product news

Innovations for the Digital Enterprise

November 2017
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The Totally Integrated Automation Portal (TIA Portal) provides unrestricted access to the complete range of digitalized automation services – from digital planning and integrated engineering to transparent operation.

Machine builders and systems integrators face the challenge of reducing time-to-market with increasing individualization and meeting growing quality demands. The TIA Portal engineering framework grants perfect access to automation in the Digital Enterprise. As part of the Digital Enterprise Suite along with PLM software and MES, it completes the comprehensive range of Siemens solutions for companies on their path to Industrie 4.0.

The potential of a digitalized value chain can be easily seen when using the TIA digitalization usecases with TIA Portal. They include for example the automated execution of engineering tasks using the TIA Portal Openness interface as well as virtual commissioning, where already today mechatronic systems in conjunction with automation can be simulated, tested and validated. The new version V15 of TIA Portal expands its application options and further increases engineering efficiency (read more on page 6).
Where digitalization becomes reality

Make the most of the benefits of TIA and digitalization

Automated execution of engineering tasks

Manage standards and versions of program modules using libraries and...

... integrate into development processes with TIA Portal Openness via a public interface.

Automate engineering tasks via a local interface and...

... generate the HMI visualization with Simatic Visualization Architect automatically.

Create machine variations faster

Redundant processes are eliminated beginning with the second machine, program quality is increased by avoiding faults, and efficiency is increased during maintenance and adjustments.
Virtual commissioning

In TIA Portal, simulate and validate with Step 7 and Simatic S7-PLCSIM Advanced as early as the configuration and engineering stages...

... as well as the functions of the controllers – with no need for real controller hardware.

Simulate several PLC instances and how they work together. This means the modules will also be know-how protected.

Via an API interface, integrate external simulation tools...

... and test and optimize the controller in the context of a virtual machine or an entire system.

More TIA digitalization applications can be found at siemens.com/tia

This ensures that the actual commissioning process is fault-free, cost-efficient, and run seamlessly.
TIA Portal V15

More application options, more engineering efficiency

The improved integration into the digital value chain is a core element of TIA Portal V15. The Simatic S7-1500 now also supports method calls with the new firmware version 2.5 in addition to the OPC UA server. This enables standardized and integrated horizontal and vertical communication within the machines and plants and also to the MES/SCADA/IT levels. Automation solutions can now also be used with industry-specific standards like OMAC PackML (Organization for Machine Automation and Control) and Weihenstephan. With the S7-PLCSIM Advanced virtual controller and the digital twin in NX MCD, mechatronic systems can be simulated, tested, and validated in conjunction with automation.

Standardization and increased engineering efficiency are also highlights of TIA Portal V15. Teamwork in TIA Portal with Multiuser Engineering becomes even more easier to use because modified objects are now automatically marked, making it possible to work in offline mode. The expanded change management (such as change history, user comments for changes) enables optimal system-based synchronization of changes to the team. This saves a lot of time in the engineering phase.

The efficient diagnostics of machines and plants with Simatic ProDiag has been expanded with monitoring of fail-safe modules. The identification of the first faulty operand is also new. When combined with the S7 Graph Control in Simatic WinCC, users can make even more efficient diagnostics of machine processes and application faults on the HMI operator panel directly on the machine.

siemens.com/tia-portal

NEW FEATURES

More application options

- Multifunctional platform for integrating C/C++ applications (more on page 10)
- Control of 2D to 4D kinematics (more on page 11)
- Integration of the multiaxis servo converter system Sinamics S120 (more on page 26)
- Assistant-guided safety acceptance test for Sinamics G120 converter (more on page 26)
- New functions in Simocode ES, including mass engineering functions, a parameter wizard, and the TIA Portal Openness interface used for import/export of functions
Energy-efficiency in TIA Portal V15

A close eye on the energy requirement of machines

In TIA Portal V15, Step 7 contains instructions for the production-related and standardized determination of the energy consumption of production machines. Machine manufacturers can easily integrate this function in their machine controls with Simatic S7-1500 and S7-1200. The machine's efficiency status is then displayed directly on the HMI panel on-site. This helps the operator ensure that the machine is running efficiently. Thanks to automatic long-term measurements, the machine's efficiency status is regularly determined, and so changes can be identified at an early stage. For verification purposes, a report can be created and analyzed, for example, in Microsoft Excel. The data can be optionally sent via the integrated interface to the Simatic Energy Manager PRO and remain available there for cross-machine efficiency analyses. This means that the system operator always has an overview of the entire production lifecycle.

NEW FEATURES

• Production-related and standardized energy-efficiency analyses for machines
• Recording and monitoring of all relevant energy flows and media in the production machine
• Energy consumption can be logged according to the VDMA 34179 measurement regulation (Mechanical Engineering Industry Association)

siemens.com/simatic-energy-management
Safety in TIA Portal V15

Using all benefits of TIA Portal

With the powerful Simatic Step 7 Safety V15 options package for programming the fail-safe S7 controller, users can make the most of all the benefits of TIA Portal – for fail-safe automation as well. New functions improve usability and facilitate the migration of programs that were created with Simatic Distributed Safety. In addition to supporting the new fail-safe CPU 1516TF controller, the option package offers numerous new functions.

†siemens.com/simatic-safety

Sinetplan – Siemens Network Planner

Tapping network resources

The complexity of industrial networks in the manufacturing industry is growing continuously because Industrie 4.0 requires connectivity from the sensor to the cloud. One of the main tasks of proactive network planning is to correctly assess the existing network resources in order to make confident decisions about the next steps.

The Siemens Network Planner (Sinetplan) supports users in planning and designing Profinet networks. This applies in particular when – in addition to RT or IRT communication – a large amount of NRT (non-real-time) communication is added such as TCP/IP data. The tool facilitates the professional and proactive dimensioning of the Profinet installation as early as the planning phase. What’s more, it provides support for optimizing the network, determining the best possible use of network resources, and planning reserves.

With version V1.0 SP1, Sinetplan now enables the import and simulation of TIA Portal projects (from V14 SP1). The product catalog has also been significantly expanded, and new functions like user-specific data rates were introduced.

†siemens.com/sinetplan

NEW FEATURES

• Function modules for using F arrays
• Function modules for data conversion
• Usability improvements (for example, OV bit monitoring)
• Introduction of a separate F signature for hardware and software for improved change tracking

NEW FEATURES

• Import and simulate existing TIA Portal projects from V14 SP1
• Product catalog is expanded with new device descriptions
• User-specific data rates
• Supports Windows 10
Within the framework of digitalization, the networking and communication of diverse systems play a key role. To automate production across all levels, create transparency, and optimally utilize resources, an open standard is required for Industrie 4.0 communications concepts. As a supplement to Profinet, the open communications standard OPC UA offers a convenient interface to third-party providers for connecting to higher-level systems like SCADA and MES and to the cloud. With the combination of OPC UA and Profinet, all industry requirements can be fulfilled within the framework of digitalization. Existing Profinet networks can be easily expanded with OPC UA devices.

The OPC UA S7-1500 option was expanded using the methods function. OPC UA makes the simple connection of machines with Simatic S7-1500 to higher-level systems possible now.

With TIA Portal V15, the standardized companion specifications can now also be used and easily integrated. With OPC UA the simple and standardized vertical connection is carried out while Profinet is fulfilling all requirements in the field level. By combining Profinet and OPC UA in a network, an integrated, open, and secure communications network from the field level to the cloud is created. This innovation makes Profinet a unique and powerful network for today’s systems.

siemens.com/profinet

**NEW FEATURES**

- Expansion of OPC UA S7-1500 using methods function
- Combination of Profinet and OPC UA in one network
- Integrated, open, secure communication – from the field level to the cloud
Simatic automation systems offer the right product for every application. The new controller generation consists of Basic, Advanced, Distributed, and Software Controllers. The Simatic controllers are available in a fail-safe version, the S7-1500 Advanced Controller, now also with advanced motion control functionality.

One hardware platform for controller and PC functions

With the S7-1500 CPU 1518(F)-4 PN/DP MFP multifunctional platform, OEMs can meet their requirements flexibly and application-oriented on a tried-and-tested S7 platform. This makes the Advanced Controller even more versatile, adding to its proven easy maintenance and robustness.

In the past, control functions were typically processed in a Simatic controller, whereas typical PC applications – which require high-level language programming or have to be solved using databases – were outsourced to robust industry PCs. In this process, automation solutions quickly became confusing and overly complex due to the use of different programming tools as well as the data exchange that also had to be programmed.

The control functions required are now combined with the open solution for C/C++ routines. The first delivery stage comprises the PLC concept with callable C/C++ functions, already known from the ODK-CPUs, supplemented by PLC-independent C/C++ applications, which used to require PC hardware. The CPU 1518(F)-4 PN/DP MFP is programmed, for example, with TIA Portal from V15 and for C/C++ with Eclipse.

Simotion V5.1

Develop software more efficiently

The new Software Version 5.1 for the high-end motion control system Simotion allows programmers to further increase the efficiency and quality of their software. With the Simosim simulation integrated into the engineering, users can now test their software during program development – with no hardware required and including the projected axes and kinematics. This gives the machine builder a fault-free software early in the process, and can significantly reduce commissioning- as well as setup- and downtimes.
Kinematic functions in TIA Portal V15

Scalable motion control solutions

The two technology CPUs 1516T-3 PN/DP and 1516TF-3 PN/DP expand the range of Simatic S7-1500 T-CPUs. They provide users with maximum, high-functioning, and comprehensive scalability within the range of Simatic S7-1500 Advanced Controllers for standard, safety, and motion control applications.

The previous motion control features like absolute drive and cam disk synchronization are now expanded by controlling 2D to 4D kinematics: for example, for pick-and-place tasks. The system offers predefined standard kinematics such as cartesian portals, roller pickers, SCARA robots, and delta pickers. A free transformation interface allows users to seamlessly integrate their own kinematics. The parameterization of the kinematics is performed via a graphically supported and intuitively operable configuration editor, and the programming of movements in space takes place in the usual Simatic Step 7 programming environment via standardized function modules in accordance with PLCopen. In TIA Portal, an integrated kinematic trace with trace marking and a kinematic control panel for commissioning are available for visualizing and diagnosing the movements.

With Simatic S7-1500 T-CPUs and the servodrive systems Sinamics V90 with Profinet and Sinamics S210, sophisticated mid-range motion control tasks can thus be implemented efficiently and easily in TIA Portal V15.

