SIEMENS

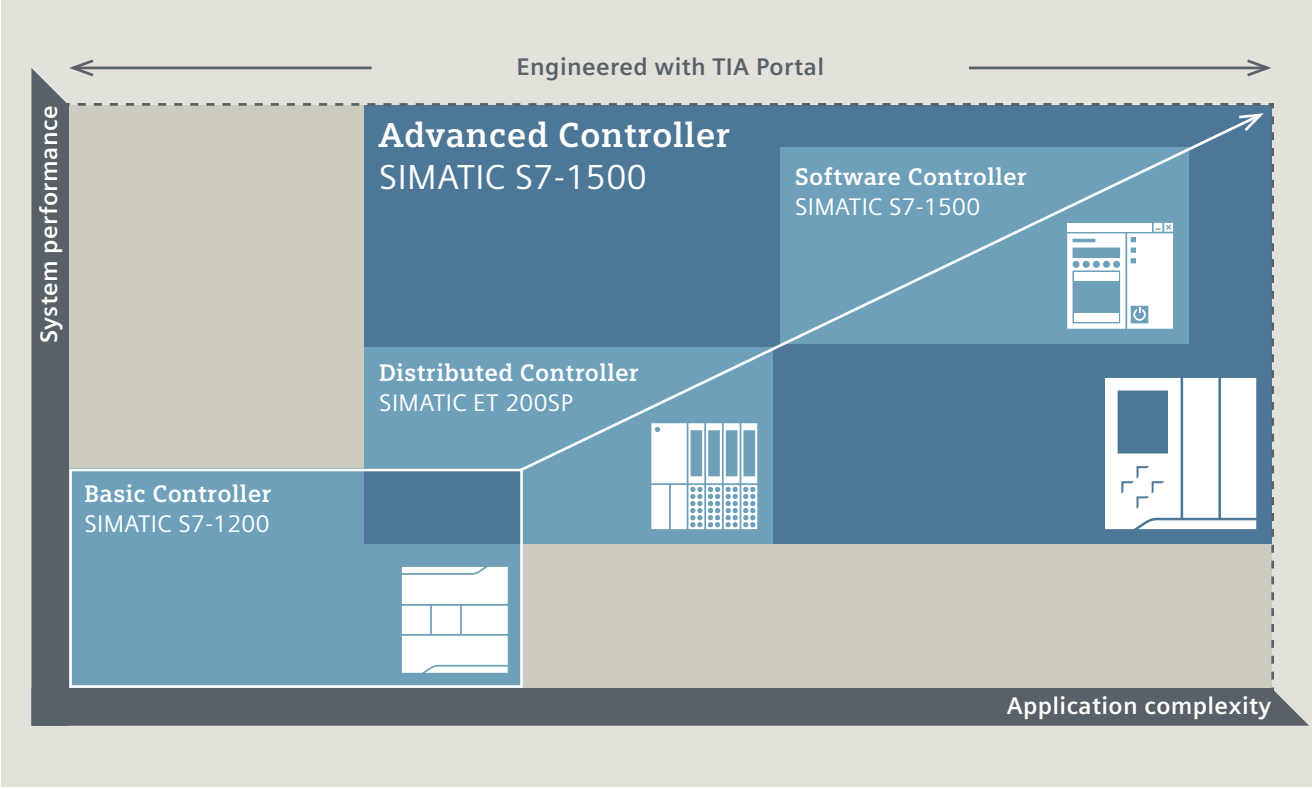
The intelligent choice for your automation tasks

SIMATIC Controllers

siemens.com/controller

Overview of the SIMATIC controller portfolio

Siemens offers the right controller for a wide range of automation requirements. The SIMATIC range of controllers comprises of Basic, Advanced, Distributed and Software Controllers offering impressive scalability and integration of their functions. The engineering in the Totally Integrated Automation Portal (TIA Portal) enables optimum automation solutions to be found for every application.



Basic Controller

Basic Controllers are the intelligent choice for compact automation solutions with integrated communication and technology functions. They are available in both standard and safety versions.

Distributed Controller

Distributed Controllers are used for machines with a distributed architecture and for series machines with limited space available. They are combine the advantages of a SIMATIC S7-1500 with the design of a SIMATIC ET 200SP.

Advanced Controller

Advanced Controllers automate not only complete production plants, but also applications which demand the greatest performance, flexibility and networking capability. A new addition to the portfolio is the SIMATIC S7-1500 controller in a compact design.

Software Controller

The Software Controller is used wherever maximum precision and speed are required as well as PC-based automation. The PC-based controller is fully independent of the operating system during operation.

Integrated functions in all SIMATIC controllers

Apart from scalability, every controller offers integrated system functions such as efficient engineering, high performance, innovative design, reliable diagnostics, Safety Integrated, Technology Integrated and Security Integrated. This allows flexibility in the design or adaption of automation solutions, without repeatedly having to accumulate further know-how and expertise.




