The advertisement features a dark blue background with a glowing grid. In the upper left, a white box contains the Siemens logo and slogan. The center is dominated by a large, semi-transparent software interface window showing a technical diagram of a drive system with five vertical modules. Below this, a graph displays a sine wave. In the foreground, three physical SINAMICS drive units are shown: a smaller one on the left, a medium one in the center, and a larger one on the right. On the far right, a tall, vertical SINAMICS cabinet is visible. The overall aesthetic is high-tech and industrial.

SIEMENS

Ingenuity for life

SINAMICS Startdrive

Intuitive converter engineering and
perfect interaction with SIMATIC in the
Totally Integrated Automation Portal

[siemens.com/startdrive](https://www.siemens.com/startdrive)

Your gateway to automation in the Digital Enterprise



Digital Workflow



Integrated Engineering



Transparent operation

The Totally Integrated Automation Portal (TIA Portal) allows you to completely access all of the digitalized automation – extending from digital planning through integrated engineering up to transparent operation.

With the TIA Portal you profit as machine builder and system integrator as well as plant operator:

- Shorter time to market also based on innovative simulation tools
- Increased productivity of your plant and system through additional diagnostics and energy management functions
- Increased flexibility through coordinated teamwork

In addition to PLM and MES, within the scope of the Digital Enterprise Software Suite, it rounds off the holistic and seamlessly integrated portfolio of Siemens for companies en route to Industrie 4.0.

Digital Workflow with the TIA Portal – you work openly, virtually and networked with:

- Flexible cloud solutions
- Virtual commissioning with digital twins
- Open interfaces for higher connectivity

Integrated Engineering with the TIA Portal – shorten your time to market, for instance through:

- Coordinated collaboration in interdisciplinary teams
- Automatic generation of automation solutions instead of manual programming

Transparent Operation with the TIA Portal – boost your productivity, for instance through:

- Higher availability of production plants and machines
- Energy management: Energy transparency for energy-saving according to ISO 50001

Drive Engineering with SINAMICS Startdrive

The TIA Portal includes SINAMICS Startdrive to intuitively integrate SINAMICS drives into the automation landscape. The same operating concept, elimination of interfaces and the high level of user friendliness make it possible to quickly integrate SINAMICS converters into the automation environment and commission them using the TIA Portal.

As a consequence, a wide range of applications can be implemented. These extend from variable-speed axes – such as pumps, fans, mixers, conveyor belts etc. – through positioning axes up to high-end motion control applications – for example handling systems, storage and retrieval machines and packaging machines. Because you always work with the TIA Portal, it is not important whether these motion functions are realized in the controller or in the drive.



Effectiveness through user friendliness

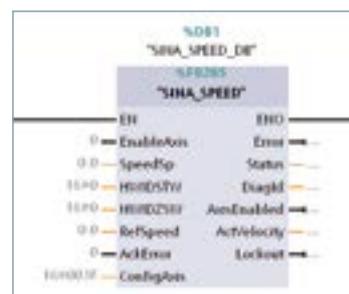
An integrated and seamless engineering platform for automation and drive technology

- The same user navigation for controller, HMI and drive technology increases the engineering productivity and reduces the potential for making errors.
- A common hardware configuration for all components of the application facilitates that the converter automatically goes online, even beyond network boundaries (routing/remote maintenance). This significantly simplifies commissioning.
- Common data management for the controller and converter in one tool automatically guarantees consistency – the bus address and message frame types, for example. As a consequence, commissioning times and potential errors are significantly reduced.
- A common library concept guarantees the simple reusability of the converter, including the parameters and hardware components.
- The effective and intuitive communication connection between the converter and the controller using drag and drop simplifies configuring considerably.

