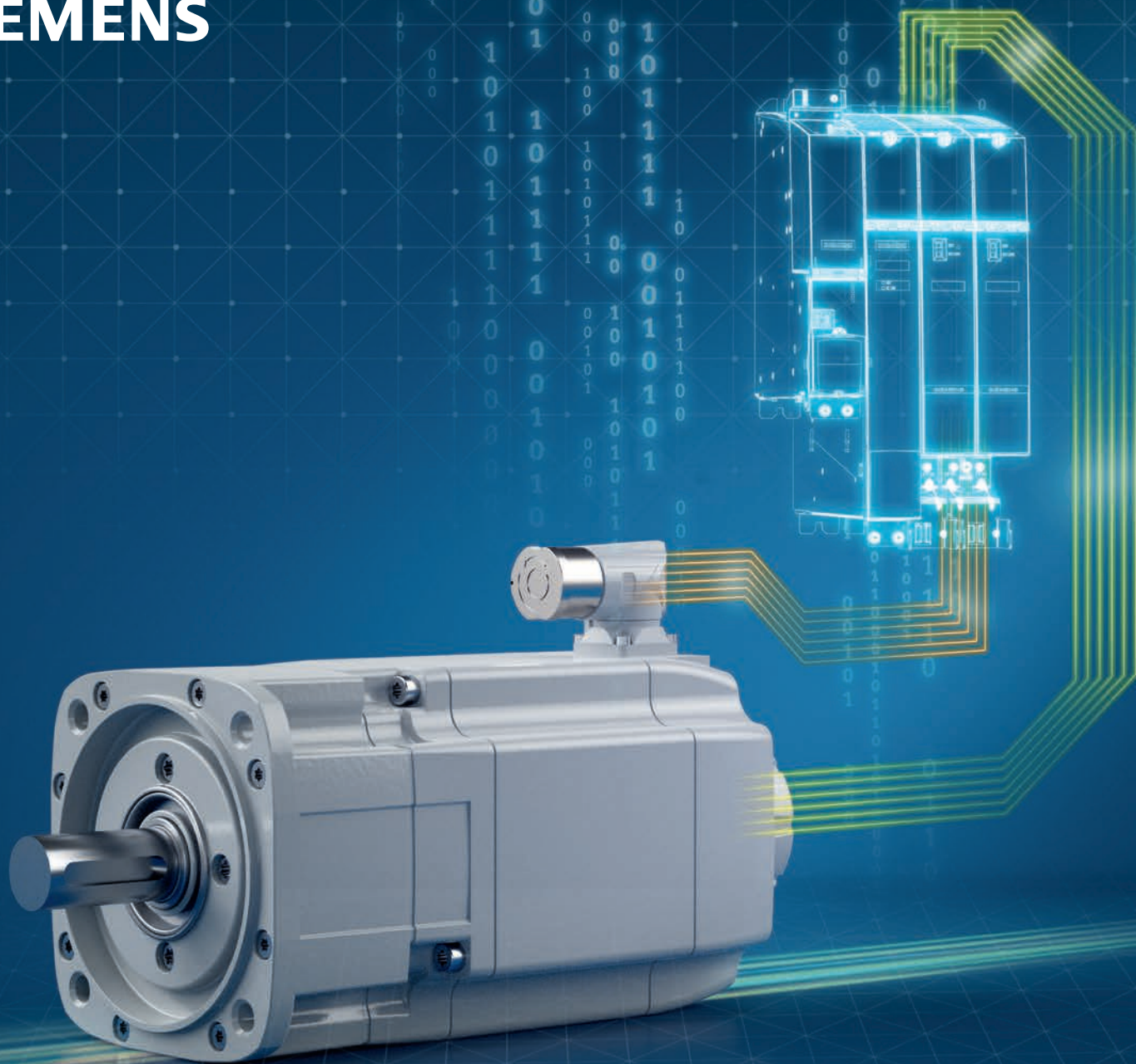


**SIEMENS**



**SIMOTICS**

compact, dynamic and rugged

Experience a higher level of precision

**SIMOTICS L Linear Motors**

# **SIMOTICS motors** for every motion control application





# | Move it!

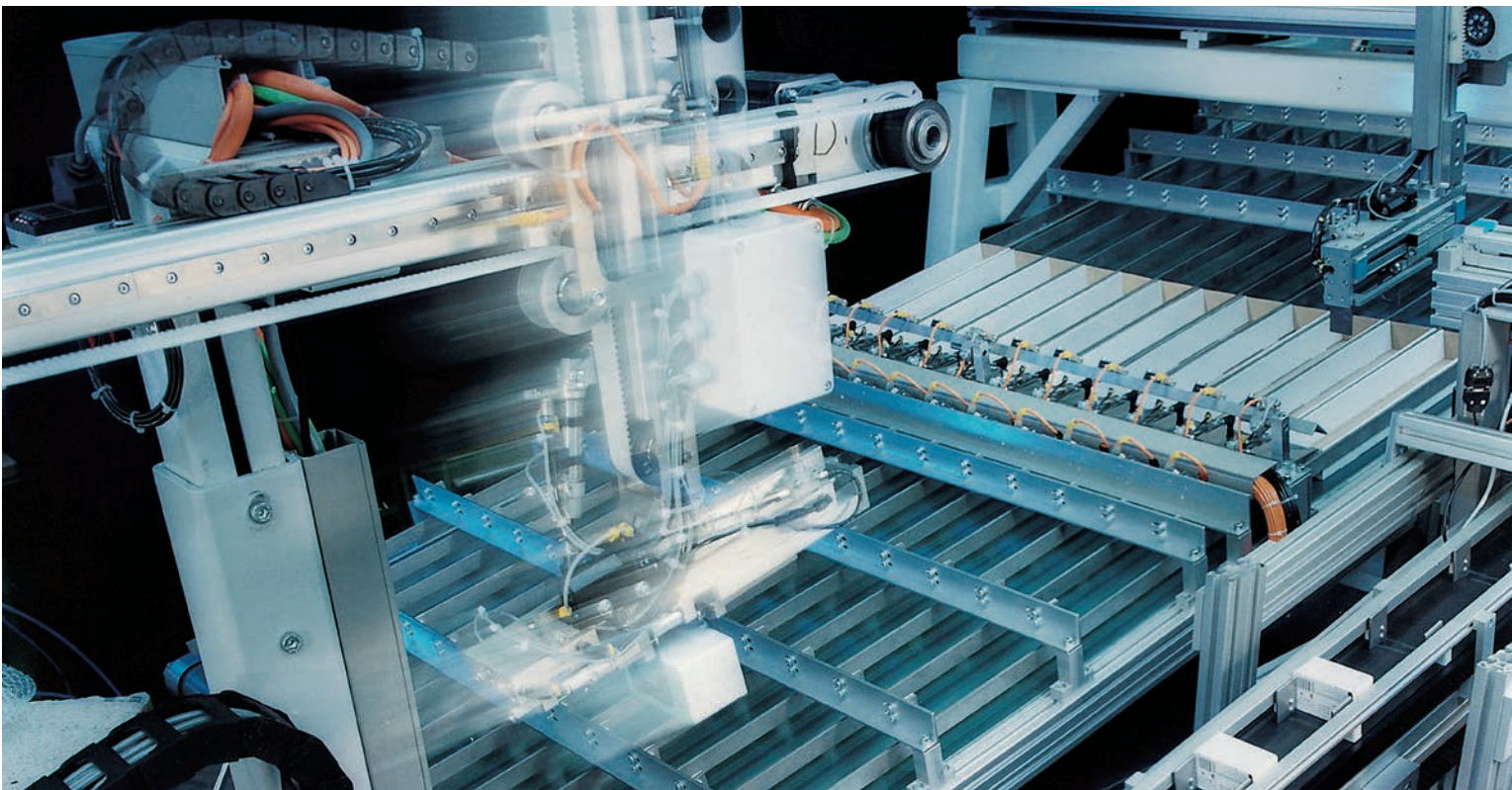
Since the development of the dynamo-electric principle by Werner von Siemens in 1866, innovative motor technology represents a core business of our company. In addition to low-voltage, DC and high-voltage motors, **SIMOTICS motors** have firmly established themselves in many industries when it comes to addressing demanding motion control applications.

