



SIEMENS



Engineered  
with  
TIA Portal

# SIMATIC S7-1500 plus TIA Portal

The ultimate plus in automation

[siemens.com/s7-1500](http://siemens.com/s7-1500)



Intuitive, efficient, proven –  
TIA Portal redefines engineering

Answers for industry.

# The ultimate plus of productivity and efficiency



**Enhanced performance – enhanced usability: The new SIMATIC S7-1500 controller sets new standards in productivity with its many innovations. SIMATIC S7-1500 is perfectly integrated with the Totally Integrated Automation Portal (TIA Portal) for maximum efficiency in engineering.**

## Power

SIMATIC® S7-1500 offers advanced system performance and PROFINET as a standard onboard interface. It is the new standard for performance. Short system response times mean shortened machine cycle times – increasing productivity, and yielding faster return on investment.

- + Outstanding **system performance** for extremely short response times and highest control quality
- + **Technology Integrated** for perfect integration of drives through motion control functionalities and PROFIdrive
- + **Security Integrated** – integrated throughout for the optimal protection of investment

## Efficiency

SIMATIC S7-1500 is designed for optimal usability. Thanks to the many system innovations the controller can be installed, connected, and commissioned quickly and easily. Engineering, project planning, and the use of new functionalities are easier than ever before due to the seamless integration with the TIA Portal. The TIA Portal provides intuitive navigation, workflow, and look and feel via a shared layout and navigation concept as well as shared consistent data storage for PLCs, HMIs, and Drives.

- + **Innovative design and easy handling** for simple use and commissioning as well as safe operation
- + **Integrated system diagnostics** for full transparency of the plant status, automatically generated and consistently displayed
- + **TIA Portal** for maximum engineering efficiency and reduced project costs

# + power

## Performance

Fast, faster, SIMATIC S7-1500: The exceptional system performance allows for extremely fast response times for optimal control quality and highest system performance.

### + Processing Speed

SIMATIC S7-1500 provides even faster signal processing for shorter response times and higher productivity.

### + High-Speed backplane bus

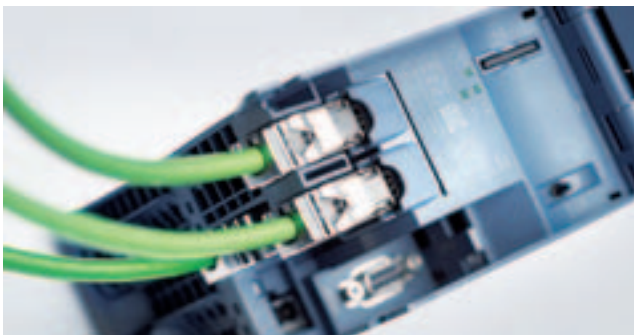
The new backplane bus with a high baud rate and efficient transmission protocol yields the crucial performance advantage for fast signal processing.

### + Communication

SIMATIC S7-1500 has multiple PROFINET ports and IP addresses: Two ports with identical IP addresses for field level communication and a third one with its own IP address for integration into the company network. PROFINET IO IRT allows defined response times and highly precise plant behavior.

### + Integrated Web server

CPU status requests are performed over a standard Internet browser, independent of location. Process variables displayed in graphics form and user-defined websites facilitate the acquisition of information.



## Technology Integrated

SIMATIC S7-1500 makes it possible to integrate motion control into the PLC without additional modules. With PLCopen, the controller provides standardized components for the connection of drives that support PROFIdrive.

SIMATIC S7-1500 supports comprehensive TRACE functionalities for all CPU variables for effective commissioning and fast optimization of drives and controls.

### + TRACE

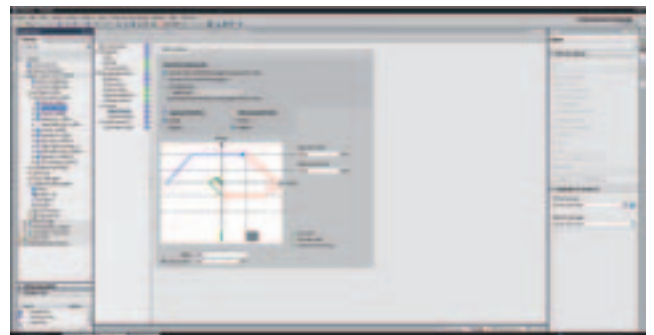
All CPUs support the TRACE functionality. User programs and motion applications can be diagnosed precisely and drives can be optimized.

### + Motion control functionality

Analog drives and drives that support PROFIdrive can be connected. The motion control functionality supports speed and position axes.