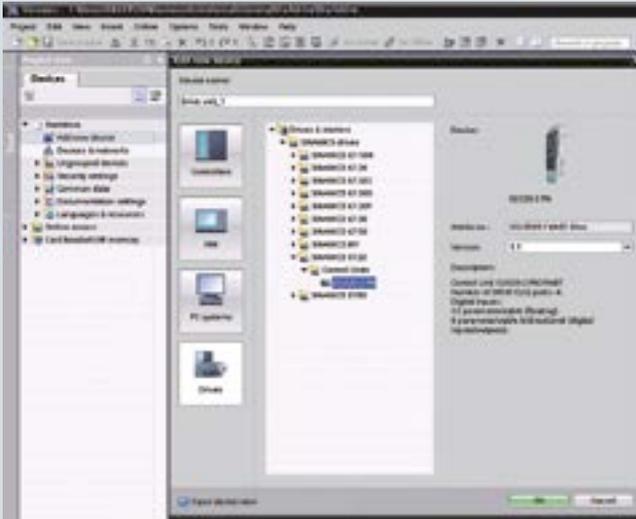
Know-how once gained – for example how to configure a controller – can be simply applied when configuring the converter. This significantly reduces training and engineering costs.

High degree of user-friendliness of SINAMICS Startdrive

- Users can optimally parameterize their converters supported by user-friendly wizards and screen forms.
- The various steps when engineering a converter are intuitively structured according to the particular task, and promote a structured workflow.
- Intuitive parameterization of the safety functions integrated in the drive using graphic screen forms.
- Based on a transparent parameter list, experienced users can work quickly and efficiently.
- Simple configuration of the matching SIMOTICS motors.



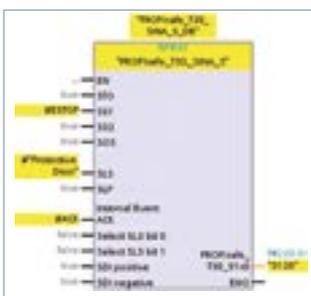
Communication block for closed-loop for speed control



Perfect interaction between the converter and control

Automation and drive technology in one environment

- All of the data required for the controller and the converter are saved in a common data management system. This avoids conflicts between versions – and significantly simplifies service, for example.
- Consistency of fieldbus address and message frame types facilitate automatic communication between the controller and converter, therefore eliminating dual entries. As a consequence, complex and time-consuming programming of the fieldbus communication is a thing of the past.
- With Safety Integrated, safety technology is completely integrated in the standard automation environment without requiring any additional tools – including PROFIsafe. This is realized seamlessly from the converter up to the controller. Standardized SIMATIC blocks simplify the first steps and shorten the engineering time.



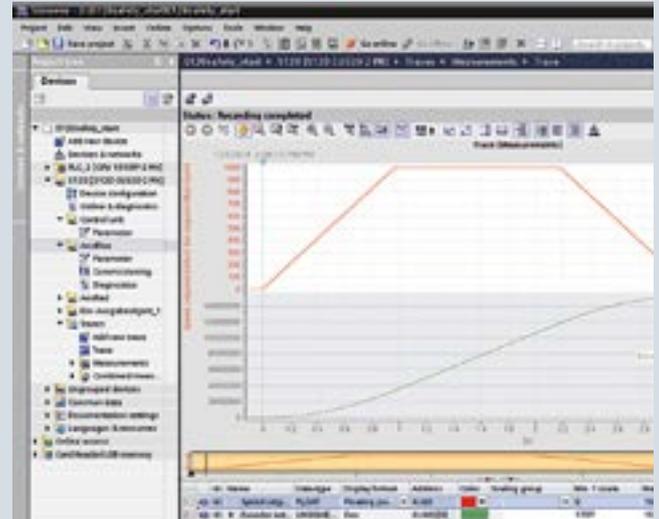
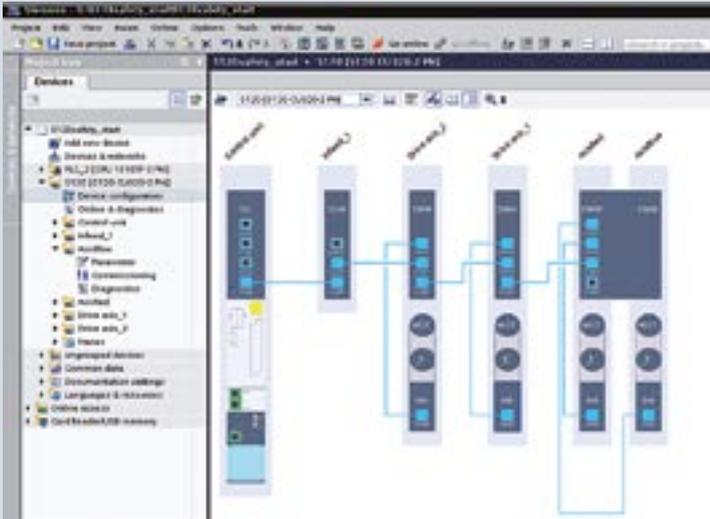
Safety Integrated communication block

Integrated motion control technology objects for speed/positioning axes, gearing/camming axes and kinematics

Technology objects facilitate a very simple view of technology functions – and are generated, configured and parameterized using user-friendly input screens. Technology objects handle the motion control, closed-loop control and diagnostics of the axes. When creating the technology objects, users are guided through the parameterization of the controller and the converter.