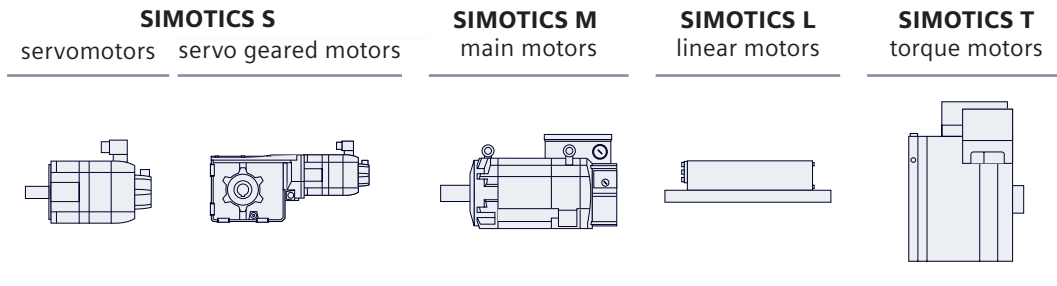
## **The correct solution**

Whether for precise and repeatable positioning, constant speed and high dynamic motion, long traversing paths or fast velocity changes—the **Siemens SIMOTICS portfolio of servo, main, linear and torque motors** has the optimum solution for every motion control application.

### **SIMOTICS motion control motors are based upon:**

- More than 150 years of experience and innovation in electric motor technology
- The widest range of motors worldwide with optimum solutions for motion control applications in every manufacturing industry and power class
- Can be fully integrated into the drive-train to create overall systems, perfectly addressing the control concept
- Rugged and compact design for reliable, low-maintenance operation with the highest dynamic performance and precision
- A global network of skill sets and worldwide service around the clock



