: high power in a compact design

Their compact design and high power density makes these naturally cooled, forced-ventilated or water-cooled motors predestined for any application where a low mounting depth is required. The low torque ripple manifests its advantages, especially in machine tools where a high surface quality is of topmost importance.

High Dynamic: for high dynamic performance and shortest cycle times

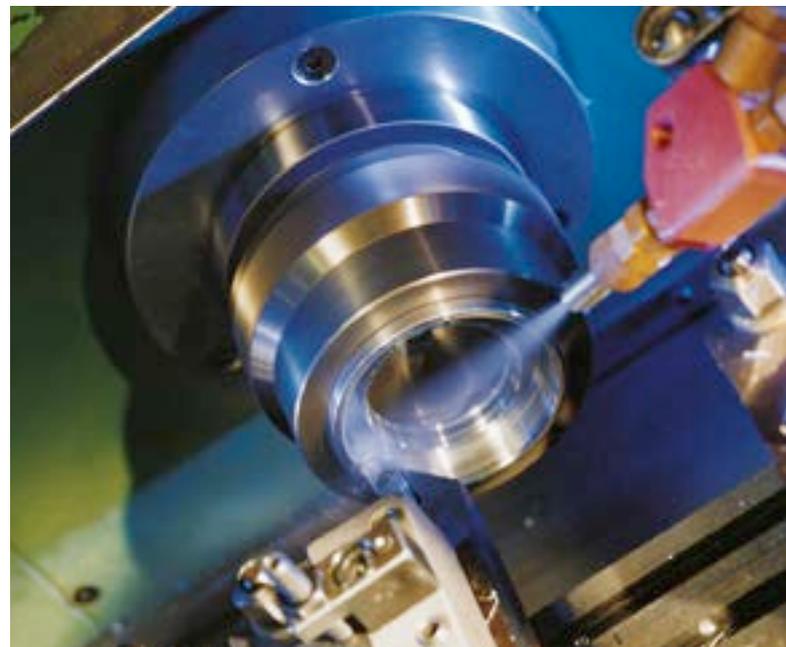
These motors with their extremely low rotor moment of inertia are ideal for applications demanding the highest dynamic performance. As a result of the forced ventilation or water cooling, these motors set themselves apart as a result of the high continuous power capability.

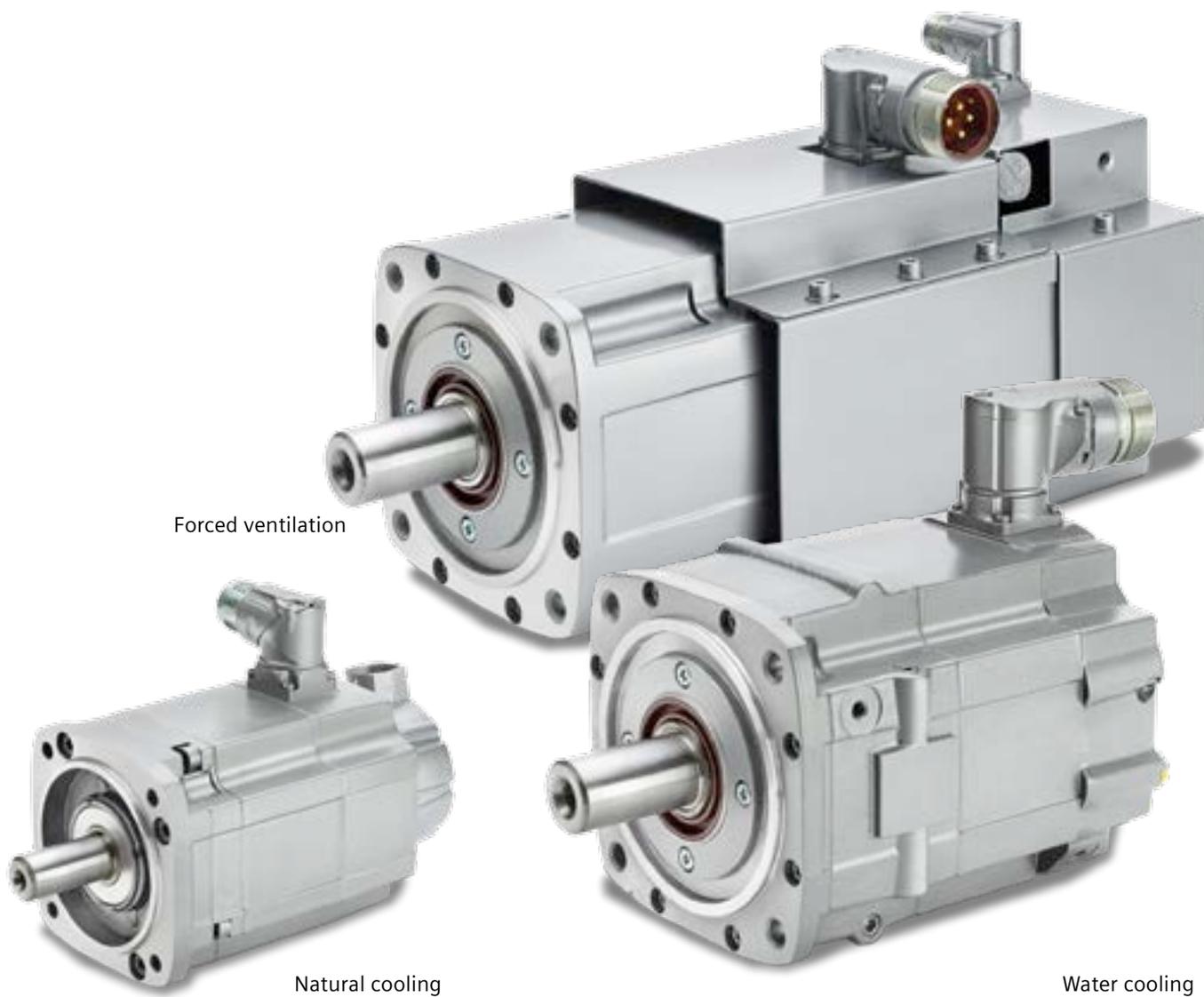
SIMOTICS S-1FT7 with premounted planetary gearbox