- Central motion control for several axes
- Automatic alignment of technological variables between the controller and the drive
- User-friendly diagnostics of axes & kinematics and powerful trace function (e.g. kinematic trace)
- Intuitive configuration and programming of applications
- Shorter engineering, commissioning and service times

More power for control
www.siemens.com/simatic-technology



Faster engineering and shorter downtimes using automatic system diagnostics and trace functionality

Increased productivity based on automatic system diagnostics for the converter

Converter status alarms and faults are directly routed to the control using the automatic system diagnostics.

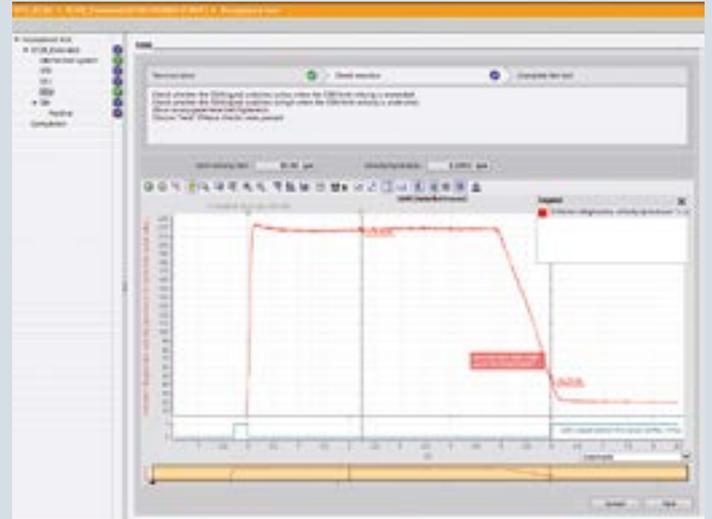
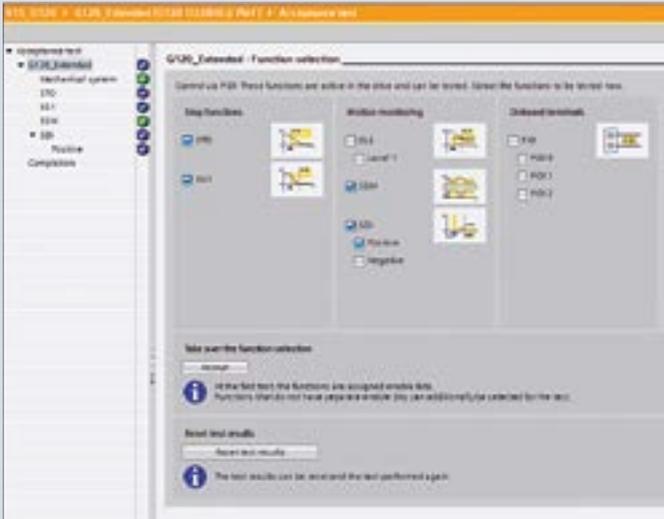
- System diagnostics for the drives are automatically available without users having to take any action.
- All converter messages are visible on the SIMATIC HMI operator panel, in the web server of the SIMATIC controller and in the TIA Portal. As a consequence, faults in the plant or system are quickly localized from anywhere – simply and without any high associated costs, therefore minimizing downtimes.
- Active faults and alarms are displayed in clear text – which makes them easy to understand without requiring any additional programming.
- With the integration of SINAMICS Startdrive, system diagnostics for the converter are part of the TIA Portal, and are therefore available without any additional tools or resources.

Trace

With SINAMICS Startdrive, a trace function is directly integrated in the converter for precise diagnostics. The trace function allows every individual converter parameter to be precisely monitored and traced – just the same as you would use an oscilloscope, however far more conveniently and efficiently.

