

Scalable motion control functions

The technology CPUs of the SIMATIC S7-1500 Advanced Controllers permit extended motion control functionalities in the efficient environment of the TIA Portal with SIMATIC and SINAMICS.

The SIMATIC S7-1500 Technology CPU (T-CPU) completes the scalable motion control portfolio from Siemens with functionalities such as gearing, camming or kinematics with up to 4 interpolating axes.

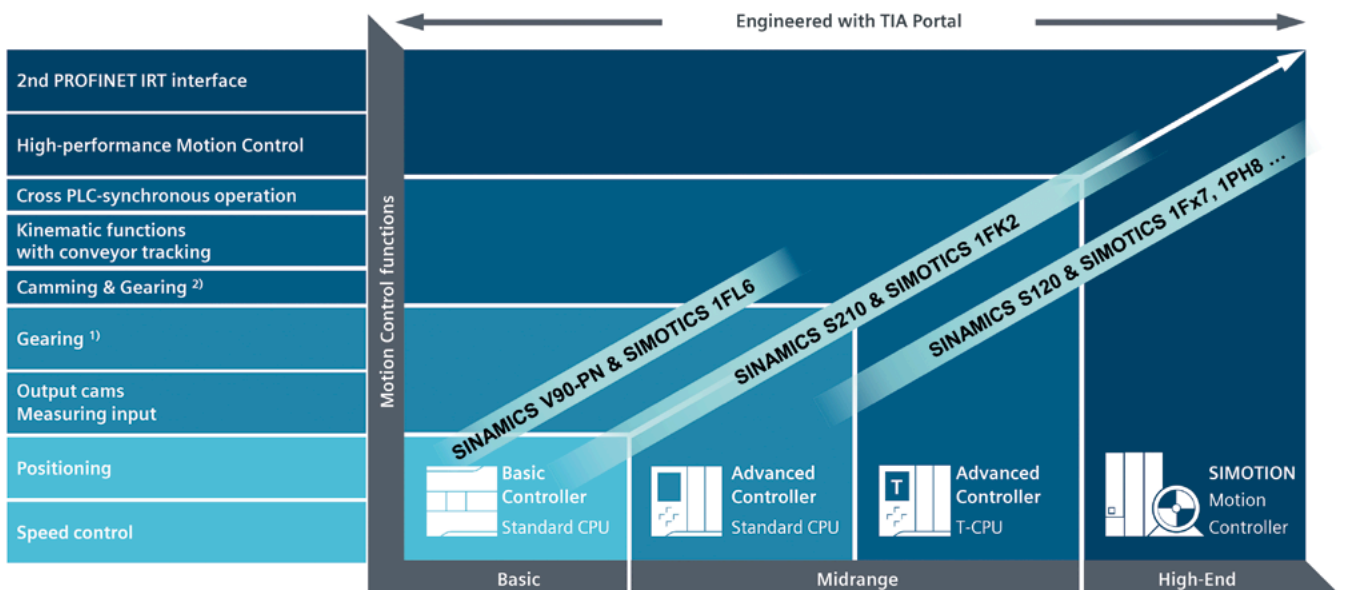
The extended functions mean that motion control applications can be generated efficiently in the SIMATIC environment using the TIA Portal engineering framework.

T-CPU's are also suitable for safety applications, which means that the user only requires one controller for standard, safety and motion control automation tasks. This allows even the most demanding requirements for machine and personnel protection to be implemented - e.g. with SIMATIC Safe Kinematics even safely monitored movements in the room.



The Advanced Controllers are available in 3 versions for the different requirements in machine building:

- as Open Controller, the compact PC-based system with optionally installed WinCC RT Advanced visualization software
- as scalable modular S7-1500 Controller in 4 performance classes
- as Drive Controller in ultra-compact design, available in 2 performance classes and with integrated SINAMICS S120 drive control and technology I/Os onboard.



¹⁾ Synchronization without specification of the synchronous position

²⁾ Synchronization with specification of the synchronous position

**Published by
Siemens AG**

Digital Industries
Factory Automation
P.O. Box 48 48
90026 Nuremberg
Germany

**For the U.S. published by
Siemens Industry Inc.**

100 Technology Drive
Alpharetta, GA 30005
United States

Article No.: DIFA-B10085-00-7600
PDF 0320
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Siemens offers automation and drive products with Industrial Security functions that support the safe operation of the plant or machine. They are an important component in a holistic Industrial Security concept. With this in mind, our products undergo continuous development. We therefore recommend that you keep yourself informed with respect to our product updates and only use the respective current versions.