Efficient engineering

The seamless integration of SIMATIC controllers in the common TIA Portal engineering framework permits the consistent storage of data, the smart library concept, and a uniform operating philosophy. This makes the use of universal functions particularly easy.

High performance

The highest performance in every class: The controllers are scalable not only in their speed of processing, but also in their performance characteristics. In addition, they offer networking options across different communication standards.

Reliable diagnostics

The integrated system diagnostics with efficient fault analysis and fast troubleshooting cuts commissioning times and minimizes downtimes in production. Faults are uniformly indicated in the engineering on the HMI, in the web server and in the display of the SIMATIC S7-1500.

Innovative design

Each controller can be set up and wired differently. The SIMATIC controller portfolio offers modular, compact and PC-based CPUs.

Safety Integrated

Fail-safe SIMATIC controllers offer the greatest possible level of integration: one controller, one communication system and one engineering for both standard and fail-safe automation.

Technology Integrated

Technology functions for metering and measuring tasks, closed-loop control and motion control are integrated into all SIMATIC controllers.

Security Integrated

Intellectual property and the investment it represents are safeguarded by the integration of know-how protection, protection against copying and manipulation, and additional password protection for access to program contents.

The intelligent choice for every requirement

Every machine or plant is different in terms of system performance needs and complexity. Requirements regarding technology and safety systems may be applied. With its comprehensive range of SIMATIC controllers, Siemens offers the perfect control solution for every application. The overview below simplifies the intelligent choice for every requirement!

Application	
CPU types	
Engineering efficiency	Programming software
	Programming languages
Innovative design	Portfolio
	Design of the IO modules
	Wiring
	Mounting
	PROFINET interfaces/ports (max.)
High performance	Performance characteristics
	Communication options*
	Isochronous mode (IRT)
Reliable diagnostics	Integrated system diagnostics
	User-defined messages
	Display of the diagnostic message
Safety Integrated	Fail-safe
Technology Integrated	Speed-controlled axis
	Positioning
	Relative synchronous operation
	Counters
	PID controller
Security Integrated	Know-how protection
	Copy protection

*onboard or with add-on module

Basic Controller –
Be flexible thanks to networking possibilities

- Compact controllers with integrated IOs, technology and communication functions
- Networking options via various communication standards by means of integrated functions (PROFINET, Modbus, etc.) or add-on modules (IO-Link, AS-i, etc.)
- Flexible in design and with modular expansion options

Advanced Controller –
Increase productivity with the ultimate power

- Controllers with extensive system functions and high performance
- Unique power thanks to high-performance backplane bus, extremely short terminal-to-terminal response times and high-speed signal processing
- Ensures maximum performance and user-friendliness

Compact automation solution with requirements for integrated communication and technology functions – often combined with cost effectiveness	Complete production automation and applications for medium-sized and high-end machines with high demands in terms of performance, communication, flexibility and technology functions
CPU 1211C, 1212C, 1214C (F), 1215C (F), 1217C	CPU 1511C, 1512C, 1511 (F), 1513 (F), 1515 (F), 1516 (F), 1517 (F), 1518 (F)
STEP 7 Basic or Professional in the TIA Portal	STEP 7 Professional in the TIA Portal
LAD, FBD, SCL	LAD, FBD, STL, SCL, GRAPH
Compact CPUs	Compact and modular CPUs
Expandable centrally (up to 8 modules)	Expandable centrally (up to 30 modules) and on distributed basis
Screw terminals	Push-in and screw terminals
IP20 DIN rail	IP20 mounting bar
1/2 (RJ45)	3/4 (RJ45)
Small	Large
PROFINET, PROFIBUS, PtP, AS-Interface, IO-Link, CANopen, Modbus RTU and TCP, Telecontrol	PROFINET (including PROFIsafe, PROFIenergy and PROFIdrive), PROFIBUS, PtP, Modbus RTU and TCP
	+ (distributed)
+	++
	++
Engineering, HMI, web server, SIMATIC S7 App	Display, engineering, HMI, web server, SIMATIC S7 App
+	++
+	+
+	+
	+
+	++ (S7-1500 compact CPU integrated or with technology modules)
++	++
++	++
++	++

Distributed Controller –
Save space with the smallest footprint

- Distributed controllers
- ET 200SP controller: combines the advantages of the S7-1500 and the very compact design of the ET 200SP with a high channel density
- Space savings in the control cabinet and financial savings due to the use of distributed intelligence
- ET 200pro controller with IP65/67 protection for use outside the control cabinet