- Productivity can be increased by recording and optimizing motion sequences
- When commissioning, the drive can be optimized using traces, which in turn means that mechanical stress on the machine can be minimized
- For diagnostics in the case of faults, individual parameters can be recorded. This allows fast troubleshooting and downtimes can be reduced
- The trace is initiated using freely definable events (trigger events), with the possibility of recording the trace before the event (pre-trigger).

The best is yet to come: controller and drives are handled with the same tool, which means that you can use the same user interface and operating philosophy. It does not make any difference as to whether you wish to monitor variables in the controller or parameters in the converter. This allows you to save valuable time.



Now even faster with Startdrive – Safety Integrated acceptance test and open interface

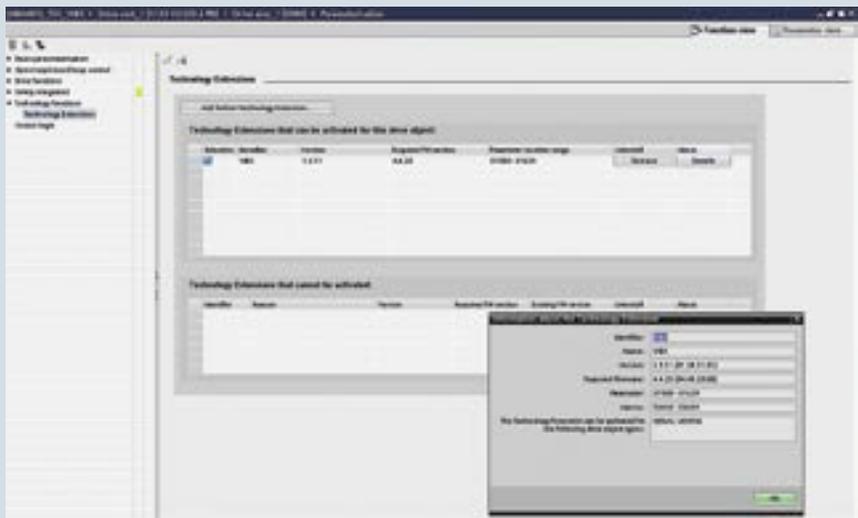
Documentation simplified – the acceptance test

One of the highlights of Startdrive is the acceptance ¹⁾ test for the Safety Integrated functions of the integrated SINAMICS converter. According to the machinery directive, safety functions must be validated and documented in compliance with EN ISO 13849-1 and EN ISO 13849-2. With the integrated acceptance test, users are navigated in a user-friendly fashion step-by-step using graphic screen forms in the TIA Portal. They are guided through the complete workflow and at the end receive a document that is attached to the machine documentation.

¹⁾ The Safety Integrated acceptance test is part of Startdrive Advanced.

Drive settings can be simply accessed as a result of the TIA Portal Openness

The focus is on digitalization based on these new functions. As a result of the Openness interface, Startdrive can be directly and flexibly integrated into customer processes. For example, in the TIA Portal, the hardware configuration can be externally accessed along with drive parameters. This can be used for manufacturers of standard machines to automatically generate projects, for instance. Using an external, customer-specific tool, all information can be transferred to the TIA Portal – and the drive is automatically created in the project. An external tool as application example is provided for mass parameter changes. This is used in a project involving many drives if one or several parameters must be simultaneously changed in several drives.



Scalable and flexible with Advanced Technology Functions in SINAMICS Startdrive and DCC

Two solutions are available, which can either be used individually or combined.