When requested, SIMOTICS S-1FT7 motors are available with precision planetary gearboxes. Their advantages: high smooth running properties as well as a compact design.

Highlights of the SIMOTICS S-1FT7 motor series

- 2 moment of inertia versions: Compact, High Dynamic
- Up to 400 % overload capability (for natural cooling)
- High surface quality of the workpiece through low radial eccentricity and low torque ripple
- Either natural cooling, forced ventilation or water cooling
- Compact type of construction
- High degree of efficiency
- Extremely rugged as a result of the high degree of protection IP67 and an encoder mounting that is decoupled against vibration
- Service- and installation-friendly using crossover profile, quick release connector that can be rotated and replaceable encoder
- DRIVE-CLiQ digital interface with electronic rating plate for optimum connection to SINAMICS S110 and SINAMICS S120
- Optional: holding brake with zero backlash and low backlash planetary gear





Typical application areas

- Machine tools
- Packaging machines
- Printing machines
- Conveyor technology
- Handling systems

An overview: SIMOTICS S-1FT7 synchronous motors

SIMOTICS S-1FT7	Torque *	Rated speeds *	Rated power *
CT – Compact	2 – 125 Nm	1,500 – 6,000 rpm	0.88 – 34.2 kW
HD – High Dynamic	14 – 61 Nm	3,000 – 4,500 rpm	3.8 – 21.7 kW

* depending on the version and type

Perfectly coordinated to address your motion control application

The new range of SIMOTICS S-1FG1 servo geared motors is attractive as a result of the complete and seamless portfolio – and the high versatility through the combinability. Irrespective of the motion control task involved: You can configure the optimum solution to address your particular application, and you can always depend on a wealth of advantages, e.g. high dynamic performance and precision as well as high power density.

SIMOTICS S-1FG1: wide range of versions for customized solutions

The four gearbox versions and the finely graduated ratios allow you to select the optimum drive regarding design and performance to address your specific application. Depending on the gearbox type and size, helical, parallel shaft, bevel and helical worm gearboxes are available with up to 25 transmission ratios. Based on the particular rotor version, motors can be selected for standard (CT) or for dynamic (HD) load cycles.

Can address a broad field of applications

The servo geared motors have a high efficiency and low torsional play – and are ideally suited for applications such as palletizers, storage and retrieval machines with lifting, travel and fork drives, dosing pumps as well as actuator drives.

The helical gearing means that the gearboxes have high smooth running properties and generate low noise. The pinion inserted in the motor shaft allows a high transmission ratio to be achieved in the first gearbox stage.

As a consequence, in the limit range, a two-stage gearbox can be used instead of a three-stage one. This results in an efficiency of up to 2% better – as well as a lower temperature rise.



Highlights of the SIMOTICS S-1FG1 motor series

- Compact drive with high power density
- 4 different gearbox types for a high degree of flexibility: helical, parallel shaft, bevel and helical worm gearboxes
- In some instances, 2-stage instead of 3-stage gearboxes can be used as a result of the high transmission ratio in the first gearbox stage
- For 2-stage gearboxes an efficiency that is up to 2 % higher – and reduced temperature rise
- DRIVE-CLiQ digital interface with electronic rating plate for optimum connection to SINAMICS S110 and SINAMICS S120



Parallel shaft geared motor

Helical geared motor

Bevel geared motor

Helical worm geared motor



Typical application areas

- Packaging machines
- Printing machines
- Machinery construction, wood and metal processing
- In applications such as palletizers, storage and retrieval machines with hoisting, travel and fork drives, dosing pumps and actuator drives

An overview: SIMOTICS S-1FG1 servo geared motors

	Parallel shaft geared motor 2-stage (Z) 3-stage (FD)	Helical geared motor 2-stage (Z) 3-stage (D)	Bevel geared motor 2-stage (B) 3-stage (K)	Helical worm geared motor 2-stage
Gearbox designation	FZ29 – FZ89 FD29 – FD89	Z29 – Z89 D29 – D89	B29 – B49 K39 – K109	C29 – C89
Max. drive torque (Nm)	17 – 2,000 (FZ) 163 – 2,010 (FD)	14 – 1,890 (Z) 146 – 1,930 (D)	15 – 456 (B) 24 – 3,070 (K)	46 – 1,430
Range of transmission	3.6 – 65.2 (FZ) 46.4 – 357 (FD)	3.4 – 61 (Z) 39.3 – 330 (D)	3.5 – 59.3 (B) 5.2 – 244.3 (K)	6.2 – 102.5

Main motors

Outstanding performance up to 40,000 rpm

Extreme load cycles, short rise times, high accuracy regarding speed, torque and positioning: Siemens has an extremely wide portfolio of main drives that are consequentially tailored to increasing demands in state-of-the-art machine and plant construction.