Software Controller –
Be open and independent

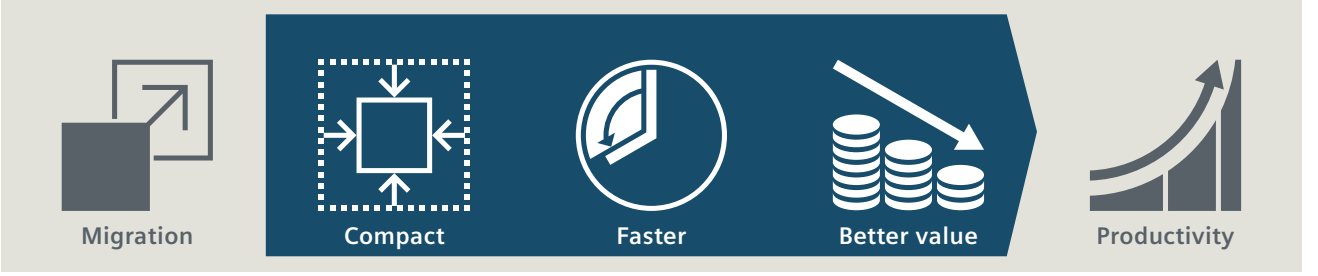
- PC-based controller independent of the operating system
- Complete engineering in the TIA Portal: no Windows settings necessary
- Easy implementation of interfaces to PC applications, and integration of high-level language code with real-time capability
- Comprehensive hardware platforms with SIMATIC IPCs

Machines with distributed architecture, series machines, with limited space requirements for the mid-performance range	Machines in the high-performance range which require maximum precision and speed, as well as a PC connection
CPU 1510SP-1PN (F), 1512SP-1PN (F), 1515SP PC	CPU 1507S
STEP 7 Professional in the TIA Portal	STEP 7 Professional in the TIA Portal
LAD, FBD, STL, SCL, GRAPH	LAD, FBD, STL, SCL, GRAPH, high-level languages (C++)
Modular CPUs	Software-based CPU
Expandable centrally (up to 64 modules) and on distributed basis	Expandable on distributed basis
Push-in	Distributed I/O system
IP20 DIN rail and IP67	Hardware dependent
2/3 (RJ45, FC, FOC), flexible bus adapter	Hardware dependent
Average	Large
PROFINET (including PROFIsafe, PROFIenergy and PROFIdrive), PROFIBUS, PtP, Modbus RTU and TCP, AS-Interface, IO-Link	Via PC interfaces for PROFINET (including PROFIenergy), PROFIBUS, PtP, Modbus RTU and TCP, AS-Interface, IO-Link
+ (distributed)	
++	++
++	++
Engineering, HMI, web server, SIMATIC S7 App	Software display, engineering, HMI, web server
++	
+	+
+	+
+	+
++ (with technology modules)	++ (with distributed technology modules)
++	++
++	++
++	++

Now is the time to try something new

Modernization with SIMATIC controllers –
Higher productivity, efficiency and availability by means of retrofit or modernization

To remain competitive in the long term, machines and plants must be continually adapted to the latest requirements. If your automation systems are no longer state-of-the-art, then a modernization will bring your company advantages in productivity, efficiency and availability. For this purpose, Siemens offers solutions using SIMATIC technologies tailored to your individual needs. Benefit from the time-saving simulation of automation while production is in progress, optimized control options by means of I/O adapters and integrated system diagnostics, as well as global support for retrofitting or modernization. Regardless of whether you want to completely modernize your plant or just replace parts of it.



Your advantages at a glance

- **Higher productivity, overall efficiency and usability:** All-in-one solution, where SIMATIC controllers, SIMATIC HMI and SINAMICS drives work optimally together – engineered in the TIA Portal
- **The latest manufacturing standards, machine safety requirements, and industrial security requirements:** Unrestricted participation in technological progress
- **Minimized downtimes:** Integrated fault diagnostics and detailed display of faults
- **Increased profitability:** Global long-term availability of all Siemens components
- **Improved competitiveness:** Optimized availability and efficiency due to the latest generation of SIMATIC automation systems

For detailed information, visit:

siemens.com/tia-migration

Planning of modernization strategy

With a host of online tools from Siemens, individual migration strategies can be planned according to needs:

- **Documentation:** Migration and conversion guides
- **Hardware:** Module code conversion
- **Software:** Integrated and external program converter
- **I/O conversion:** I/O adapter table
- **Communication:** Wide range of sample projects

Individual modernization support

On request, Siemens provides personal support for quite specific requirements. The analysis and testing of the core functionalities are performed by your Siemens contact:
siemens.com/industry/contact

For the complete service from consulting, through implementation, right up to full project completion, Siemens offers extensive modernization services:
siemens.com/fa-migration

Find out more:

siemens.com/controller

Find the right controller for your application:

- Detailed overview of all controllers
- Transparent representation with videos and 3-D animations
- References and applications

SIMATIC Controllers – everything at a glance!

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