NEW FEATURES
• Maximum functional and consistent scalability in the range of Simatic S7-1500 Advanced Controller
• Control of 2D to 4D kinematics such as cartesian portals, roller pickers, SCARA robots, and delta pickers
• Perfect interaction between Simatic S7-1500 T-CPUs Advanced Controllers and the scalable Sinamics V90 PN and Sinamics S210 servodrive systems

With Simotion V5.1, the simulation is perfectly integrated into the end-to-end digital workflow. Machines can be commissioned virtually by connecting simulation software like Simit or Mechatronic Concept Designer (MCD). Additionally, the OEM benefits from the open communication with OPC UA and IoT 2040 for the continuous optimization of his plants in the field (i.e. predictive maintenance). And by expanding the object-oriented programming (OOP), Simotion V5.1 optimizes flexibility and library capacity of the software for modular machine concepts.

NEW FEATURES
• Efficient software development with simulation in the engineering environment
• Seamless integration into the end-to-end digital workflow
• Functional expansion of object-driven programming for greater flexibility in software creation

siemens.com/t-cpu
siemens.com/simatic-technology
siemens.com/sinamics

siemens.com/simotion
LOGO! 8

Easy steps to a user-defined website

Interconnected components and access to devices via the Web are the new trend: Switch on the heat on your way home, activate the alarm system remotely, or check by camera to see whether the cat is back home. There are countless uses for this technology, and solutions are already available for many of these applications, all with their own app, controls, and interface.

LOGO! offers the possibility of covering several applications with one device and one solution. A Web server was integrated into LOGO! 8 that enables self-configured alarm texts to be created in the Web server with the standard software. Function buttons are then used to trigger switching functions, and no HTML knowledge is required. With the latest version of the LOGO! 8 logic module, users can design websites themselves – also with no HTML knowledge required – and create their own background images and self-defined switching elements. Various display resolutions can also be set for the desired end devices, such as smartphones, tablets, and PCs. The LOGO! Web editor is free of charge and available online as a download.

For a quick start, simple control and display elements are provided in a library. Each user can then design additional elements and add them to the library. Programming experts can further process the generated source code in HTML 5. The data for the user-defined websites are stored on a standard micro SD card in the LOGO! basic device. Users can then map, monitor, and control machines, devices, or building functions related to the application, making operation much easier.

If, for instance, a building image is used as a background, the controls and sensor values can be depicted at the location of these controls in the building.

siemens.com/logo

NEW FEATURES

- Define and design websites with no HTML knowledge
- Library with simple operation and display elements
- LOGO! Web editor is free of charge to download online
TIA Selection Tool

Interface to TIA Portal

The TIA Selection Tool quickly and efficiently guides users in any automation project to fault-free device selection and configuration. Device selection can then be adopted in the hardware configuration of TIA Portal. Interfaces to electric planning tools such as Eplan also contribute to integrated engineering that prevents multiple entries. Anyone requiring suitable products for a retrofit or looking for options to switch from third-party to Siemens systems can find migrators in the TIA Selection Tool that will present the appropriate components. Thanks to the display of device limits, users can also be sure to correctly dimension their system with the desired capacity reserves at all times.

siemens.com/tst

NEW FEATURES

- Interface to TIA Portal
- Interface to electric planning systems
- Display of device limits for optimal system dimensioning. Easy commissioning in Profinet networks

Simatic Automation Tool V3.1

Commissioning without TIA Portal

Whether it is commissioning, maintenance, or service — the Simatic Automation Tool (SAT) supports users in managing TIA automation components. SAT can be used independent of TIA Portal. With the new version 3.1, SAT can now be used with all fail-safe controller families: Simatic S7-1200, S7-1500 including ET 200SP, and ET 200pro based on S7-1500. This allows firmware updates to be performed and entire fail-safe projects to be downloaded.

For example, commissioning is simplified because all IP addresses are automatically changed and assigned to the selected devices. If updates and optimizations need to be performed during ongoing operation — due to modified mechanical structures or for programming reasons — SAT enables the maintenance staff to make these adjustments without having to access TIA Portal. And during servicing, SAT provides a series of functions to display a fast and simple overview of the automation components used, including the relevant versions (such as firmware, serial number) and archives them for future revisions.

siemens.com/sat

NEW FEATURES

- Supports the fail-safe Simatic S7-1200 and S7-1500 controller families
- Simplified commissioning, service, and maintenance without TIA Portal
- API for integrating the Simatic Automation Tool functions in an automation process
Industrial PCs

With their compact, fanless embedded IPCs and powerful expandable high-end IPCs, the products from the Simatic industrial PC range are the ideal basis for many PC applications in the manufacturing environment.

Simatic IPC277E – Multitouch

Space-saving 12-inch format

The Nanopanel PC Simatic IPC277E is a flexible embedded industrial PC that is equipped with a robust and durable display. Based on the Box PC IPC227E, it offers top industrial functions even in harsh ambient conditions and is entirely maintenance-free. This panel PC also features state-of-the-art interfaces and a high level of flexibility for selecting the display. It is equipped with power-saving Intel dual- and quad-core processors for visualization and control tasks.

🔗 siemens.com/ipc277e

NEW FEATURES

- Contemporary multitouch variants: in addition to 15- and 19- now also in 12-inch sizes
- 100% dimmable displays with wake-on-touch function for high energy efficiency
- High robustness for maintenance-free continuous operation

Simatic IPC327E / IPC377E

Industrial PC technology at an attractive price

For cost-sensitive application areas, Siemens is expanding its industrial PC range with the Box PC Simatic IPC327E and the Panel PC Simatic IPC377E. In conjunction with the PC IPC347E rack, the two devices cover the lower IPC capacity range. The new Simatic Basic IPCs feature up-to-date PC technology and a variety of interfaces for simple integration into new and existing systems. As an ideal supplement to the freely configurable variants of the IPC product range, eight predefined variants are available.

🔗 siemens.com/basic-ipc
Simatic HMI – Taking efficiency to a new level: that is the motto of the seamless, consistent human-machine interface product range that allows the most diverse applications to be implemented efficiently and economically.

**NEW FEATURES**

- Intuitive and simple project planning from TIA Portal V14
- Integrated safety function with extension unit
- Large selection of operating elements (indicator light, selection and key buttons, emergency-stop button, USB interface, RFID reader, stainless-steel keyboard)
- Simple labeling by tag holder, insert plate, and lens cap (optional)

Simatic HMI Comfort Panel PRO / New e-generation of the Simatic IPC PRO

**Fully protected and expandable**

Simatic HMI Comfort Panels are suited for control cabinet-free visualization and automation. Thanks to their high performance, functionality, and numerous integrated interfaces, they offer the greatest possible convenience for high-end applications and are especially suited for implementing powerful visualization tasks in machine-related areas. The flexible installation options allow for very easy operation of the machine as well as an optimal view of the visualization and the process.

In addition to the new, completely IP65-protected Simatic HMI TP1200 Comfort Panel PRO (PROtected) HMI devices, Siemens now offers the improved industrial panel PC of the e-generation for powerful PC-based applications. Simatic IPC477E PRO (with screen diagonals from 15 to 22 inches) have a sixth-generation Intel Core i-processor as well as up-to-date Celeron and Xeon processors. The 3x gigabit Ethernet, 4x USB 3.0, and 2x COM (optional) interfaces enable more flexible use.

Even more operation options are provided by extension units that can be attached to PRO devices, consisting of the basic device, expansion components, installation adapter, keyboard tray, and optional keyboard (also available in IP65 stainless-steel variant). Thanks to customized systems solutions with standard components, they enable a trouble-free adjustment to individual customer requirements and convince with their simple installation and commissioning, easy engineering, and efficient operation. The labeling of operating elements is performed conveniently with tag holders and plates or plates and lens caps. In addition to the classic hard-wired variant of the extension unit and the bus-enabled version with Profinet, a fail-safe version with Profisafe is now available.

siemens.com/simatic-hmi-pro
INOX devices/Siplus Comfort Outdoor Panel

HMI for special requirements

INOX (inoxydable) devices with “hygienic design” (based on DIN 1672-2:2009) are designed with the food and luxury goods industries in mind, where high-pressure cleaners and cleaning agents are used. They are also suited for the clean room requirements and resistant to disinfection agents as demanded by the pharmaceuticals industry.

Siplus Comfort Outdoor Panels offer reliable operation under extreme ambient conditions: up to 100% humidity, extraordinary medial load including salt mist, and increased mechanical load. They also can be used in an expanded temperature range from –30 °C to +60 °C. Thanks to their high vibration and shock resistance, Siplus Comfort Outdoor Panels are optimally suitable for use on vehicles or in pressing and punching applications. The panel can be installed at elevations up to 5,000 m and also horizontally.

NEW FEATURES

• New multitouch wide-front design
• High performance for optimized power input

siemens.com/siplus-extreme
siemens.com/inox-hmi-devices

Thin Clients

Powerful operating elements

The powerful Industrial Thin Clients Simatic ITC MT with high-resolution multitouch wide-screen touch displays in the 12”, 15”, 19”, and 22” sizes are extremely user-friendly when implementing distributed HMI solutions with a client/server architecture. The operating terminals can be used flexibly, from machine-related operation and monitoring to connection to control systems and numeric controllers (Sinumerik).

NEW FEATURES

• New multitouch wide-front design
• High performance for optimized power input

siemens.com/itc

Expansion of the INOX device spectrum:
• Simatic HMI TP900 Comfort INOX PCT (projected capacitive touch)
• Simatic HMI TP1200 Comfort INOX PCT
• Simatic IFP2200 INOX MT ETH (ETH-Ethernet)

Siplus Comfort Outdoor Panels:
• Expanded temperature range
• Resistant to extreme medial and mechanical loads
• Suitable for use on vehicles and in pressing and punching applications
Distributed I/O Systems

With the Simatic ET 200, Siemens offers a modular and precisely scalable system for distributed automation in the control cabinet or directly on the machine.

Simatic ET 200SP – new basic and potential distribution modules

Optimized space in the control cabinet

For flexibly connecting variable-input voltages, the Simatic ET 200SP is now available with two digital input and output modules (DI 8x24AC/48VUC BA and DQ 16x24VDC/0.5A BA) that enable the IO system to be used outdoors. The new potential distributor modules (PotDis) with system-integrated series terminals for connecting 2-, 3-, and 4-wire technology save a large amount of space in the control cabinet. The systems integration with direct connection to the internal potential rails P1, P2, and AUX also saves time on wiring.