The optimum power pack for every application

SIMOTICS M-1PH8 motors set themselves apart as a result of the sophisticated modular design principle. The optimum motor can be configured for each and every application with specific environmental and installation conditions as users can choose from induction or synchronous motor versions, various cooling methods and degrees of protection – as well as many other options for electrical and mechanical connection.

SIMOTICS M-1PH8 main motors, induction version: power teamed up with cost efficiency

SIMOTICS M-1PH8 induction motors are the ideal drive for applications where the primary focus is on precise, smooth running characteristics and precise controllability of the axes. They set themselves apart as a result of their cost efficiency, and supply high power ratings with the specified levels of precision. SIMOTICS M-1PH8 induction motors can be controlled from a SINAMICS G converter. As a consequence, the field of applications that these main motors can address becomes even wider. Further, new machine concepts can be implemented. With this drive system, SIMOTICS M-1PH8 connected to G-converters, machines can be constructed that are more compact and have a wider speed range than when using standard induction motors.

Highlights of SIMOTICS M-1PH8 motors

- Extended power range, from 2.8 kW to 1,340 kW
- Many options for the optimum motor:
 - Induction or synchronous motor version
 - Forced-ventilated or water-cooled
 - Solid or hollow shaft
 - Wide range of bearing concepts
 - Various encoder types for closed-loop speed control and high-precision positioning
- Maximum speeds up to 24,000 rpm
- High smooth running characteristics thanks to the outstanding true running and low vibration severity
- High dynamic performance and short accelerating times
- High degree of ruggedness
- Winding changeover (star/delta)
- Simple and flexible connection system
- Commissioning using the electronic rating plate and DRIVE-CLiQ interface





Typical application areas

- Machine tool spindles
- Paper and printing machines, winders
- Hoisting equipment and cranes
- Wood, glass, ceramics and stone processing machines
- Test stands
- Presses
- Machines in the plastics industry
- Textile machines
- Wire-drawing machines



An overview: SIMOTICS M-1PH8 main motors (induction)

Rated speed *	400 – 10,000 rpm
Max. speed *	up to 24,000 rpm
Rated power *	2.8 – 1,340 kW
Rated torque *	2.9 – 12,435 Nm

* depending on the version and type

SIMOTICS M-1PH8

SIMOTICS M-1PH8 main motors, synchronous version: the expert for high rated torques

SIMOTICS M-1PH8 synchronous motors are the ideal choice when it comes to high torque applications. The compact power packs with smooth running characteristics can be adapted to each and every application through a wide range of options. The motors are available with forced ventilation as well as water cooling.



Typical application areas

- Machine tools
- Servo presses and cross-cutters
- Printing machines
- Extruders, calenders and rubber injection systems
- Foil machines, non-woven systems, wire-drawing and cable stranding machines
- Coiler and winder drives

An overview: SIMOTICS M-1PH8 main motors (synchronous)

Rated speed *	700 – 3,600 rpm
Max. speed *	up to 4,500 rpm
Rated power *	15 – 310 kW
Rated torque *	94 – approx. 1,650 Nm

* depending on the version and type



High-precision built-in synchronous motors with a high dynamic performance

Built-in motors from Siemens are amazingly compact. With these compact drive solutions, the mechanical motor power is directly transferred to the spindle without any mechanical transmission elements. The advantage: highest dynamic performance and precision in the smallest space.

SIMOTICS M-1FE built-in motors: highest power and performance for spindles

SIMOTICS M-1FE synchronous built-in motors have been specifically designed for use in machine tool spindles; they set themselves apart as a result of their very high machining quality, short acceleration times, highest precision and smooth running characteristics. The rotor and stator are ready to be installed and are water-cooled. Depending on the particular application, these built-in motors are available as High Torque or High Speed versions.



Typical application areas

- Turning spindles
- Grinding spindles
- Milling spindles

An overview: SIMOTICS M-1FE synchronous built-in motors

	High Speed	High Torque
Series	M-1FE1	M-1FE1, M-1FE2
Max. speed *	up to 40,000 rpm	up to 20,000 rpm
Rated power *	6.5 – 94 kW	4 – 159 kW
Rated torque *	up to 300 Nm	up to 1,530 Nm

* depending on the version and type



SIEMENS

The image shows a close-up of industrial machinery, likely a paper mill or extruder. It features a complex arrangement of metal frames, rollers, and cables. A prominent feature is a large, curved, metallic component that appears to be part of a drive system. The overall scene is brightly lit, highlighting the metallic surfaces and the intricate details of the machinery. The background is slightly blurred, focusing attention on the mechanical components in the foreground.

Linear and torque motors

Inherently efficient and productive

In their particular discipline, Siemens linear and torque motors set benchmarks. These linear motors stand for the highest dynamic performance, precision and cost effectiveness when it comes to linear motion – this results in a higher degree of productivity and precision than conventional drives. Additional highlights: lower unit costs as well as the elimination of mechanical transmission elements. In turn, this simplifies the mechanical design of your machines and increases the availability. Siemens torque motors always supply the optimum torque at the right time – irrespective of whether paper roll, extruder screw or machine tool. The direct drives for rotary axes are especially compact and secure precise, high torques at the optimum speed – to achieve high machine productivity.