Further information can be found at:
support.automation.siemens.com

There you can also register for a product-specific newsletter. To ensure the secure operation of a plant or machine, it is also necessary to implement suitable security measures (e.g. a cell protection concept) and to integrate the automation and drive components into a state-of-the-art holistic industrial security concept for the entire plant or machine. Third-party products that may be in use should also be considered.

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Motion control functions are integral part of the TIA Portal

- SIMATIC S7-1500 T-CPU and SINAMICS drive systems for demanding applications
- One controller for standard, motion control and fail-safe automation tasks
- Scalable motion control functions as part of the S7-1500 CPU Advanced Controller portfolio

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Ingenuity for life




Engineered with TIA Portal

Agility in machine building

Scalable motion control solutions with
SIMATIC and SIMOTION controller

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"Thanks to the combination of SIMATIC S7-1500 T-CPU and SINAMICS V90 with PROFINET, we can now sell a fully scalable portfolio graded in terms of function and price."

Tobias Eggermont
Sales and Marketing Director at Sollas

Packaging for every requirement

Packaging machines made by Sollas wrap luxury goods in protective film with high speed and flexibility. Siemens offers the Dutch packaging specialist modern automation solutions that combine sophisticated motion control functionality with extreme ease of operation. Sollas has opted for the Totally Integrated Automation Portal (TIA Portal).

TIA Portal: the portal for integrated motion control solutions

With a portfolio of machines graded by price and performance, the Dutch packaging machine specialist is successful on an international scale. Many customers operate Sollas machines on several production lines. The company's client list reads like a "Who's Who" of the cosmetics and luxury food market. The quality requirements for the packaging machines are of an equally high standard. The demands in terms of

speed and flexibility of the machines depend on the respective product and on the customer's willingness to invest, which can also differ according to region.

The level of integration of the automation and drive systems in the TIA Portal now enables the optimum solution to be selected in terms of price and performance, whether it be with SIMATIC S7-1200, the new T-CPU of the S7-1500 or SIMOTION. It is only necessary to acquire the basic expertise for operation and maintenance once in order to implement expansions or upgrades. This is supported by the seamless PROFINET communication, the performance of the S7-1500 and ultimately the option of high-end drive and automation solutions using the SIMOTION motion control system.

For more on Sollas, watch the video at [siemens.com/sollas](https://www.siemens.com/sollas)



SIMATIC S7-1200



SINAMICS V90



TIA Portal

Simply well packed

The compact solution with integrated motion control functions of the SIMATIC standard controller

Sollas SE40

Sollas SE40 is a versatile packaging machine, in technical jargon it's known as an overwrapping machine. This machine is equipped with a fixed feeder system. Products are packed individually.

Siemens solution

For the simple packaging machines with a throughput of about 40 products per minute, Sollas relies on a SIMATIC S7-1200, as well as two SINAMICS V90 servo drives connected by pulse train output (PTO). As this solution requires neither cam nor synchronicity or multiple axes, the S7-1200 masters these tasks with ease, even without a PROFINET connection to the drive. The machine is engineered conveniently and easily in the TIA Portal.

“The biggest advantage of the S7-1500 T-CPU is that it offers a good deal of motion control functions without the need for expert knowledge on motion control.”

Dirk Verbeek,
Engineering Director at Sollas



SIMATIC S7-1500 T-CPU

The technology CPUs of the SIMATIC S7-1500 Advanced Controllers offer an extended scope of motion control functionalities.

The advantages of the technology CPUs at a glance:

- One controller for standard, motion control and fail-safe automation tasks
- Extended motion control functionalities, such as gearing or camming
- Integrated cam editor for the graphical and parametric configuration and optimization of cams
- Adaptation and calculation of cams in the user program during ongoing operation, for example when changing the product



Brings motion into the world of controllers

The universal solution for extended motion control functions in the SIMATIC environment

Sollas SX50

The Sollas SX50 is a revolutionary new modular and automatic packaging machine with a maximum output of 50 packages per minute. It has been specially developed for the overwrapping of single products, as well as multipacks, at medium to high speeds. The fast product changeover is one of the biggest benefits of this machine.