The IO system is rounded off with additional modules. The digital output module DQ 4x24.230V AC/2A HF can be parameterized per channel using four controller types and provides diagnostic capabilities. The analog input module AI Energy Meter 480V AC HF, which can be used on all standard networks, allows energy costs to be saved thanks to maximum system transparency. The high-channel input module AI 2xSG 4-/6-wire HS supports cycle synchronicity and oversampling, thus offering a cost-efficient solution for precise measurement technology and motion-control tasks. Integrating measurement tasks in the automation system combined with simple signal processing and optimizing save a significant amount of engineering time.

A unique feature now allows the system to be used in extreme ambient temperatures: the ET 200SP Sipplus extreme variant is certified for use at –40 °C. The enhanced temperature range guarantees that the module will start at low temperatures without heating, even after a long downtime, which saves energy, space, and time.

siemens.com/et200sp

NEW FEATURES

- Flexible and cost-efficient connection options with high number of channels
- New potential distributor modules (PotDis) to connect 2-, 3-, and 4-wire technology
- New ET 200SP dimmer module (DQ 4x24.230VAC/2A HF) with four controller types
- Perform precision measurement tasks with the new AI Energy Meter 480V AC HF and AI 2xSG 4-/6-wire HS modules
Siplus HCS4200

Flexible control for heating elements

Siplus HCS4200, the flexible heating control system, has been supplemented with two new power-output modules (POM): POM4220 HighEnd and POM4220 Flexible. The POM4220 HighEnd has eight outputs and enables output capacities of up to 20 A with 230-/277-V or 400-/480-V loads. Due to the integrated current measurement per output, parallel-switched heating elements can even be monitored, too. POM4220 Flexible enables the control of heating elements using a variety of voltages at 45 V, 70 V, 110 V, 230/277 V, and 400/480 V. This means it can now also be used with small protective voltages or connected to short infrared emitters to enable a fine-granular heat supply.

Siplus HCS4200 heating control system can easily be integrated into the automation system using the TIA Portal engineering framework. An HCS program library and user examples simplify engineering even more. Convenient commissioning in Profinet networks is ensured by the integration into the Proneta diagnostics tool: for example, this allows for wiring tests during assembly. Thanks to their compact design, the heating control also requires very little space in the control cabinet.

siemens.com/siplus-hcs

NEW FEATURES

- More power for the flexible Siplus HCS4200 heating control system: up to 20 A per output at 230 V or 400 V
- Control of heating elements from 45 V
- Integrated current measurement per output for diagnosing parallel-switched heating elements
- Integration into Proneta for simple commissioning in Profinet networks

Siplus CMS1200

New analysis options

With the Siplus CMS1200 Condition Monitoring System, status monitoring and analysis of mechanical components can be easily integrated into the Simatic S7-1200. This allows mechanical damage to be identified quickly and the required maintenance work planned early on. With Siplus CMS1200, three new analysis options have been added. To monitor and analyze variable-speed drives – for instance, to identify gear tooth wear and tear – vibration data can be streamed online to the CMS X-Tools analysis software. The DKW value is now also available for bearing monitoring. It is calculated and monitored independently by the SM 1281 condition monitoring module in the
**NEW FEATURES**

- Vibration data can be streamed online to the CMS X-Tools analysis software
- DKW values calculated and monitored for bearing diagnostics
- Raw data can now be saved in operating classes and actively sent to a PC for more precise data analysis
- Siplus CMS and MindSphere working together reduces downtime

For machine doors with an electric door drive, the following applies: the greater the friction, the more current is required by the electric motor to move the doors. The existing current value can now be exported and sent to the Simatic S7-1500 via the bus interface on the ATD430W Sidoor system. The motor current is not consistent over the entire door route; for example, a far greater current is required to accelerate the door. Using an arithmetic mean current value created in the Simatic S7-1500, it is possible to track this trend. The value is stored centrally in MindSphere as a key diagnostic value for the door’s mechanical status. If the defined thresholds are exceeded, they can be viewed in the Fleet Manager MindApp by the service staff, analyzed, and followed up by targeted maintenance measures if necessary.

The new, powerful MDG700 NMS motor combines the protection class IP56 with a high torque and is therefore suitable for large and heavy doors up to 700 kg. Thanks to the neutral mechanical interface (NMS), the user can freely choose between toothed belt, chain, or toothed rod as power transmission system. Compared with pneumatic door controllers, this device also allows asymmetrical door solutions to be easily adjusted as needed. Thanks to the one-button commissioning and parameter sets, which can be loaded via Simatic or Sinumerik, commissioning work is reduced by 90% compared with pneumatic drives and by up to 75% compared with servo-axis drives.

[siemens.com/sidoor](http://siemens.com/sidoor)

**NEW FEATURES**

- Identification of progressive wear and tear of the door’s mechanics, thanks to S7 functional modules
- Status-driven maintenance via MindSphere
- FW update (V1.10) for ATD4xxW door controlling devices: for example, for cyclical exports of the motor current and door position in millimeters
- High torque for the optimized connection cables for moving masses up to 700 kg (Sidoor MDG700 NMS)
Power Supplies

A reliable DC power supply is essential for efficient plant operation. The portfolio of Sitop power supply units and add-on modules can protect companies in any industry in the world from plant downtime and production losses.

Sitop PSU8600 – expansion module with eight outputs

Expandable to 36 outputs

As the world’s first power supply system, Sitop PSU8600 offers full integration into TIA and nonproprietary communication via OPC UA. The base unit has up to four outputs and can be combined with up to four CNX8600 expansion modules. A new CNX module with eight outputs allows expansion to up to 36 outputs. Thanks to the finer allocation of the control circuit, faults can be located more quickly. Voltage and current of the respective outputs can be continuously recorded and set. One potentiometer is used to adjust output voltage and current threshold for every two outputs. It is even possible to set up each output individually using software.

NEW FEATURES

• Expansion module with eight outputs instead of four allows for expansion of up to 36 outputs
• Nominal current per output 2.5 A
• Current response threshold adjustable from 0.5 to 2.5 A
• Output voltage per output adjustable from 4 to 28 V
• Width: 100 mm

siemens.com/sitop

Simatic ET 200SP PS 24 V/5 A and 10 A power supply units

Optimized for the Simatic ET 200SP IO system

The new single-phase 24-V Simatic ET 200SP PS power supplies with 5-A and 10-A load current are optimally aligned to Simatic ET 200SP in design and function. Due to their low mounting depth, the rail-mounted devices are ideal for use in control cabinets with a depth of 80 mm. Thanks to their efficiency of up to 90%, only minor heat generation occurs. The current monitor outputs the present output current as a voltage value. As a result continuous diagnostics can be evaluated by an analog module on the ET 200SP. Users can deactivate the 24-V voltage if required – for example, to allow the floating exchange of distributed I/O modules.

NEW FEATURES

• Support during energy management and diagnostics by
  - a current monitor for ongoing load current diagnostics and evaluation by an analog module of the ET 200SP
  - an LED display, and “output voltage O.K.” signaling contact
• Support during commissioning and maintenance by
  - three individual load circuits that can be disconnected via pluggable terminal
  - on/off switch for the 24 volts allows the floating exchange of the distributed I/O modules
  - setting the output voltage up to 28 V in order to offset voltage drops over long lines.

siemens.com/sitop
The Sitop PSU8600 power supply system and the Sitop UPS1600 uninterrupted 24-V power supply can now be used more universally. Thanks to OPC UA server functionality, network-enabled power supplies now communicate via the open OPC UA communications interface for the first time. This enables direct integration into automation applications with OPC UA clients of various manufacturers (i.e. controllers and PCs). Now all diagnostic, maintenance, and energy data from the power supplies can be made available to applications based in MindSphere via gateways like Simatic IoT2000, MindConnect Nano, and Ruggedcom RX1400.

With the PSU8600 power supply system, diagnostic information including overload and short circuit of individual DC consumers as well as short network outages are reported. This way, current and voltage values can be measured for each output during operation. In addition, the energy measurement of the control circuit can be visualized and analyzed. The Sitop UPS1600 reports the charging status, the type of energy storage used, and network outages. Because users receive a status overview of each energy storage used, batteries can be preemptively replaced.

With OPC UA and Profinet, Sitop PSU8600 and UPS1600 support open communications standards for Industrie 4.0 and are therefore perfect data providers for MindSphere-based applications like Fleet Manager and Manage MyMachines.

NEW FEATURES

- Sitop PSU8600 and UPS1600 communicate via Profinet and OPC UA
- Nonproprietary integration of the power supply in the automation system
- OPC UA enables integration into MindSphere via gateways
- Diagnostics, maintenance, and energy data can be used in MindSphere apps

siemens.com/sitop
The new Simotics S-1FK2 and the Sinamics S210 single-axis converter have been perfectly aligned. One cable is enough to connect the motor and the converter.

The new Sinamics S210 single-axis converters, available as a first step in the performance range from 50 to 750 W (at 1AC 230 V), are made specifically for use with the newly designed Simotics S-1FK2 motors, making the configuration much easier for machine manufacturers. Simply select the motor according to its dynamic range and torque and the matching converter is automatically derived using the motor specifications. The automatic optimization of the control parameters using one-button tuning enables simple commissioning. Thanks to the motor’s electronic type plate, the motor data are loaded when starting up the converter and parametrization is performed automatically.

Integrated motion and safety functions

The converter uses the Simatic S7-1500 or S7-1500 T-CPU higher-level controls with extended motion control functionality for multiple-axis operation. Converters and motors can follow the Simatic PLCs target values with the highest degree of dynamics and precision. For easy commissioning, no basic positioner was used in the converter. Instead, the Simatic controller, connected via Profinet, handles all positioning tasks. Overall, the range of functions of the Sinamics S210 clearly focuses on the core functions of the highly dynamic motor axis control. Safety functions are also integrated: Safe Torque Off (STO), Safe Stop 1 (SS1), and Safe Brake Control (SBC) are available by default. Optionally, the functions can be controlled via Profsafe, STO, and SS1 also using a terminal. Additional safety functions will be available soon.

Entirely new range of motors

The new Sinamics S-1FK2 servomotor matched to the converters was developed with two service cases in mind: the highly dynamic movement of small loads and the dynamic and highly precise movement of medium and large loads. Accordingly, the motors are available in two versions: high-dynamic (with low inertia) and compact (with medium inertia). In interaction with the fast cycle times and sophisticated control algorithms of the S210 converter, a high-quality feedback system, and the combination of low rotor inertia and high overload capacity, the motors can achieve high-level dynamics and precision. That is why the Simotics S-1FK2 is especially suitable for use in machines for packaging, handling, wood and ceramics processing, and digital printing.