Direct drives for linear axes with a high dynamic performance

Linear motors from Siemens offer the optimum solution wherever high-dynamic and high-precision linear traversing motion is required. They are extremely rugged, almost wear-free and therefore especially maintenance-friendly. SIMOTICS L-1FN3 motors were specifically developed for use in machine tools and have been the proven standard for linear motion for over 10 years now. They set themselves apart especially as a result of their ruggedness and thermal encapsulation.

Extensive portfolio

The modular SIMOTICS L-1FN3 system provides an extensive range of motors. This allows you to select the optimum motor for the installation space that you have available. A total of seven different widths are available with up to five different construction lengths. SIMOTICS L-1FN3 motors are available with several winding types, each harmonized with the SINAMICS S120 drive system.

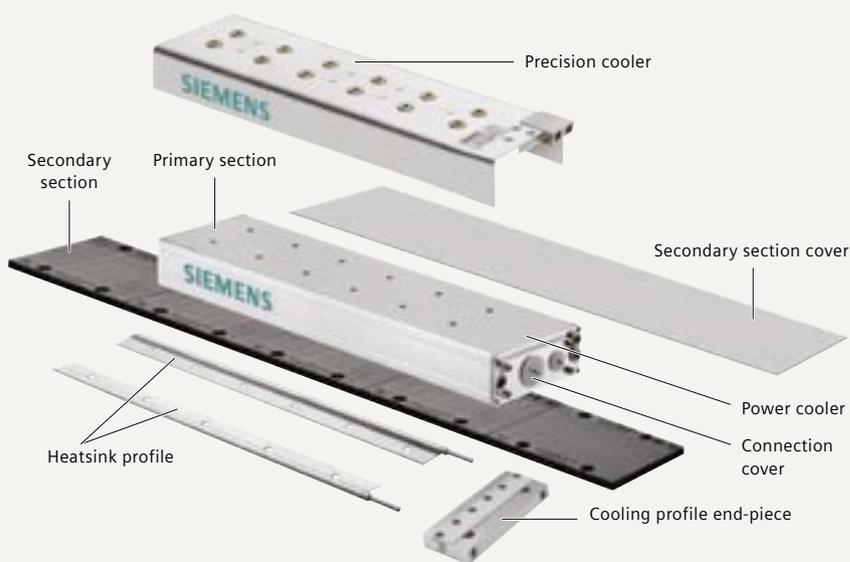
If you wish to implement application-specific solutions using special motors, then we recommend that you use our Application and Mechatronic Support. There you can obtain services such as consultation and simulation.

As part of our portfolio, you can obtain an extensive range of accessories, which allows you to increase the degree of ruggedness and thermal encapsulation.



Highlights of SIMOTICS L-1FN3 linear motors

- Highest precision linear motion with high dynamic performance
- Enormous force density in a compact design
- Highest traversing velocities for all applications
- Highest precision when using suitable measuring systems
- High energy efficiency
- Large air gap, therefore extremely rugged against external influences
- Wide range of options depending on the application profile
- Simple mounting and installation
- Wear-free drive components
- Low machine life cycle costs



Typical application areas

- Milling, turning and grinding machines
- Laser machining centers
- Handling
- Production machines
- Oscillators
- Test setups

An overview: SIMOTICS L-1FN3 linear motors

	1FN3	
	Peak load	Continuous load
Max. feed force*	up to 20,700 N	up to 17,610 N
Velocity*	up to 836 m/min	up to 435 m/min
Overload capability*	up to 2.75 x F _N	1.7 x F _N

* depending on the version and type

Highest precision for rotary axes

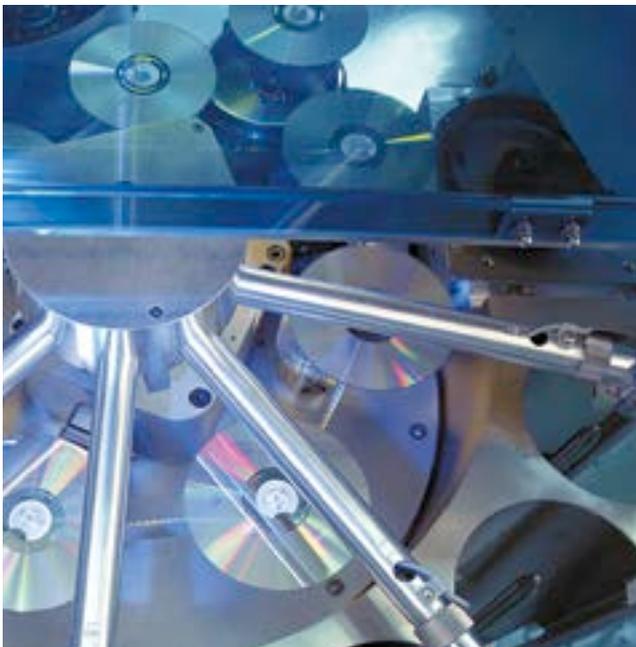
Torque motors from Siemens are attractive as direct drives with a high dynamic performance for all rotary axes. As the permanent-magnet synchronous motors with high pole number are completely integrated in the machine and mechanical transmission elements are eliminated, for example, gearboxes, you benefit from a higher degree of flexibility when it comes to installation, simplified maintenance, high availability and low space requirement. The direct mechanical connection also means a higher dynamic performance and control quality in the system. Depending on the application, users can select one of two motor types.