Siemens solution

If a customer requires a higher performance than 40 packed products per minute, Sollas installs the new SIMATIC S7-1500 T-CPU. Thanks to its sophisticated technological functions, such as gearing and camming, several axes can be controlled in parallel. Communication with SINAMICS V90 is done by means of PROFINET IO with IRT for maximum dynamics and precision and easy expansion with additional axes. PROFINET also simplifies diagnostics and troubleshooting.

Engineering is performed in the TIA Portal which enables the technology functions to be parameterized by means of technology objects. These are configured and programmed via STEP 7 without the need for any additional tools. This simplifies work not only for machine manufacturers, but also for their customers. Customers do not require any special know-how in order to service or reconfigure their machines, but can use their existing knowledge of PLCs. Options for optimizing the cams according to VDI guidelines, graphical input support for axis configuration and simulation tools save additional time and reduce the number of errors.

“At Sollas we manufacture outstanding machines that are both reliable and easy for our customers to operate. The Siemens portfolio helps us to achieve our targets.”

Floris Oly,
Managing Director, Sollas



SINAMICS V90

SINAMICS V90 is the performance-optimized and easy-to-use servo drive system from Siemens:

The drive system comprises the SINAMICS V90 servo drive and the SIMOTICS S-1FL6 servo motor. The system features eight servo drive frame sizes and seven motor shaft heights to cover a performance range of 0.05 to 7.0 kW for operation in single-phase and three-phase networks.

The benefits of the SINAMICS V90 servo drive system at a glance:

- Optimized servo performance
- Also available with PROFINET IO IRT
- Cost effective
- Easy integration via PROFINET, PTI, USS, Modbus RTU
- Together with a SIMATIC Controller, a strong team in the TIA Portal



SIMOTION D445-2



Comfort Panel



S120



TIA Portal



PROFINET

Particularly versatile

The high-performance solution for maximum flexibility and performance with SIMOTION

Sollas FSX

This fully servo-driven overwrapping machine combines significant flexibility with high outputs. Thanks to the optional motorized adjustment features, the machine can be changed over to another product in as little as ten minutes. All components are adjusted simultaneously to their product-related settings, based on product data stored in the machine's PLC.

Siemens solution

For maximum flexibility and functionality of its high-performance packaging machines, Sollas relies on SIMOTION. The complex motion control system permits any level of scalability making it possible, for example, to control as many as 17 servo drives simultaneously. This enables the machine to achieve a rate of 120 packaging operations per minute. The solution in this machine is unique, because it changes automatically from one format to another by the help of servo motors on the linear adjustments. That allows great repeatability and achieves change overtimes of less than 10 minutes. Thanks to SIMOTION SCOUT TIA, this solution is integrated fully into the TIA Portal.



TIA Portal – more than an engineering framework

The Totally Integrated Automation Portal (TIA Portal) offers you full access to the entire digitized automation system, from digital planning and integrated engineering to transparent operation. The new version reduces the time-to-market, partly by means of simulation tools and raises the productivity of your plant through the additional diagnostics and energy management functions. Furthermore, it offers you greater flexibility thanks to its connection to the management level. System integrators and machine manufacturers benefit from the new options, but also plant operators. The TIA Portal is thus the perfect means of access to automation in the Digital Enterprise. As part of the Digital Enterprise software suite, alongside PLM and MES, it completes the integrated range of products from Siemens for companies moving toward Industry 4.0.

Integrated motion control technology objects for synchronous, positioning and speed-controlled axes
Technology objects allow a simple view of the motion control functions of the applications and are configured and parameterized via user-friendly input screens. The technology objects handle the motion control as well as the close loop control and diagnosis of the axes.

When creating the technology objects, the user is guided through the parameterization of the controller and the drive. Technology objects allow:

- Centralized motion control for several axes
- Automatic adjustment of the technological variables between controller and drive
- User-friendly diagnostics of axes and powerful trace
- Intuitive configuration and programming of applications
- Reduced engineering, commissioning and service times

Motion control has never been easier!