A single cable for power, encoder signals, and brake

The motor is connected to the converter via a one-cable connection (OCC), which means that the wires for the power, encoder signal, and brake are combined into a single cable and a single motor plug. The new OCC cable’s diameter is just 9 mm, making it thinner, lighter, and more flexible than the previous power cable. The wiring on the converter is just as easy, thanks to easy-to-access removable push-in terminals on the front.

siemens.com/sinamics-s210
Simotics VSD4000 synchronous-reluctance motor
with Sinamics S120 frequency converter

Precise encoderless control – until standstill

With the launch of firmware 4.8, you can now use Simotics synchronous-reluctance motors with Sinamics S120 frequency converters. This combination unlocks the full functionality and complexity of the modular Sinamics S120 product range. You can operate the system with or without a position encoder. For applications such as servo-pumps, which have to operate with top precision at high loads from the moment they are started up, an encoder is usually required because the setting range for encoderless control is limited to 1:10.

This is where the new Sinamics reluctance control license combined with Sinamics book-size modules come in: together, they expand the range of encoderless control for both motorized and generator-based operation all the way down to a stoppage. You could say the setting range is from one to infinite – as is the case when using a drive with position encoder. Technically, this new functionality is realized by feeding test pulses into the motor at low speeds. This way, the motor position can be determined without an encoder and any evaluable voltage at the motor terminals. The vector control throughout the entire operating range increases the drive system’s ruggedness significantly. As opposed to U/f-based methods, this, for example, prevents “stalling” when the load changes suddenly.

The encoderless control also stands out in terms of energy efficiency. Even at low speeds, the consumption is as low as it would otherwise only be possible with an encoder. Furthermore, control precision is particularly high and enables many applications to be realized without an encoder that used to require one. Not having to install a position encoder for many applications has various advantages for the user: more ruggedness and considerably reduced system costs, especially for investment, installation, and commissioning.

siemens.com/reluctance-drive-system

NEW FEATURES

• Sinamics reluctance control licence enables precise encoderless control until standstill
• Maximum ruggedness thanks to field-oriented vector control throughout the operating range
• High energy efficiency even at lowest speed
Sinamics S120 book-size motor modules continuous/discontinuous types

Extremely compact and robust

There are new book-size motor modules for Sinamics drives:

The 24-, 45-, and 60-A motor modules with double overload (C type) or even triple overload (D type) for the 24-A devices are now available.

Unlike the previous versions, the new 45-A and 60-A devices are very compact: they are 33% narrower, which allows the space in the control cabinet to be optimized significantly. The maximum current for the 45-A devices was also increased from 85 A to 90 A and for the 60-A devices from 113 A to 120 A.

The 24-A devices are entirely new on the market. They will be available as C and D types, closing the gap in the range between 15 A and 30 A.

For the C type version, single motor modules are available from 18 A to 60 A and the double motor module 2 x 18 A. The D-type version includes single motor modules from 3 A to 30 A and double motor modules from 2 x 3 A to 2 x 18 A.

NEW FEATURES

- Motor modules 24, 45, and 60 A with double overload
- Motor module 24 A with additional triple overload
- 45-A and 60-A devices with optimized footprint of 150 to 100 mm
- New potential overload of 90 A in 45-A devices and 120 A in 60-A devices

There now is a new I/O extension module available for the Sinamics V20 converter. The module provides two additional digital inputs and two relay outputs and can be mounted on the converter. Because it is equipped with connection ports on the front and back sides, the module can be used in conjunction with other Sinamics V20 accessories such as the BOP interface.

The new I/O extension module adds more application options to Sinamics V20, such as the multipump control that allows a maximum of four pumps to be controlled with one drive. The converter equipped with the new extension module is perfectly suited for use with pumps and fans as well as general applications that require additional I/Os in the power range from 0.37 kW.

siemens.com/sinamics-s120

siemens.com/sinamics-v20
Sinamics Startdrive in TIA Portal V15

Quick engineering in TIA Portal

NEW FEATURES

• Support for the Sinamics S120 and the Large Drive portfolio
• Safety Integrated acceptance test for the Sinamics G120 drive family
• Openness interface to read/write parameters and the hardware configuration
• Workflow between EPLAN P8 and TIA Portal

Sinamics Startdrive allows operators to quickly integrate the Sinamics drives into the automation system and to commission them with TIA Portal. The new Startdrive V15 version has more functions and supports additional hardware. In addition to the Sinamics S120 drive family, the Sinamics S120, S150, G130, and G150 converters and medium voltage are also integrated. By integrating the high-end Sinamics S120 servodrive system and the Large Drive portfolio, Sinamics Startdrive can cover an extensive output range from 0.55 to 85,000 kW.

One of the highlights of Startdrive V15 is the acceptance test for the Safety Integrated functions of the Sinamics G120 drive family. According to the machines directive, an acceptance of safety functions must be carried out and documented in accordance with EN ISO 13849-1 and EN ISO 13849-2. The integrated acceptance test guides the user through the required sections step by step in a user-friendly way thanks to graphical screens in TIA Portal. At the end it issues the document that the user can file with the remaining machine records.

Another area the new functions focus on is digitalization. Thanks to the openness interface in TIA Portal, it is possible to access the hardware configuration and the drive parameters from the outside. This option benefits serial machine manufacturers, for instance, who can use this to create projects automatically. An external tool for mass parameter modification – which is used when one or more parameters in several drives are to be modified simultaneously in one project – will be launched along with the V15.

siemens.com/startdrive
Sinamics G120

New frame size and more heat sink variants for power modules

Whether pumping, ventilating, compressing, moving, or processing: Sinamics G120 is the universal drive for the most diverse requirements. Its modular design and broad output range from 0.55 to 250 kW ensure that users can always find the optimal converter for their tasks. The new frame size FSG of the power module series PM240-2 expands the innovative power modules up to 250 kW: for example, this allows for line lengths of up to 450 m without implementing additional options. By default, the new PM240-2 power module can be ordered in category C2 and has an integrated link reactor.

The existing push-through versions of the PM240-2 were expanded by increased outputs of up to 132 kW to save more space in the control cabinet. This ensures that most of the heat is dissipated outside the control cabinet. The push-through versions – just like the standard versions of the PM240-2 – can be combined with control units from the Sinamics G series and have an integrated brake chopper (four-quadrant application).

siemens.com/sinamics-g120

Sinamics V90

Absolute encoder single turn and new motor design

Positioning, transporting, and winding: the user-friendly Sinamics V90 servo-drive system is optimized for applications focused on dynamic motion and processing. The servodrive system is available in two versions: the high-inertia version for applications requiring smooth operation, and the low-inertia version for applications requiring dynamic performance. The system is available either as a pulse train (PTI) model or as a Profinet model that enables real-time transmission of user/process data and diagnostics with a single cable. The low-inertia version now comes with an additional absolute encoder single turn with a resolution up to 21 bits. This allows unique position values to be identified, meaning that initial referencing is no longer needed because the values are available right after the system is switched on. Movements that occurred during downtimes are also available right after the system is powered up again. This enables a faster setup time and a fast reset time after a machine stoppage.

The design of the Simotics S-1FL6 high-inertia motor was also updated. The connections on the motor side are now angled, and connections on the cable side are standard connections. This makes the motor more convenient to use and more compact.

siemens.com/sinamics-v90

NEW FEATURES

- Improved efficiency thanks to faster setup and reset times
- Higher accuracy due to resolution up to 21 bits
- Motor is smaller and easier to connect

NEW FEATURES

- Improved efficiency thanks to faster setup and reset times
- Higher accuracy due to resolution up to 21 bits
- Motor is smaller and easier to connect
Sinamics IOP-2, the new Intelligent Operator Panel generation for Sinamics G

Configuration and support, quick and easy!

The flat IOP-2 Intelligent Operator Panel allows the quick commissioning, fault diagnosis, and intuitive operation of the Sinamics G frequency converters and facilitates settings adjustments during operation. The innovative central multifunctional sensor control field helps users select the settings.

The assistant for a simple configuration of the Ethernet-based fieldbus interface is new. It provides users with a quick overview of the relevant settings options for the interface, which allows them to select and configure them individually. The IOP-2 also offers a new support function that enables direct access to general product information, product documentation, downloads, FAQs, contact persons, and much more. Access is established using a two-dimensional code generated on the IOP-2 that can be easily scanned and analyzed with a mobile device (e.g., a smartphone or tablet).

There are three options for using the IOP-2: The user can plug it directly into the converter’s control unit, install it on the door to operate it outside the control cabinet, or use an IOP handheld for mobile cable-bound operation at locations that are difficult to access. The new IOP-2 is compatible with the Sinamics G120, G120C, G120P, G110D, G120D, and G110M converters and with Simatic ET 200pro FC-2.

NEW FEATURES

• Simple configuration of an Ethernet-based fieldbus interface
• The device name of the fieldbus interface can be modified using the virtual IOP-2 keyboard
• Quick access to product information from the current drive system (power module, control unit, IOP-2)
• Direct contact to customer support via the Industry Online Support app
• Simple connection to mobile devices (e.g., smartphones and tablets) using a two-dimensional code (data matrix or QR code)

NEW FEATURES

• Power module PM240-2, push-through versions
  3 AC 200 V bis 240 V: 18.5 kW, 30 kW, 55 kW
• Power module PM240-2, push-through versions
  3 AC 380 V bis 480 V: 37 kW, 55 kW, 132 kW
• Power module PM240-2, frame size FSG 3 AC 380 V - 480 V: 160 kW-250 kW
• Power module PM240-2, frame size FSG 3 AC 500 V-690 V: 160 kW-250 kW

siemens.com/sinamics-accessories
Simotics IQ

IoT connectivity for standard motors

With Simotics IQ, Siemens offers drive technology users a quick and cost-effective entry into the digital industrial world. The operating data for low-voltage motors can be saved and analyzed in MindSphere, the cloud-based IoT operating system. For this purpose, Siemens offers a specific MindApp. For the connection to MindSphere standard motors such as the new Simotics SD series are supplied with a compact box. It contains the necessary sensors for measuring the operating parameters, a WiFi communications module for transmitting the recorded data to MindSphere, and a battery for the power supply. By connecting to MindSphere, all necessary product information from the digital twin can be retrieved.