SIMOTICS T-1FW3 complete torque motor

The extremely compact, complete torque motors are flanged to the machine using torque arms specifically developed for the purpose. The rotor is connected to the machine shaft using the optionally supplied clamping element. The mounting set is supplied, premounted. It includes the torque arm, clamping element and centering sleeve (only for hollow shafts); this makes it simple and safe to establish a connection to the motor: plug and play. As a consequence, a perfect, stiff drive train is obtained, which can be optimally controlled.

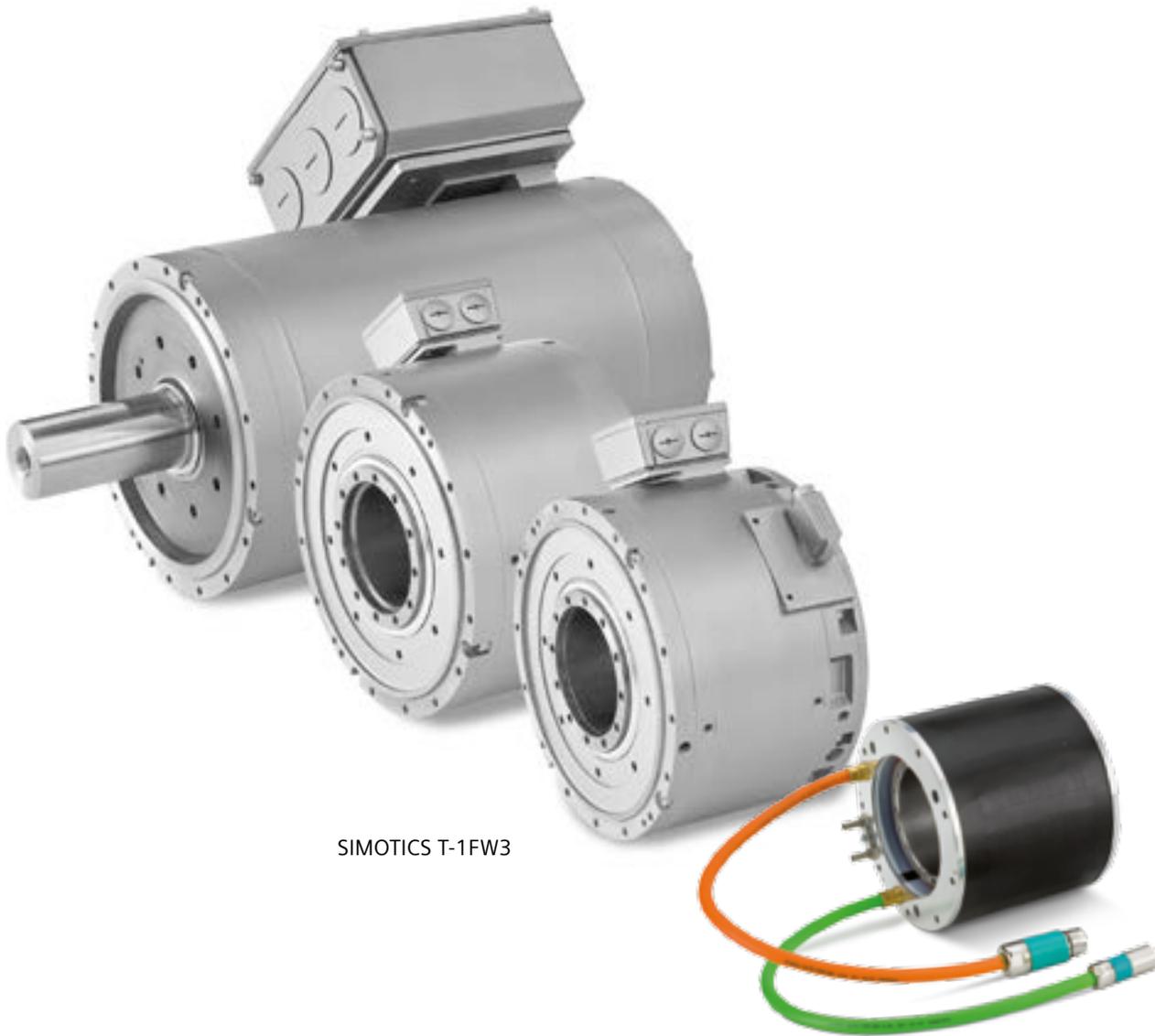
SIMOTICS T-1FW6 built-in torque motors

For built-in torque motors, stator and rotor are supplied as components and are directly integrated in the machine. They are available with jacket as well as with integrated cooling.