### + PID control

Increased quality of control due to easily configurable components for the automatic optimization of the control parameters.



# Security Integrated

SIMATIC S7-1500 offers a security concept that includes authorization levels, component protection and even communication integrity. Security Integrated protects your investment and contributes to high plant availability.

## + Know-how protection

Algorithms can be protected from unauthorized access and modifications. Machines are protected from replication and your investments are protected.

## + Copy protection

Programs can be configured to work only with a specific SIMATIC Memory Card, bound by serial number. This means that programs cannot be reproduced and will run only with the planned memory card.

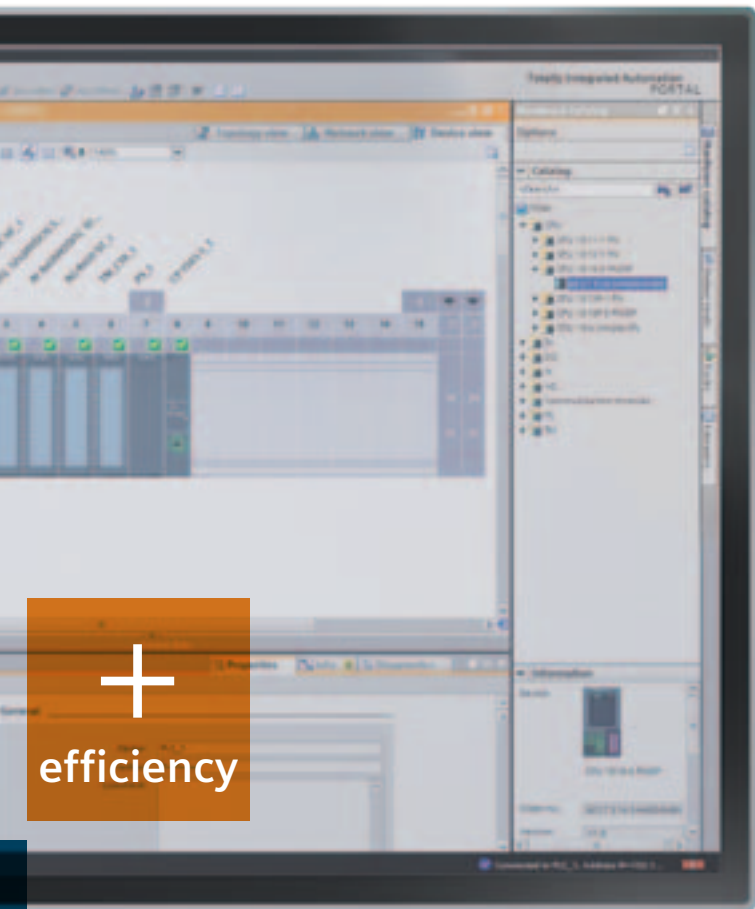
## + Access protection

The access protection functionality offers security against unauthorized project-planning changes. Separate rights can be allocated to various user groups through permission levels. Security CP 1543-1 enables enhanced access protection via an integrated firewall.

## + Manipulation protection

The system protects the data being transmitted to the controller from unauthorized manipulation. The controller recognizes the transmission of engineering data that has been changed or comes from a strange source.





## Design and handling

SIMATIC S7-1500 offers an extensive new feature set that delivers maximum engineering efficiency and usability.

+ **Built-in CPU display**

Easy access to detailed, plaintext information and diagnostics increase usability and provide complete plant transparency.

+ **Standardized front connector**

The standardized front connector ensures easy cable storage and time saving during wiring.

+ **Integrated jumper link**

Integrated jumper links make it possible to establish potential groups in an easy and flexible manner.

+ **Integrated DIN rail**

Additional components such as automatic circuit breakers, relays, and others can be installed quickly and easily on a common rail with the PLC.

+ **Adaptable cable storage**

Due to two pre-defined locking positions, the front door can be closed easily even when thick cables are used.

+ **Pre-wiring position**

Initial wiring and reconnection become faster and easier due to swing-wiring with locking feature.

+ **Integrated shielding**

The proper shielding of analog signals ensures high-quality signal recognition and resilience to external EMIs. Push-in type-wiring terminals enable easy, tool-free installation.

+ **Scalability**

Flexible assembly and upwards compatibility ensure the maximum cost-efficiency and investment security due to easy expandability. Up to 32 modules can be attached to a rack.



# +efficiency

## Integrated system diagnostics

SIMATIC S7-1500 provides integrated diagnostics that require no additional programming effort. A consistent display concept enables the identical plaintext visualization of fault notifications in the TIA Portal, on the HMI, in the Web server, and on the CPU's display.