The analysis using smart algorithms brings the user significant benefits, because they make industrial processes transparent. The user can provide static product information about the motor such as service and spare part information, as well as typical motor data such as condition and operating status and load profile. With this information, customer processes can be made more productive and also improve future designs of drives and plants. The MindApp also enables higher availability and reduced maintenance and operating costs at the customer’s plant.

Because key performance indicators up until a specific event are visualized – for example, a temperature increase or the oscillation transient – the service staff can respond quickly, which permits ideal maintenance planning. Even fleet management is possible with the MindApp. The target and actual status of several motors in the fleet are compared with one another, in consideration of the ambient conditions. Specifically configurable warning thresholds allow customers to plan ahead for maintenance activities and to react to alarms before plant downtime occurs.

siemens.com/simotics-iq

NEW FEATURES

- Recording and analysis of motor data in MindSphere
- Overall solution consisting of a MindApp for the smart analysis of operating data and communication-capable hardware directly on the motor
- Easy commissioning of the system via plug and play
- Secure and encrypted data communication with MindSphere
Simotics SD Add

Extended range of applications for the next generation of motors

Maximum reliability, maximum power density and minimum operating costs describe the new performance level of Simotics SD next generation low-voltage motors. This new generation is now available in an additional motor variant, Simotics SD Add, which features in particular low starting currents. The motor therefore also fulfills process industry specifications because the ratio of starting currents to rated currents meets industry-specific requirements.

In general, low starting currents reduce the loading of the grid from disruptive voltage dips. This particularly pays off for weak grid conditions that occur with long supply lines to the end user. Simotics SD Add is, therefore, the first choice for countries with extensive territories such as the U.S., Canada, and Russia. Simotics SD Add’s low starting currents provide specific benefits for the drive train and its periphery: because the cables, cabinets, and protection devices can themselves be designed with far smaller dimensions, the procurement costs are accordingly lower. At the same time, the strain on the components is smaller thanks to the lower starting currents, which extends their service life.

Another highlight of the Simotics SD Add: It has all the essential global certificates and can be used anywhere in the world. A broad range of standardized options also ensures simple engineering and very short delivery times. The relevant static motor information saved within the digital twin can be retrieved with the Simotics Digital Data App (see text below).

Simotics Digital Data App

Quick overview of the motor

Operators can use the Simotics Digital Data App to access product information from the digital twin of their Simotics GP/SD motor at all times, regardless of where they are. Users only need to scan the Data Matrix Code affixed to the motor and they will immediately receive the electrical and mechanical data for the product. Customers can also use the app to quickly view operating instructions and get an overview of the spare parts available for order. By accessing these data, the Simotics Digital Data App simplifies and optimizes many processes such as commissioning, assembly, and service activities. Operators can download the Simotics Digital Data App for free from Apple or on Google Play.
Industrial communication such as the Scalance SC-600 meet the industrial requirements needed to implement specific security concepts. They therefore offer effective protection for machine and plant networks on the field and aggregation levels.

The new Scalance SC-600 industrial security appliances are equipped with all the necessary functions for effective protection from unauthorized access at the industrial cell level. For instance, the Scalance SC632-2C and SC636-2C have a stateful inspection firewall with a data rate of up to 600 Mbit/s, making them ideally suited to protect the machine or plant cell. The models Scalance SC642-2C and SC646-2C also support up to 200 IPsec VPN tunnels. In addition to security functions such as firewall and VPN, the new Scalance SC-600 also offers network structuring options, including virtual LANs (VLANs) and network address translation (NAT/NAPT). On top of the traditional cell security concept, the new industrial security appliances enable the implementation of flexibly configurable security zones that ensure structured protection in the plant network.

Flexible components in a compact design
The compact security network components stand out with a data rate of up to 1,000 Mbit/s with up to six Ethernet ports, two of which are combo ports. These support both 100 Mbit/s and 1,000 Mbit/s optical SFPs in single or multi-mode versions, making it possible to cover distances of up to 200 km with fiber-optic cables using LC connector technology. The SC632-2C and SC642-2C have one port for the higher-level network and one port for the network being secured with more elevated protection requirements. With the SC636-2C and SC646-2C, the six active ports can be flexibly divided into different security zones as needed.

The Scalance SC-600 modules have a redundant DC 24 V power supply as well as a signaling contact and can also be integrated into the Sinema Server network management software. The industrial security appliances can be configured using either an integrated Web server, the simple network management protocol (SNMP), the command line interface (CLI), or the Step 7 V15 (TIA Portal) engineering tool. The enclosure design is based on the Simatic S7-1500 controller, making installation next to the controllers in the control cabinet very convenient. The product range is completed by approvals for ex zone 2, shipbuilding approvals, and compliance with IEC 62443.

Secured remote access guaranteed
All versions of the Scalance SC-600 can be easily connected with Sinema Remote Connect (Sinema RC), the management platform for remote networks. After providing the relevant data with Sinema RC, setting up the VPN tunnel to the industrial security appliances is easy. Sinema RC is used as an administration interface between the authorized service technicians and the machines in the field, which are secured by Scalance SC-600. This allows for secured remote maintenance and remote diagnostics of machinery and plants worldwide.
S7-1200 CPs – new firmware V 3.0

Flexible thanks to open telecontrol protocols

The new firmware version 3.0 for the Simatic S7-1200 communication processors (CPs) supports several telecontrol protocols. This allows flexible use thanks to a free selection of the telecontrol protocol for various telecontrol applications – all with a single module. All the user needs to do is simply choose the relevant telecontrol protocol when commissioning the module with TIA Portal Step 7 V14 SP 1. The CP 1243-1 communication processor now also supports the open telecontrol protocols DNP3 and IEC 60870-5-104 in addition to TeleControl Basic, the Siemens telecontrol protocol. The CP 1243-8 IRC also offers the DNP3 and IEC 60870-5-104 open telecontrol protocols in addition to the Sinaut ST7 protocol. Additionally, the CP supports two WAN ports for path redundancy – an RJ45 port for connecting external routers: for example, Scalance M – as well as the option to configure an additional interface with plug-in TS modules.

The new firmware V 3.0 also supports SMS and e-mail alerts – regardless of the telecontrol operating mode chosen. This allows the CPs to be used for simple notification or alarm systems independent of any connection to a telecontrol control center. In addition, the CPs also offer extensive diagnostic functions and record the alarm history. The information is available via PLC Web server and in the PLC program, ensuring full transparency at all times.

NEW FEATURES

- Free selection of the telecontrol protocol in various telecontrol applications
- Simple alarm functionality by SMS or e-mail
- Optimized diagnostics and alarm history
- Configuration of all CP functions in TIA Portal using the Step 7 V14 SP1 engineering software

siemens.com/telecontrol
Sinema Server V14

More convenient monitoring and data collection

The Sinema Server software for network management and diagnostics makes monitoring and data collection even more convenient. The new version V14 with network address translation (NAT) enables all diagnostic data from machines and systems to be collected, even if they have identical IP addresses. The advantage: serial machines can be analyzed in one single Sinema Server installation.

Sinema Server uses Java scripts to display topologies, so that Java Runtime installation is no longer necessary. This means that both installation and start-up of the management and diagnostic software is clearly accelerated on PC-based systems. Another innovation involves the IPv6 Basic support. Sinema Server V14 distinctly marks network devices with IPv6 IP addresses so that users have a comprehensive overview of all IPv4 and IPv6 devices in the system at any time. In addition to the OPC UA server functionality, there is now another way to send data to superior systems: the connection to MindSphere. For example, the new Ruggedcom RX1400 with MindConnect enables monitoring data to be sent directly into MindSphere.

siemens.com/sinema-server

HIGHLIGHTS
• Diagnostics of serial machines using network address translation (NAT)
• Advanced and optimized display of topology
• Operates without Java Runtime

Sinema Remote Connect V1.3

Secured remote access made easy

A secured remote access to machines and systems is now even easier. The new version 1.3 of the management platform for remote networks, Sinema Remote Connect, now provides a multifactor authentication: in addition to authentication with user name and password, users can also log in with a PKI Smartcard. This new function applies to both web-based management of the Sinema Remote Connect server and the Sinema RC Client. The new version 1.3 also supports the current encryption process TLS 1.2 and therefore increases the security for remote access.

Additionally, the new version of the management platform enables offline licensing to activate user and device licenses on the server with no need for a connection to the Internet. In the new version 1.3, the Sinema RC Client supports Windows 10. Devices using this operating system can now also access widespread machines and systems via Sinema Remote Connect.

siemens.com/sinema-remote-connect

HIGHLIGHTS
• Multifactor authentication for simple and secured login
• Current encryption process TLS 1.2
• Offline licensing and support of Windows 10 for greater flexibility
Scalance W1750D

Highest data rates

The new, high-performance Direct Access Point for data rates up to 1,733 Mbit/s manages wireless networks with up to 64 access points. In accordance with the latest WLAN standard IEEE 802.11ac Wave 2, Scalance W1750D-2IA RJ45 transmits with eight omnidirectional antennas that are integrated into the device. It is especially suitable for wireless applications that require very high bandwidths, when video transmission is involved, or a large number of users are in the network, for instance.

Thanks to the integrated virtual controller, Scalance W1750D-2IA RJ45 is able to manage WLAN networks with up to 64 access points directly with no need for separate hardware. Easily and individually scalable, Direct Access Points (1 to 64) can be added to the virtual controller network piece by piece to automatically provide the right configuration. Another cost-saving factor is the transmission of power and data through one line by means of a Power-over-Ethernet connection. Scalance W1750D-2IA RJ45 supports frequencies of both 5 GHz and 2.4 GHz.

Their flat, state-of-the-art design and their low weight make Direct Access Points ideal for assembly on ceilings or walls. Typical fields of application include prestigiously designed rooms as well as industrial areas with more moderate environmental conditions such as assembly halls and adjoining spaces. Scalance W1750D-2IA RJ45 is available in different variants for different countries.

siemens.com/scalance-w1750d
siemens.com/wireless-approvals

HIGHLIGHTS

• Gigabit data rates thanks to WLAN standard IEEE 802.11ac Wave 2
• Integrated controller functionality for centralized network management
• Cost-efficient power and data transmission through a single cable
• Smart design for applications in moderate environments

Scalance W1788

11ac standard WLAN

With the new Scalance W1788 access points, the latest WLAN standard IEEE 802.11ac Wave 2 finds its way into industry. Thanks to gigabit data rates, the device can handle wireless applications with very high bandwidths: for example, in cases of high user density and video streaming. Thanks to the innovative multiuser MIMO technology, it is possible to structure the flow of data and so achieve even higher throughput. The integrated switch with two managed Ethernet Gigabit ports offers a wide variety of networking options such as link aggregation or redundancy. It also supports tried-and-tested special industrial functions, known as iFeatures, which enable reliable redundancy via WLAN with iPRP.