Highlights of the torque motors

- Highest precision, power and dynamic performance
- Various application-specific versions
- Direct controllability; no elasticities in the drive train
- No mechanical transmission elements
- Simplified maintenance
- Highest torque at low speeds as a result of the high-pole winding
- Extremely low radial eccentricity
- Short acceleration times
- Can be directly integrated into the machine
- Low space requirement
- High degree of efficiency
- High degree of availability



SIMOTICS T-1FW3

SIMOTICS T-1FW6



An overview: SIMOTICS T-1FW3 and T-1FW6 torque motors

	T-1FW3 Complete torque motor	T-1FW6 Built-in torque motor
Rated speed *	150 – 1,200 rpm	38 – 940 rpm
Rated torque *	100 – 7,000 Nm	10 – 5,760 Nm
Maximum speed *	up to 1,800 rpm	up to 1,500 rpm

* depending on the version and type

Typical applications for SIMOTICS T-1FW3 motors

- Rolling drives
- Paper machines
- Plastic injection molding machines
- Extruders
- Handling and assembly systems
- Servo presses

Typical applications for SIMOTICS T-1FW6 motors

- Rotary indexing machines
- Rotary tables and dividing heads
- Rotary axes (A-, B-, C-axis for 5-axis machine tools)
- Revolver interconnection and drum connection
- Workpiece spindles
- Roller and cylinder drives

Application-specific motors

A proven standard for customized solutions

Applications are not made for motors, but motors are made for applications. As a consequence, we also create application-specific solutions on request, which go beyond our standard motors. Some examples of our competence in this area are provided here.



Innovative combination motor for printing machines

Together with manroland – the printing machine manufacturer – Siemens has developed a special motor for offset printing machines. Its axis executes both rotary as well as linear motion. As a consequence, in addition to rotary motion, rolls can also execute lateral motion. This means that the ink can be cleanly and evenly distributed, a crucial factor for achieving high print quality. Users profit from a high degree of flexibility and a significantly optimized printing process.



Customized performance for machine tools: motor spindles

An optimum degree of performance and workpiece quality can be achieved with the compact, water-cooled 2SP1 motor spindle from Siemens. Further, the integrated motor has fewer parts when compared to solutions based on a belt drive – the motor also has integrated sensors for indexing and monitoring the tool change. Moreover, we supply customized versions for grinding, turning and milling spindles.



Naturally cooled linear motor in the LTS profile rail guide slides

Together with SKF Linear Technology, Siemens has developed a non-ventilated version of the SIMOTICS L-1FN3 – for use in linear slides with a high dynamic performance. The simple mounting and installation of this preconfigured mechanical unit – and its optimum coordination with the SINAMICS S120 drive system – make it easier for users to enter the realm of high-speed and high-precision linear technology.



Designed for optimum interaction

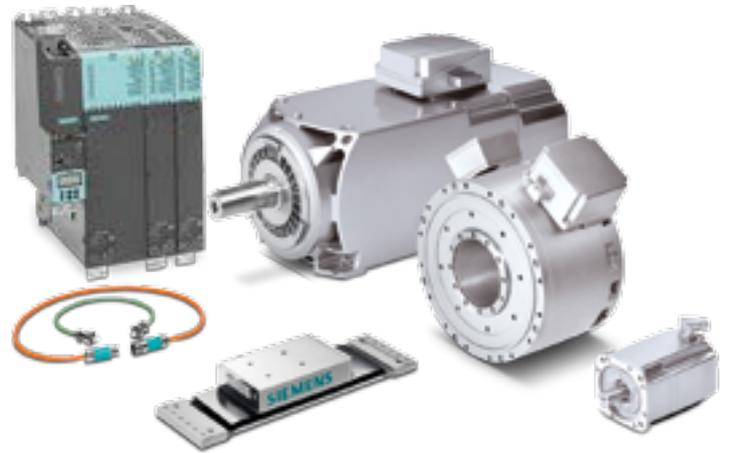
Our SIMOTICS motion control motors are perfectly harmonized and coordinated for operation with our SINAMICS S family of converters. You profit from faster commissioning and optimum performance.

The optimum drive for every application

When developing our servomotors, special emphasis was placed on the optimum coordination with the SINAMICS S family of drives. These converters are predestined for high-performance applications in plant and machinery construction – as well as for the widest range of motion control tasks.

One combination – many advantages

When it comes to optimum interaction between the motor and converter, especially fast commissioning and smooth, disturbance-free operation play significant roles. This is ensured through the coordination of the power parameters, the electronic rating plate and the connection of the motors via the DRIVE-CLiQ system interface. Additional advantages: field weakening operation extends the speed range of the motors; and the prefabricated MOTION-CONNECT connection system ensures that components are simply connected without any errors.



The simple, fast and reliable connection

With MOTION-CONNECT, Siemens offers a reliable, high-quality and efficient system cabling for your motion control systems. You profit from higher availability of your plant and system and from an innovative connection system, which is significantly faster and simpler to connect than conventional systems.