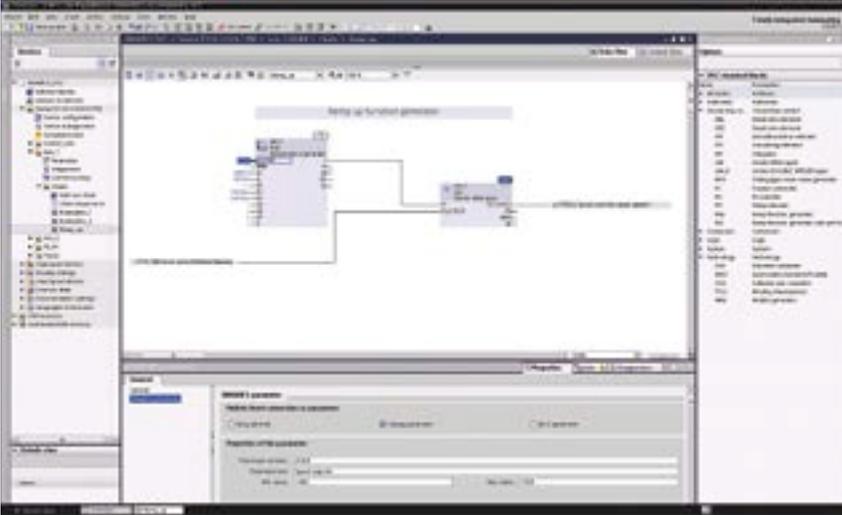
Using advanced functions, complex tasks are quickly and efficiently realized in the drive. The processing load placed on higher-level automation systems is significantly reduced, and time-critical tasks are directly computed in the drive. This reduces the level of communication required between the drive and automation system.

Depending on the particular task, you can select between configurable solutions or your own solution that you create in the drive. Both solutions are addressed in SINAMICS Startdrive in the TIA Portal and SINAMICS DCC.

SINAMICS Technology Extensions – TEC

These configurable functions or technologies extend device functionality. These extensions address high-performance application-specific tasks for various domains, for example test stands, storage and retrieval machines and multi-winding motors in machinery construction.

Using SINAMICS Startdrive installation is user-friendly and extends the device functions, which must then be configured in a final step.



SINAMICS Drive Control Chart – DCC

Creating basic and complex technology functions based on graphic signal processing diagrams with standard and advanced libraries.

Using SINAMICS DCC, drive system functions can be individually extended to include freely available closed-loop control, arithmetic and logic blocks. This provides users with a new degree of flexibility when adapting their drive to address specific machine or system functions.

The user-friendly SINAMICS DCC configuring tool supports you when implementing technology functions in the drive by simply and graphically configuring the blocks using drag&drop and fast integration in the drive using user-defined parameters.

Through Siemens Application Support, a whole series of application examples can be downloaded (winder, synchronous operation, cross cutter, ...) based on SINAMICS DCC. These can either be applied as ready-to-run solution or individually adapted and expanded.

SINAMICS DCC is available as option to SINAMICS Startdrive Basic and Advanced in the TIA Portal

TIA Portal – overview of the software and option packages

	SIMATIC STEP 7/ STEP 7 Safety	SIMATIC WinCC Unified	SINAMICS Startdrive	SIMOTION SCOUT TIA	Soft Starter ES/ SIMOCODE ES
Features and functions	Software Controller – SIMATIC S7-1500 (F/T/TF) Advanced Controller – SIMATIC S7-1500 and SIMATIC S7-300/400 (F/T/TF/R/H) Distributed Controller – SIMATIC ET 200 CPUs (F/T/TF) Basic Controller – SIMATIC S7-1200 (F)	PC systems Panel systems WinCC Unified Comfort WinCC Unified PC	The safety integrated functions are validated in a guided and convenient fashion Commissioning, optimization and diagnostics for continuous and cyclical applications: S150, S210, S120, G120, G130, G150 V90 PROFINET	SIMOTION D SIMOTION P SIMOTION C	Additional access via PROFIBUS/PROFINET Additional graphic parameterization and extended diagnostics Additional online functions via SIRIUS PtP List parameterization via PN/PB-parameterization when starting
	Basic Basic Professional Advanced	max 100 k 10 k	STEP 7 integrated Basic (free of charge) Advanced	Professional	STEP 7 integrated Basic (free of charge) Standard Premium
Engineering options	TIA Portal Multiuser Engineering				
	TIA Portal Teamcenter Gateway				
	TIA Portal Cloud Connector				
	SIMATIC Energy Suite ES				
	SIMATIC PLCSIM Advanced				
	SIMATIC STEP 7 Safety				
	SIMATIC ODK 1500S				
	SIMATIC Target 1500S for SIMULINK			SINAMICS DCC	
Runtime options	SIMATIC ProDiag				
	SIMATIC Energy Suite RT				
	SIMATIC OPC UA	WinCC/ WebUX			

All of the important functions for commissioning, optimizing and diagnostics SINAMICS drives are already integrated in Startdrive Basic.

Via Startdrive Advanced you get access to the comfortable and guided acceptance test of the Safety Integrated Functions.

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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

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