### + Diagnostic generation with a single click

System diagnostics are generated with a single click – no programming required. Diagnostics are consistently integrated throughout the entire system – both hardware and software.

### + Consistent display concept

Plaintext information and diagnostics are consistently available for display both locally and remotely (via Web) to ensure investment security on all levels.

### + 1:1 assignment wiring terminals / LED-labeling

Easy and convenient visual assignment of terminals and labeling provides noticeable time savings during tests, commissioning, diagnosis, and operation.

### + Channel-granular display concept

In case of faults, the affected channel can be identified quickly and precisely, reducing downtime and increasing plant availability.

## Engineering with TIA Portal

SIMATIC S7-1500 integrates seamlessly with the TIA Portal, the innovative engineering framework for all automation tasks. You can use all the advantages of TIA Portal for the engineering of SIMATIC S7-1500.

### + TIA Portal

The TIA Portal provides both synchronous project planning and a consistent control concept for controllers, HMI, and drives. It integrates all future hardware components into the framework, enables common data storage, and ensures data consistency in the entire project.

### + Common engineering framework

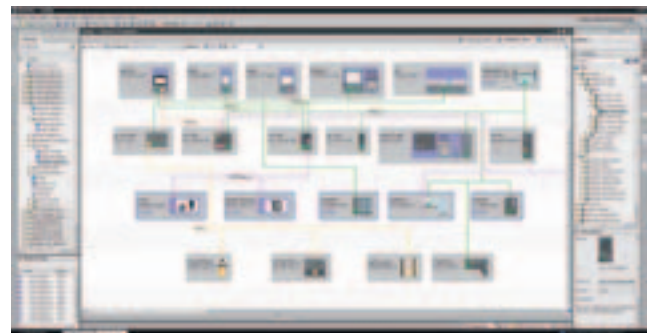
The engineering framework is designed to be intuitive to use and to learn making it easy to use for project planning due to its quick-start functionality. It ensures easy migration because programs and existing know-how can be used continuously. It transfers all changes and ensures the complete transfer of data to the CPU as well as the activation of all components.

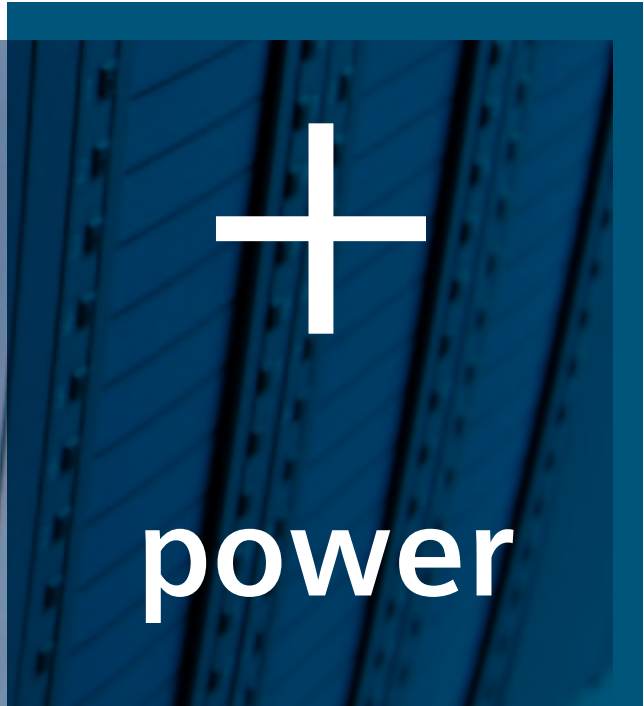
### + Safety

Identical look and feel for the engineering of safety functionalities within the TIA Portal saves time and improves security.

### + Online functionality

The project can be compared to the offline project on the controller. The online component status ensures efficient commissioning and easy identification of programming mistakes. This reduces downtimes and increases plant availability.





Discover more

[siemens.com/s7-1500](http://siemens.com/s7-1500)

## Discover everything about SIMATIC S7-1500:

- › in video form: design overview and videos showing the main highlights
- › as 360° animation: experience all benefits directly on the product
- › everything about the outstanding engineering efficiency thanks to TIA Portal

SIMATIC  
S7-1500 –  
take a look!



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To ensure the secure operation of a plant or machine it is also necessary to take suitable preventive action (e.g. 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. Any third-party products that may be in use must also be taken into account. Please find further information at: <http://www.siemens.com/industrialsecurity>

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