Always the optimum connection:

- MOTION-CONNECT 500: cost-effective product for predominantly fixed cable routing
- MOTION-CONNECT 800PLUS: for a high dynamic performance - a performance product for use in drag chains with increased mechanical requirements up to 5 g or longer traversing distances up to 50 m
- SPEED-CONNECT: fast, rugged and reliable connection using robust round connectors with quick release
- DRIVE-CLiQ: high-quality shielded cables with RJ45 metal connector or compact and rugged M12 connector for connecting direct measuring systems

Advantages of MOTION-CONNECT

- The optimum connection between SINAMICS converters and SIMOTICS motors; plug & play based on system-tested original components
- Prefabricated cables with rugged IP67 connectors
- Cables prefabricated with decimeter accuracy
- Large selection as a result of the finely graduated cross-sections from 1.5 up to 120 mm²
- Consistent quality management and a comprehensive test program
- Highest plant/system availability and high EMC quality using a 360° shield connection

Overview of drive systems / connection systems / motors for motion control

<p>SINAMICS drive systems</p>				
<p>MOTION-CONNECT</p>				
<p>SIMOTICS motors for motion control</p>	 <p>Servomotors</p>	 <p>Main motors</p>	 <p>Torque motors</p>	 <p>Linear motors</p>

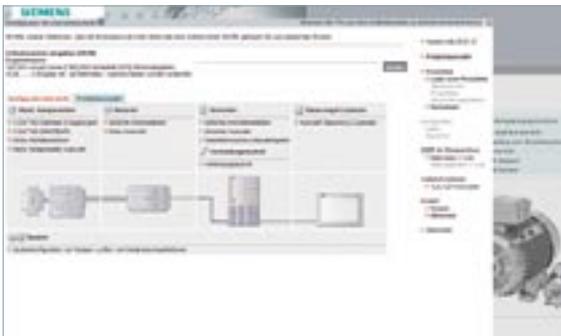
Drive engineering – simple and fast

With Siemens, you can easily create the optimum motor solution – using uniquely efficient and powerful tools: SIZER, DT Configurator and CAD CREATOR for engineering, configuration and design.



Focused motor selection and dimensioning: SIZER engineering software

The SIZER engineering software supports you when engineering a complete drive system, including options, accessories and connection system. SIZER allows you to simply handle single-motor drives up to complex multi-axis drives. Starting from the application, a motor Wizard supports you step by step when dimensioning the motor. The advantage: SIZER not only provides a list of all of the components with the various ordering data, but also allows motor data to be simply imported into CAD CREATOR.



Selecting and configuring using the Drive Technology Configurator

The Drive Technology Configurator (DT Configurator) supports you when selecting the optimum products for your application – from motors through converters up to the relevant options.

Comprehensive documentation, from data sheets through operating instructions up to 2D/3D dimension drawings and certificates can also be called up. The components that you selected can be directly ordered by transferring them into the Industry Mall shopping cart.



Integrated: mechanical design based on CAD CREATOR

Technical data, dimension drawings and CAD motor data can be quickly and simply generated using CAD CREATOR. The data can be easily transferred into the system documentation and used for the mechanical design.

CAD CREATOR is included in the scope of supply of the SIZER engineering software.

Faster to the machine – faster to market

With Mechatronic Support, Siemens can offer you the ideal basis to significantly optimize the productivity and precision of your machine – and this, already in the design phase. As a consequence, new machine concepts can be virtually compared with one another, modified and optimized – without having to build a prototype.

A clever alternative to trial and error

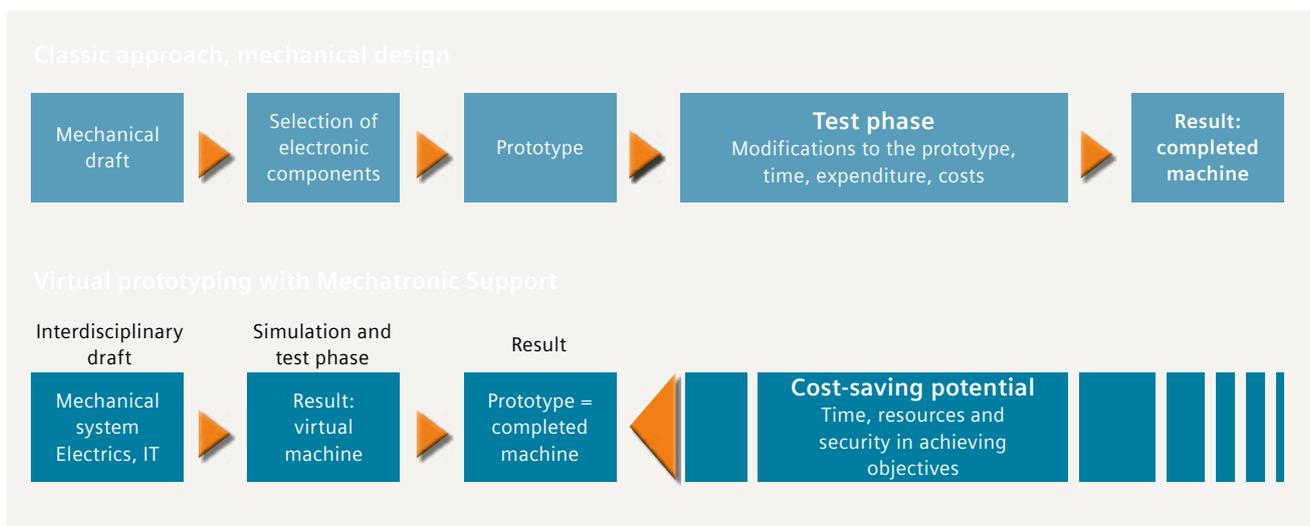
With Mechatronic Support, Siemens offers you an intelligent alternative to developing costly prototypes. Using virtual prototyping, already in the draft phase, all mechanical, electronic and IT systems can be modeled and optimized regarding their functionality. The machine is produced without first having to build a prototype.