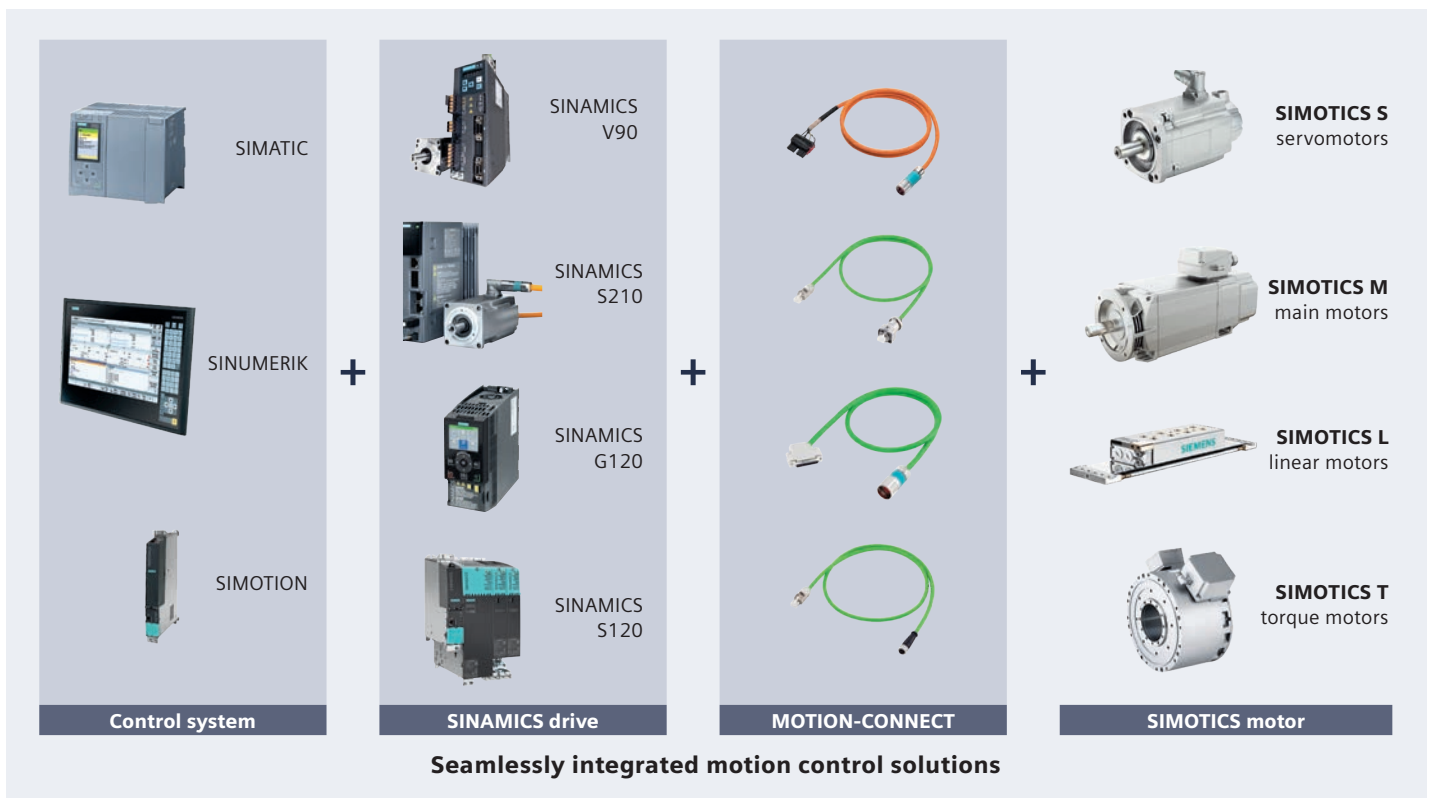


**SIMOTICS motion control motors** are perfectly harmonized and coordinated for operation with our SINAMICS family of drives. This simplifies the engineering and commissioning needed for high-performance applications in machine building and plant construction.

**Optimum integration in the drive and control system**

To optimize interaction with the drive, Siemens motors have a DRIVE-CLiQ interface to quickly transfer data—and transparently monitor important motor information. In addition, SIMOTICS motion control motors operate perfectly with SIMATIC, SINUMERIK and SIMOTION control systems from Siemens.

For specific questions related to your application, simply e-mail us: [✉ mc.us@siemens.com](mailto:mc.us@siemens.com)



# SIMOTICS linear motors—the benchmark for directly driving linear axes

SIMOTICS linear motors set benchmarks when it comes to the accuracy, precision and cost efficiency of linear motion applications. Contrary to conventional drive solutions, they do not require any mechanical transmission elements—which simplifies the design of your machines and optimizes their availability.

## SIMOTICS L-1FN3

### Highlights

- \_\_\_\_\_ Highest precision linear motion with the 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 upon the application profile
- \_\_\_\_\_ Simple mounting and installation
- \_\_\_\_\_ Wear-free drive components
- \_\_\_\_\_ Low machine lifecycle costs

### Typical application areas

- \_\_\_\_\_ ■ Milling, turning and grinding machines
- \_\_\_\_\_ ■ Laser and waterjet machining centers
- \_\_\_\_\_ ■ Handling systems and gantries
- \_\_\_\_\_ ■ Production machines
- \_\_\_\_\_ ■ Oscillators
- \_\_\_\_\_ ■ Test setups

### The manufacturing industry's standard

SIMOTICS L-1FN3 motors are water-cooled and were specifically developed for CNC machine tool applications. They have been the proven standard for linear motion control for many years. The modular principle provides you with a comprehensive range of motor versions that are almost wear-free and therefore low-maintenance. 1FN3 linear motors are available in several different widths and up to five different lengths—as well as several winding types.

The motors are harmonized and coordinated for operation with SINAMICS S120 drives. A wide range of accessories is available to further optimize the high degree of ruggedness and thermal encapsulation.

When it comes to using direct drives in machine tools and production machines, Siemens has many years of experience and a wealth of industry-specific know-how—allowing us to support you by quickly and reliably implementing your development goals.

### SIMOTICS L-1FN3 linear motors—overview

SIMOTICS L-1FN3	Peak load	Continuous load
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 <sub>N</sub>	1.7 x F <sub>N</sub>



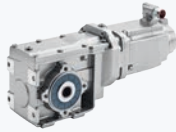

\* depending upon the version and type



- 1 Primary section
- 2 Precision cooler
- 3 Secondary section
- 4 Secondary section cover
- 5 Cooling profile
- 6 Power cooler
- 7 Connection cover for separate power and signal cables
- 8 Combination adapter