With its high degree of protection IP65 and firmly screwed M12 and N-Connect connectors, the Scalance W1788 access points can withstand harsh environmental conditions. Depending on the requirements, various different versions are available for easy and flexible assembly with internal or remote antennas or with one or two radios for optimal data usage. In addition to the existing configuration interfaces known from Scalance W-700, the new access points also have various national approvals to permit worldwide use.

siemens.com/scalance-w1788

NEW FEATURES

• Gigabit data rates for demanding wireless applications
• Investment protection with the latest WLAN standard IEEE 802.11ac Wave 2
• Reliable redundancy in harsh environments

This is rounded off by a comprehensive range of accessories optimally geared to specific applications.
Access Points Scalance W778-1 M12 / Client Modules Scalance W738-1 M12

Robust and flexible in harsh environments

With their high IP65 degree of protection, Access Points Scalance W778-1 M12 and Client Modules Scalance W738-1 M12 are especially suitable for applications without control cabinets. The robust aluminum enclosure withstands both high mechanical requirements and strong temperature fluctuations. Each device is equipped with two N-Connect antenna sockets, two M12 Ethernet connections (10/100 Mbit/s, D-coded), and a redundant 24V-M12 socket for the power supply. Thanks to these permanently fixed connections, the devices are resistant to high levels of shock and vibration.

Equipped with the proven Scalance W firmware and the corresponding key plugs, the new Access Points and Client Modules feature some additional functions specifically for industrial applications. Thus the innovative iPRP technology enables a reliable redundancy via WLAN even for applications involving movement. With 2 x 2:2 MIMO, they achieve data rates of up to 300 Mbit/s according to WLAN standard IEEE 802.11n and are suitable for frequencies of both 2.4 GHz and 5 GHz.

The biggest advantage of the Access Points Scalance W778-1 M12 and Client Modules Scalance W738-1 M12 is that while they are quite robust, they are still compact and space-saving. This is underscored by the diversified mounting options: the new Access Points and Client Modules can be easily mounted with their corresponding mounting adapters, either flat or – for maximum saving of space – laterally on a mounting rail. Alternatively, they can also be mounted directly on the wall using screws.

Because all LEDs are placed on the edge of the enclosure, they can generally be seen from different angles. Users can also save cabling and mounting time by letting power and data flow through one line – by means of a Power over Ethernet (PoE) connection. This enables a cost-efficient and convenient use of the new products for different applications, such as for the wireless on-site networking of welding robots, power screwdriver controls in the automotive industry, and the connection of automated guided vehicle systems (AGVs) to a control system.

To permit worldwide use, there are different national versions for the U.S. and the rest of the world. A special EEC version enables it to be used in especially demanding environments.

⇒ siemens.com/ Scalane-w730
⇒ siemens.com/scalance-w770
⇒ siemens.com/wireless-approvals

NEW FEATURES

- Worldwide use with new national versions
- Products for especially demanding environments
- Reliable redundancy via WLAN
Industrial Communication

Switches for industrial applications and buildings

By 2020, up to 15 billion machines with communications capability will be networked in the industrial Internet of Things (IIoT). The degree of networking will continue to increase, especially at the field level. Unmanaged Industrial Ethernet switches can connect smart sensors and actuators to the production network very quickly and easily. The new Scalance XB-100 unmanaged Industrial Ethernet switches are available in five versions – from devices with up to 24 RJ45 electrical connections to derivatives with two optical connections using SC or ST/BFOC plugs.

The 10/100 Mbit/s devices make cost-optimized network configuration possible in discrete manufacturing, while also meeting the requirements of industrial environments with their DC 24 V redundant power supply. Furthermore, all Scalance XB-100 devices support a redundant power supply with AC 24 V, as is required in building automation. The new switch product line is therefore ideally suited for Ethernet connection of monitoring, control, regulating, and optimization equipment via the BACnet/IP protocol. With their space-saving lightweight enclosures, the Scalance XB-100 is ideal for mounting in a control cabinet. In addition to permits for use in ex zone 2, the new switches are also compliant with Profinet CC-A.

NEW FEATURES
• Electrical and optical Industrial Ethernet switches
• DC 24 V and AC 24 V (50/60 Hz) for industrial and building applications
• Up to 24 electrical ports for large-quantity structures

Scalance XB-100

Powerful switches with high port density

For communication between network nodes in horizontal and vertical directions, the new Scalance XR-100WG unmanaged Industrial Ethernet switches have 24 electrical ports (with RJ45 plugs) with a data transfer rate of 10/100 Mbit/s. This makes it possible to connect Ethernet nodes to the production network via line or star topologies. Their narrow aluminum housing and the shallow mounting depth mean that you can install two switches back to back in a 19" rack. They can also be clipped on a 35-mm top hat rail with additional brackets, allowing them to be installed in control cabinets. Moreover, the switches’ fanless design permits low-maintenance operation.

Like the Scalance XR-300WG managed Layer 2 Industrial Ethernet switches, the unmanaged Scalance XR-100WG belong to the family of work group switches for cost-optimized installation of smaller networks. The product lines are available in different versions with a AC 100-240 V power supply as well as with DC 24 V in redundant versions, and they are also approved for use in ex zone 2. The compact Scalance XR-100WG are most often used in small control rooms and industry-related environments.

NEW FEATURES
• Cost-optimized work-group switches with a shallow mounting depth for 19" racks
• Industrial Ethernet switches with 24 electrical ports
• Versions with AC 100-240 V and redundant DC 24 V power supply

siemens.com/xr-100wg
The new Simatic PCS 7 V9.0 process control system integrates Profinet into the process automation architecture down to the field level. Robust Scalance XF-200BA managed Industrial Ethernet switches function as network components and are equipped with coated printed circuit boards (conformal coating), cover an extended operating temperature range from -40°C to +70°C, and can even be installed at elevations up to 4,000 m above sea level. The flexible bus adapter concept of these network components provides for the design of line, star, or redundant ring structures according to topology requirements using electrical or optical connectors.

The new BA 2xRJ45VD HA bus adapter is yet another version that can bridge a distance up to 1,000 m between two devices with copper cables – provided the devices are compatible with the bus adapter. In addition to standard Ethernet communication, the new bus adapter also permits data transfer via 4-core cables (twisted pair) as well as 2-core cables (single twisted pair). This means that existing Profibus cable-infrastructures can continue to be used, avoiding costly and complex retrofitting, especially at the field level. In addition, an 8-core cable makes it possible to reach Profinet components at distances up to 500 m. Depending on whether 2-, 4-, or 8-core copper cables are used, it is possible to cover distances between 100 and 1,000 m, contingent on the desired data rate. The new BA 2xRJ45VD HA bus adapter is used in Scalance XF-200BA Industrial Ethernet switches and in the Simatic ET 200SP HA and the Simatic CFU.

NEW FEATURES

- Ethernet communication via 2-, 4-, or 8-core copper cables
- Bus adapter equipped with coated printed circuit board (conformal coating)
- Used in process automation for all products with the bus adapter concept

siemens.com/y-switch
The Ruggedcom RX1400 with VPE1400 functionality is a compact cellular router, which combines Ethernet switching, Wireless LAN, routing, a virtual machine environment, and firewall along with various long-range connectivity options, such as Gigabit fiber optics. The Ruggedcom VPE1400 enables applications to run in a virtual environment that has full access to the network, wireless LAN, and serial and LTE interfaces on the RX1400.

The Industrial IoT Gateway Ruggedcom RX1400 with MindConnect running in the VPE1400 is a plug-and-play solution that enables users to read data with OPC UA or an S7 connection from their assets and preprocess them for transfer to MindSphere – simply and reliably. The encrypted data is transferred securely to MindSphere, where it is available for further processing and analysis. Ruggedcom RX1400 with MindConnect integrates data acquisition, conversion, and communication into MindSphere in a compact, single device solution. End devices can be connected via serial, wireless LAN, and Ethernet connections. The connection to MindSphere can be set up with redundant paths via either LTE or copper/fiber Ethernet. Proven reliability and ability to function in extreme temperatures and harsh environments make the Ruggedcom RX1400 with MindConnect the obvious choice for MindSphere data acquisition in industrial applications such as electric power and transportation, as well as oil and gas.

Siemens is expanding its Ruggedcom portfolio for industrial communication. The company is now offering a line module, which supports LTE (Long Term Evolution) for its Ruggedcom RX1500 product family.

This product family of cost-efficient industrial-grade Layer 2 and Layer 3 switches and routers is designed to comply with protection rating IP30. It requires no fans for cooling, and it is capable of operating at ambient temperatures of between –40°C and +85°C. In addition, it is highly resistant to electromagnetic interference and current fluctuations. The family comprises different form factors with metal housing. The Ruggedcom RX1500 and RX1501 are suitable for rack mounting, and the Ruggedcom RX1510, RX1511, and RX1512 are compact form factors suitable for installation in cabinets or other non-rack mount applications.

With the new LTE Line Module all form factors can have cellular 4G connectivity added to them. This can be done to existing devices in the field as well as in new deployments. The addition enables users worldwide to connect to the latest wireless wide area networks. This product is ideally suited for electric power utilities, the industrial plant floor, rail, and traffic control systems.

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The entire range of Sirius modular systems with industrial switching devices is now available up to frame size S12 for power outputs of up to 250 kW. Digital support for each device with CAX data for the standard configuration programs is a great time-saver for users.

Sirius modular system comprises circuit breakers, contactors, and overload relays for motors, allowing all types of devices and accessories to be optimally aligned and enabling a great variety of combinations. They can now also be used in the higher output spectrum, thanks to the three innovative Sirius 3RT2 contactors in frame sizes S6, S10, and S12 that round off the modular system. Users now have a comprehensive output range from 3 kW to 250 kW at their disposal, which offers them many benefits in applications worldwide.

Coupling relays no longer required
The developers have also integrated new functions into the large contactors. For example, variants that permit direct control from fail-safe controllers have now been added to the range of devices with frame sizes S6 to S12 for outputs from 55 kW to 250 kW. This makes the coupling level that was required for fail safety in the past redundant and reduces the number of devices, space, wiring work, and interfaces needed. For instance, you only need one contactor to achieve SIL CL2 in accordance with IEC 62061, or you can use two consecutive contactors to achieve SIL CL3. Another benefit of the new devices: because the coupling relays are no longer necessary, it is now possible to switch the large contactors for both operational and safety-related tasks using a direct control. This significantly simplifies the engineering and enables remote control with no need for additional devices.