Siemens – your partner for machine development

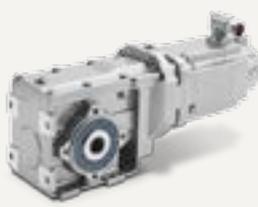
- Comparison and assessment of machine concepts regarding static and dynamic precision, control loop dynamics, stiffness
- Mechatronic model building and machine simulation (finite element techniques)
- Computer-based optimization of machine structures
- Optimum dimensioning and selection of all motor and control loop components
- Commissioning and control loop optimization
- Analysis and optimization of existing tool and production machines locally on site

Advantages of Mechatronic Support

- Shorter development times – faster to market
- Development objectives are reliably reached
- Risk-free testing of new machine concepts
- Higher quality and productivity from the word go



SIMOTICS motion control motors – an overview

	SIMOTICS servomotors			SIMOTICS main motors
				
Motor types	SIMOTICS S-1FK7	SIMOTICS S-1FT7	SIMOTICS S-1FG1	SIMOTICS M-1PH8
Cooling methods	Natural cooling	Natural cooling, forced-ventilated, water-cooled	Natural cooling	Forced-ventilated, open-circuit-cooled, water-cooled
Shaft height	20 ... 100	36 ... 100	Frame sizes 29...109	80 ... 355
Degree of protection	IP64 to IP65	IP64 to IP67	IP65	IP23, IP55, IP65
Line voltage	230 V, 400 ... 480 V	400 ... 480 V	270 ... 360 V, 510 ... 720 V	400 ... 480 V, 690 V
Rated speed/velocity	2,000 ... 6,000 rpm	1,500 ... 6,000 rpm	13 ... 1,279 rpm	400 ... 10,000 rpm
Rated power	0.05 ... 8.17 kW	0.88 ... 34.2 kW	0.5 ... 1.8 kW	2.8 ... 1,340 kW
Rated torque/force	0.08 ... 37 Nm	1.4 ... 125 Nm	depending on the geared motor, up to 3,070 Nm	2.9 ... 12,435 Nm
Encoder	Resolver, incremental encoder, absolute encoder	Incremental encoder, absolute encoder	Absolute encoder, single- and multi-turn – as well as resolver with DRIVE-CLiQ interface	Incremental encoder, absolute encoder, pulsing code
Holding brake as option	yes	yes	yes	yes
Typical applications	Applications with high up to very high demands on the dynamic performance and precision, e.g. robots and handling systems, wood, glass, ceramic and stone processing, packaging, plastics and textile machines and in the machine tool sector		In applications such as palletizers, storage and retrieval machines with hoisting, travel and fork drives, dosing pumps and actuator drives	Precisely rotating rotary axes with a high dynamic performance, e.g. main drives in presses, printing machines, roller drives and winders in foil machines and other converting applications, extruders, main spindle drives in machine tools
Drive systems	SINAMICS S110, S120	SINAMICS S110, S120	SINAMICS S110, S120	SINAMICS S110, S120, G120
Catalog *)	PM21, NC62, D31	PM21, NC62, D31	D41	PM21, NC62, D31

*) PM21: SIMOTION, SINAMICS S120 and motors for production machines, D31: SINAMICS and motors for single-axis drives, NC62: SINUMERIK and SINAMICS –

	SIMOTICS linear motors	SIMOTICS torque motors	
			
SIMOTICS M-1FE1, M-1FE2	SIMOTICS L-1FN3	SIMOTICS T-1FW3	SIMOTICS T-1FW6
Water cooling	Water cooling	Water cooling	Water cooling, natural cooling
40 ... 180	–	150 ... 280	159 ... 730 (outer stator diameter)
IP00	IP65	IP54/IP55	IP23
400 ... 480 V	400 ... 480 V	400 ... 480 V	400 ... 480 V
500 ... 25,000 rpm	Maximum velocity at the rated force (feed force FN): up to 836 m/min	150 ... 1,200 rpm	38 ... 940 rpm
4.0 ... 159 kW	1.7 ... 81.9 kW	2.8 ... 380 kW	1.7 ... 54.1 kW
up to 1,530 Nm	Rated force (feed force FN): 150 ... 10,375 N	100 ... 7,000 Nm	10... 5,760 Nm
External encoder required	External encoder required	Resolver, incremental encoder, absolute encoder	External encoder required
–	–	–	–
Motor spindles in machine tools, e.g. turning, grinding and milling spindles	Linear axes with the highest requirements on the dynamic response and precision, e.g. machining centers, grinding and out-of-center turning machines, laser and water-jet cutters, handling gantries and linked/cascaded systems	Applications with high up to very high requirements on the force and precision, e.g. extruders, injection molding machines, roll drives in foil-drawing machines, paper machines, winders, servo presses	Applications with high up to very high requirements on the force and precision, e.g. rolls and winders, rotary indexing tables, rotary cyclic machines, swiveling axes, tool turrets
SINAMICS S120	SINAMICS S120	SINAMICS S120	SINAMICS S120
NC62	PM21, NC62	PM21	PM21, NC62

equipment for machine tools, D41: SIMOTICS S-1FG1 servo geared motors (Nov. 2015)

There's more to it:

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your competitive edge and
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For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered.

For more information about industrial security, visit

<http://www.siemens.com/industrialsecurity>