# SIMOTICS motion control motors—an overview

SIMOTICS				
	S-1FK7	S-1FT7	S-1FG1	S-1FL6
Servomotors			Servo-drive systems	
<b>Cooling method</b>				
Natural cooling	Yes	Yes	Yes	Yes
Forced-ventilated	Yes	Yes	—	—
Water-cooled	—	Yes	—	—
Open-circuit-cooled	—	—	—	—
<b>Shaft height</b>	20 ... 100	36 ... 132	29...109	20 ... 90
<b>Degree of protection</b>	IP64 to IP65	IP64 to IP67	IP65	IP65
<b>Rated speed / velocity</b>	2,000 ... 6,000 rpm	1,500 ... 6,000 rpm	13 ... 1,279 rpm	2,000 ... 5,000 rpm
<b>Rated power</b>	0.05 ... 8.17 kW	0.88 ... 45.5 kW	0.5 ... 1.8 kW	0.05 ... 7.0 kW
<b>Rated Nm torque / force</b>	0.08 ... 37 Nm	1.4 ... 250 Nm	up to 3,070 Nm <sup>1)</sup>	0.16 ... 33.4 Nm
<b>Encoder</b>				
Single-turn absolute	Yes	Yes	Yes	Yes
Multi-turn absolute	Yes	Yes	Yes	Yes
Incremental	Yes	Yes	—	Yes
Resolver	Yes	—	Yes	—
External required	—	—	—	—
<b>Holding brake as option</b>	Yes	Yes	Yes	Yes
<b>Drive systems</b>	SINAMICS S120	SINAMICS S120	SINAMICS S120	SINAMICS V90
<b>Catalogs</b>				
D21.4 SINAMICS S120 and SIMOTICS	Yes	Yes	—	—
D31.1 SINAMICS drives for single axis drives / built-in units	Yes	Yes	—	—
D32 SINAMICS S210 servo-drive systems	—	—	—	—
D33 SINAMICS V90 basis servo-drive system	—	—	—	Yes
D41 SIMOTICS S-1FG1 servo geared motor	—	—	Yes	—
NC62 SINUMERIK CNC systems for machine tools	Yes	Yes	—	—

<sup>1)</sup> Dependent upon the geared motor



S-1FK2/1FT2/1FS2	M-1PH8	M-1FE1, M-1FE2	L-1FN3	T-1FW3	T-1FW6
Main motors			Linear motor	Torque motors	
Yes	—	—	—	—	Yes
—	Yes	—	—	—	—
—	Yes	Yes	Yes	Yes	Yes
—	Yes	—	—	—	—
20 ... 100	80 ... 355	40 ... 180	—	150 ... 280	159 ... 730 <sup>4)</sup>
IP64 to IP67	IP23, IP55, IP65	IP00	IP65	IP54/IP55	IP23
3,000 rpm	400 ... 10,000 rpm	500 ... 25,000 rpm	up to 836 m/min <sup>2)</sup>	150 ... 1,200 rpm	38 ... 940 rpm
0.05 ... 7.5 kW	2.8 ... 1,340 kW	4.0 ... 159 kW	1.7 ... 81.9 kW	2.8 ... 380 kW	1.7 ... 54.1 kW
0.16 ... 34.5 Nm	2.9 ... 12,435 Nm	up to 1,530 Nm	150 ... 10,375 N <sub>3</sub> <sup>3)</sup>	100 ... 7,000 Nm	10 ... 5,760 Nm
Yes	—	—	—	Yes	—
Yes	Yes	—	—	Yes	—
—	Yes	—	—	Yes	—
—	—	—	—	Yes	—
—	—	Yes	Yes	—	Yes
Yes	Yes	—	—	—	—
SINAMICS S210	SINAMICS S120, G120	SINAMICS S120	SINAMICS S120	SINAMICS S120	SINAMICS S120
—	Yes	—	Yes	Yes	Yes
—	Yes	—	—	—	—
Yes	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	Yes	Yes	Yes	—	Yes

<sup>2)</sup> Maximum velocity at rated force (feed force F<sub>N</sub>)

<sup>3)</sup> Rated force (feed force F<sub>N</sub>)

<sup>4)</sup> Outer stator diameter

**Published by  
Siemens Industry, Inc.**

100 Technology Drive  
Alpharetta, GA 30005

(770) 871-3800

Order No. DRBR-SIMOTICS-0822

Printed in USA  
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