Support from Integrated Control Panels
In-depth expertise in control cabinet engineering and planning is just as important as an optimally aligned product range. Users can work with the experts at Siemens Integrated Control Panels and get help that accelerates their business processes. They offer both expertise and the right tools and data for everything from planning and production to service, as well as comprehensive support in the pre- and after-sales phases.

siemens.com/sirius-modular-system
siemens.com/control-cabinet
Industrial Controls

Whether the task involves switching, protecting, starting, or monitoring, with the Sirius modular system Siemens offers a coordinated portfolio for industrial controls that is easy to install in the control cabinet and straightforward in its integration into distributed systems.

Sirius 3RT26 – capacitor contactors

Switching capacitive loads

The new Sirius 3RT26 capacitor contactors are special contactors for capacitive load switching. They are based on the tried-and-tested 3RT2 basic devices and have precharge resistors that are uncoupled again after damping the peak inrush current. The new range is rounded off by variants for DC actuation, approvals for global use, and accessories for the 3RT2 basic devices. The 3RT26 capacitor contactors are part of the Sirius modular system and are used in industrial automation and building technology.

NEW FEATURES
- Comprehensive power spectrum
- Flexible range of freely available auxiliary switches
- Also available in NC designs

Sirius 3RM1 motor starters

Shorter idle time – higher plant output

With the motor starters in the Sirius product family, Siemens offers an energy-efficient switching technology that contributes to reducing plant consumption and simultaneously increases efficiency. The hybrid motor starters in the Sirius range combine relay and semiconductor technology, which makes them very economical. The well-established hybrid fail-safe Sirius 3RM1 motor starter has now been optimized and can be supplied with shorter idle time: 200 ms instead of 500 ms. The purpose of the idle time is to protect motors and starters from overload. The idle time ensures that after starting and operating the motor for a brief period, there is a short interruption before the motor restarts. Without an interruption, the components would overheat and damage the hardware. Thanks to the shorter idle time, the motor starter now supports a higher number of switching operations per time unit. For applications that are frequently activated and deactivated – for example, conveyor belts – this reduces cycle time and increases plant output.

NEW FEATURES
- Idle time reduced from 500 ms to 200 ms
- Higher switching time per time unit
- Reduced cycle time and higher output for plants that are frequently activated and deactivated
Simatic MV540

Always keeping an eye on production and logistics

The new Simatic MV540 optical reading devices are characterized by modern design, significantly improved functionality, and even more versatile applications. The connection to MindSphere opens up new possibilities for using the data obtained from 1D/2D codes.

With Simatic MV500, the range of optical read devices is being expanded with a series of new high-end read devices. The Simatic MV540 optical reader is being launched first. This new model offers significantly more functionality and performance than its predecessor, the Simatic MV440, but remains fully compatible.

Thanks to its modular design, the Simatic MV540 optical reader can be flexibly adapted to the needs of different applications in the production and logistics process. With its compact and rugged design and its high degree of protection (IP67), it is ideally suited for use in harsh industrial environments and for integration into applications with tight installation spaces. The device’s higher computing power significantly accelerates the read process. In addition, in-depth evaluation of the image information enables improved read reliability under even the most adverse conditions.

High-performance accessories such as lenses with electronic focus and flexible-control built-in ring lights enhance functional reliability and – due to the increased working distance – expand application options. The electronic focusing function also reduces setup errors and downtimes. Device configuration using web-based management and new control elements make handling the Simatic MV540 especially easy and convenient. The device is subject to the Siemens IT security tests which, combined with its integration into the TIA Portal, provide for the highest possible system availability and reliability.

The future is digital

Using the Simatic S7-1500 controller, the Simatic MV540 can also be connected to the open cloud-based IoT operating system MindSphere. As a link between the real and the digital world, the Simatic MV540 devices ensure that operating data, such as product ID and quality data with position and time, can be recorded so that the results of the tracking are available globally. All this is made possible by a function block integrated into the controller. As a result, no additional equipment other than the S7 controller is needed to transmit values from the Simatic MV540 to MindSphere.

Thanks to the data analysis, which is sent from the production line and logistics application to MindSphere using the Simatic MV540, all production and logistics processes are made transparent regardless of the manufacturer. This optimizes production processes and supply chains and boosts efficiency and quality in production, logistics, asset management, and other areas – across all industries. The Simatic MV540 optical readers and MindSphere are key components of a successful digitalization strategy and form the foundation of all data-based services from Siemens.
Industrial Identification

Identification systems help companies remain competitive in increasingly dynamic markets. RFID or optical identification systems allow manufacturers to meet the ever-increasing demands relating to material flow control, asset management, tracking and tracing, and supply chain management.

Simatic RF200 read/write devices compliant with the IO-Link standard V1.1

Ten times faster data processing

The Simatic RF210R, RF220R, RF240R, RF250R, and RF260R read/write devices for the Simatic RF200 RFID (radio frequency identification) system with IO-Link interface are now available for IO-Link standard V1.1. The new readers are capable of reading and writing at more than 10 times the speed of the existing series, which are compliant with the IO-Link standard V1.0. There are master modules for this standardized IO-Link interface available from Siemens as well as from various well-known third-party suppliers. They can be used to integrate the readers in a wide range of fieldbus systems and control systems, making it very easy to integrate RFID readers from the lower performance range into the automation environment. The RFID system automatically supplies the data read from the transponder. Not only is it possible for the unique identification number (UID) to be read, the user data from a predefined memory area can also be read or written. The comprehensive portfolio of extremely rugged industrial-grade ISO15693 transponders from Siemens is available for a wide range of application areas.

The read/write devices are characterized by their compact and rugged technical setup and their high degree of protection, which makes them ideally suited for use in harsh industrial environments and for integration into applications with tight installation spaces.

The readers according to IO-Link standard V1.1 can only be operated with master modules that are also compliant with standard V1.1. Existing readers compliant with the IO-Link standard V1.0 are still available.

siemens.com/rf200
The new Simatic RF 280R and RF 380R read/write devices are rugged, compact, and flexible. The Simatic RF280R with an integrated antenna, which supports the RFID standard ISO 15693 exclusively, is especially suitable for identification tasks in harsh industrial environments due to its high degree of protection (IP67). It is used primarily in dynamic applications where long ranges (up to 200 mm, depending on the transponder) are required. The Simatic RF280R offers users a cost-effective alternative to the Simatic RF380R if they do not need the performance of the Simatic RF300 system: for example, seven times the speed of ISO 15693.

The functionality of the new generation of Simatic RF380R readers has been significantly improved, but they are still fully compatible with the first generation. The device has very high read/write speeds (up to 240 mm, depending on the transponder), which makes it very well suited for use in dynamic applications. Next to the RS422 interface, the reader also has an integrated RS232 interface. The Simatic RF380R’s new convenient setup wizard ensures reliable determination of the perfect antenna position, especially in metallic environments. Other new features include an additional air interface (MIFARE classic) as well as a mixed transponder mode and added functions for easy migration of Moby I/E.

Simatic RF280R/Simatic RF380R

Rugged, compact, and flexible

With the launch of the new firmware version V3, the Simatic RF600 RFID system now supports the OPC UA standard and allows devices to be connected to the cloud-based open IoT operating system MindSphere – for instance, over the industrial IoT gateway Ruggedcom RX1400 with MindConnect or with the cloud gateway MindConnect Nano. This opens up exciting new opportunities for users, such as the recording and tracking of containers, pallets, and products that are fitted with an RFID transponder. By analyzing the data imported into MindSphere through Simatic RF600, KPIs such as plant availability, utilization of assets, and energy-saving potential are made transparent. This allows functions such as production processes and supply chains to be targeted and optimized in order to improve efficiency and quality in production, logistics, asset management, and other areas across all industries.

Simatic RF600 and MindSphere are therefore not just significant components of digitalization, they also form the basis for applications and database Siemens services for the fields of predictive maintenance and energy data management, as well as asset and supply chain management. Configuration is easily performed using the web interface in a browser. The web-based concept guarantees global availability of the information.

Simatic RF600

Link between the real and the digital world

HIGHLIGHTS

• High degree of protection IP67 for use in harsh environments
• Compact design
• Reader with integrated antenna
• Integration in TIA Portal (V14 SP1) via technology object “Ident”

siemens.com/rf280
siemens.com/rf380

HIGHLIGHTS

• OPC UA enables standardized connection to MindSphere
• Simple connection – for example, via the Industrial IoT gateway Ruggedcom RX1400 with MindConnect or MindConnect Nano
• Global availability of KPIs thanks to the web-based concept

siemens.com/rf600
The management of security vulnerabilities affecting your production is an essential part of a broad asset management concept. Machine tools for industry and industrial control systems embed proprietary products, third-party components and open source software (OSS). These components are regularly affected by security vulnerabilities which can be exploited to carry out cyberattacks and cause severe disruptions to production. To prevent or inhibit these cyberattacks, appropriate measures need to be put in place: security norms and standards (e.g. IEC 62443-2-3) provide recommendations to deploy an appropriate vulnerability management process.

Machine tools often operate as stand-alone plants within factories and remain largely unconnected to superordinate systems (e.g. supervisory stations, workstations, maintenance servers, DMZ, etc.). As a consequence, security solutions and technologies equipped with scan engines to detect vulnerabilities remain largely ineffective. Because machine tool builders and OEMs are aware of the components integrated into their machines and maintain inventory lists as part of series production and manufacturing, they are responsible for informing customers regarding vulnerabilities affecting the machines they sell.

Plant Security Services (PSS) have recently developed an application running on the cloud-based, open IoT-platform MindSphere to identify vulnerabilities affecting OT components, including third-party components, open source software, and Siemens products installed in machine tools and automation systems. Based on the registered components, the new Security Vulnerability App provides a digital security bulletin containing information such as CVSS score, vulnerability description and impact, patch information, and vendor link. The application also integrates a security dashboard with charts and figures to support the user with the remediation and closure of vulnerabilities.

The Security Vulnerability App is an IoT solution that monitors your industrial assets – efficiently managing more than 22,000 components. It complements the existing tool for managing Microsoft patches on Simatic PCS7 and McAfee Application Whitelisting, which have been tested with Sinumerik PCU 50.x, thus providing protection for outdated legacy systems.

siemens.com/plant-security-services
MindSphere

Connecting real things to the digital world

With MindSphere, the open, cloud-based IoT operating system from Siemens, users can connect their machines and physical infrastructure to the digital world.

Every machine and system in a manufacturing enterprise holds a wealth of data. Turning this data into value and leveraging the Internet of Things (IoT) to connect it all is a critical success factor in today’s competitive environment. MindSphere lets you understand your data by quickly and securely connecting your machines to the digital world. Siemens has included the tools you need to tackle the IoT connectivity challenge, high security standards, and robust support to develop applications.

In the cloud even without hardware
As more production environments seek to digitalize their automation processes, having the flexibility to connect assets from both Siemens and third-party vendors is a key component of a comprehensive IoT solution.

The MindConnect Nano and Mind-Connect IoT2040 offer robust out-of-box-connectivity from your machines to MindSphere. The MindConnect Nano is a high-performing dedicated IoT connector that is built to handle higher data volumes in larger industrial landscapes, while the MindConnect IoT2040 is intended for smaller production environments.

With MindConnect FB 1500, your existing S7-1500 PLCs can connect directly to MindSphere and the digital world using a TIA Portal Step 7 library with no additional investment in new infrastructure or development.

MindConnect LIB, an Open Application Programming Interface (API), provides connectivity functions to enable communication through numerous protocols to MindSphere from any asset in a cost-effective way. Thanks to the MindConnect API open interface, MindConnect LIB can be integrated into the existing software. The custom agent connects and transfers data through a secure Internet protocol, allowing for businesses of any scale and asset array to connect assets to MindSphere.

Immediate monitoring of assets
Today, competitive pressure calls for lower costs, improved production
quality, flexibility, and efficiency. The IoT facilitates additional productivity levers and new business models and is the foundation for development of applications and digital services.

Siemens offers various applications. As a standard and best-practice IoT starting point, MindSphere users have access to the Fleet Manager application, which they can use to configure all assets in virtually no time. Convenient functions include email notification trigger from configured rules and list hierarchy of asset fleet. Rules can be configured and enabled to trigger email notification to jump quickly to Fleet Manager and take immediate action to improve operational efficiency.

Optionally, users can access the Visual Analyzer Application with customizable dashboard to locate their connected assets at a glance on a geographical map. The transparent and flexible visualization of machine data, history, and status reduces the costs of inspection.

Machine builders benefit from the Manage MyMachines MindApp, making machine states and history transparent for users. Siemens demonstrated the various connection options on more than 240 different machine tools at EMO 2017. In addition, TIBCO Jaspersoft™ Service, available with MindAccess User, enables customers to create dynamic, web-based dashboards and reports suited to their individual requirements. With TIBCO Jaspersoft™ Service, customers have the ultimate flexibility to create their own visualizations using configuration tools with no development required.

**Highly scalable and cost-effective developer support**
Solutions and assets for each industry and production environment differ, therefore, out-of-the-box analytics and reporting may not always meet the customer’s needs. With MindAccess Developer, customers and partners have ultimate flexibility to develop their own applications tailored to their unique set of requirements. Accelerate time to implementation with Siemens’ support and experience. MindAccess Developer, available in different package sizes to suit the needs of your organization, provides development tenant access to your development team or third-party partners using highly scalable and cost-effective infrastructure based on Cloud Foundry. In addition, developers can utilize reusable supporting modules including parsing, analytics, and visualization to accelerate time-to-deployment.

**Collaboration with experienced partners**
To address the broad scope and high complexity of digital transformation across all industries, MindSphere has established a network of world-class partnerships with broad domain expertise. With APIs, partners can develop, deploy, and distribute their own MindSphere solutions and share them among the entire MindSphere community.

[siemens.com/mindsphere](siemens.com/mindsphere)  
[siemens.com/iot2000](siemens.com/iot2000)
Digital Services

Optimize Overall Equipment Effectiveness

Shaping the digital change is one of the most significant challenges of the future. Digital Services help customers to make the most of their company’s digital transformation. With a thorough analysis of all relevant operating and process data, you can optimize the Overall Equipment Effectiveness and increase competitiveness.

Digitalization changes all areas of life and business models. Manufacturers need to ensure ever shorter time-to-market while providing more flexibility and higher quality with fewer and fewer resources. In this phase, many customers call for a partner to help them achieve this transformation. At Siemens, the Industry Services department aims to take a leading role here.

A partner for all requirements
The Industry Services portfolio consisting of classical, digital enabled, and digital services, provides corrective, preventive, and predictive maintenance throughout the entire lifecycle of products, machines, and plants – worldwide and from a single source. With their specialized know-how, the Digital Services experts help customers to master the challenges of digitalization.

The basis for each digitalization and each digital service is awareness: Known and hidden data can no longer be evaluated or mastered by conventional means to gain the required business advantage. Only the meaningful merge and analysis turn Big Data into Smart Data and Siemens Digital Services convert Smart Data into a competitive edge.

Based on a detailed evaluation of all relevant operating and process data, customers can make the optimum out of their machines, lower the total cost of ownership, and open up new business models. Already today, Siemens offers an extensive portfolio of Digital Services, forward-looking and expanding steadily.

Customized solutions for a wide variety of applications
Whether you want transparency on single machines or production lines, reliable monitoring on single machines or production lines, contractual obligations to be secured or just to make the best out of the potential that digitalization offers — Siemens Digital Services provide customized solutions for a wide variety of applications.

The Manufacturing IT Services offer IT solutions to optimize the manufacture and operation of machine tools. Machine data recording and analysis, as well as tool management and maintenance support, considerably increase machine and system availability and productivity. For manufacturers, this above all translates into process safety and quality that can be brought to the next level thanks to digital services. Plant operators benefit from more stable processes and lower manufacturing costs.

With the Simatic Software Platform as a Service solution, Siemens offers a customized cloud-based IT infrastructure with preinstalled Simatic software for Simatic PCS 7. Users can flexibly access the engineering software anywhere, which is extremely useful as it helps saving a lot of engineering time – in particular while working in remote engineering groups or during commissioning. Having a standardized
test and development environment at your disposal significantly reduces the costs of setting up and configuring the infrastructure. Thanks to the demand-oriented pricing model, the user only pays what he really needs.

To use remote systems safely and efficiently, Siemens Digital Services offer Remote Systems as Managed Appliance. This service combines the advantages of a virtual environment with the possibilities of a secured remote access to machines and plants – on site or in the cloud, tailored to the customers’ needs. The Siemens experts not only deliver the entire IT infrastructure but also provide rapid technical support and maintenance for drive and automation systems.

**A sustainable portfolio**

With today’s Digital Services Portfolio, you can already exploit the potential of your plants much better. Thanks to its current range of Industry Services, Siemens leverages the Overall Equipment Effectiveness to an unprecedented level. By continuously expanding this range of services with always better digital services and analytics solutions Siemens is making sure its customers can keep on improving their Overall Equipment Effectiveness.

> siemens.com/digital-services-industry
Electrification goes MindSphere

Electrical power distribution in the Internet of Things

The smooth integration of the electrical power distribution into industrial automation environments is enabled by multiple integration. This includes the provision of all relevant data for automated engineering processes as well as the integration of communications-capable devices and software in industrial automation via open interfaces. Communications-capable components, systems, and software can capture energy data and incorporate them into integrated energy-efficiency concepts – right down to their connection to cloud-based, open IoT operating systems such as MindSphere.

Efficient engineering

The 3VA molded-case circuit breakers and measuring devices of the 7KM PAC series from the Sentron portfolio are integrated in TIA Portal V14, making electrification an integral part of automation. Standardized interfaces ensure the efficient interaction of all components in the industrial communications network. Using TIA Portal, they can be directly configured and put into operation. The result is engineering with just one single tool and an intuitive configuration of the power distribution. Status monitoring and the capture of power diagnostics data suddenly become easy.

Exploiting savings potential

Via MindConnect components, all captured power data can also be provided in MindSphere, which makes the information available over the open cloud platform for specific analyses. The data analysis results offer the means for a true assessment of system states and network quality. Furthermore, this allows for an optimization of energy consumption and capacity utilization. Energy consumption per day, shift, line or production unit is determined as a basis for energy efficiency measures. A comparative analysis of energy consumption during production times and non-production times, for example, could help identify previously untapped savings potential. System comparisons for procedures or processes within one plant or across all manufacturing locations can lead to the discovery of further potential. The precise, reproducible and reliable measurements for current, voltage, power and energy form the basis for systematic power and system monitoring. It opens the door for enormous business savings potential and is the basis for sustainable operational energy management in the digital age.

http://siemens.com/lowvoltage/tia-portal

If electrical power distribution is integrated in industrial automation, energy data can be recorded digitally and made available centrally. Using the cloud-based, open IoT operating system MindSphere opens up additional potential for comprehensive energy-efficiency concepts.
The Sentron portfolio’s 7KM PAC measuring devices make the status of plants and consumption values transparent. They record the energy values for supply, outgoing electrical feeds, and individual loads and deliver comprehensive information on electrical power distribution as well as important measured values for evaluating the status of the plant and network quality in a precise, reproducible, and reliable way. Now this portfolio is being supplemented by the 7KM PAC3200T and 7KM PAC2200 measuring devices for a simple, affordable entry into power monitoring, and by the expansion module i(N), I(Diff), analog, for additional functions.

The compact 7KM PAC3200T measuring devices are easy to clip onto a standard mounting rail and are perfect wherever no display is needed on a measuring instrument. The 7KM PAC2200 measuring devices are just as easy to use. The versatile power meters show the most important measured values directly on the display. Using integrated communication interfaces, they can be integrated in power monitoring systems via Modbus TCP, Modbus RTU, or M-Bus. Both measuring devices have an integrated web server with which the data can be visualized independent of the device. The measuring devices are integrated into the power-config configuration software and the powermanager software. They meet the requirements of IEC61557-12 with class 1%, and international certifications mean that they can be used worldwide.

With the expansion module i(N), I(Diff), analog, the 7KM PAC measuring devices can be expanded with more functions. This includes the measurement of the neutral conductor (N) Class 1 according to IEC61557-12 and residual current type A or B. The module also offers two analog inputs: for example, for measuring residual current (IDiff), temperature, flow rate, and pressure.

siemens.com/powermonitoring
Sivacon S8 low-voltage switchboard

Safe distribution, intelligent management

The Sivacon S8 low-voltage switchboard is ready for the challenges of the future—and of digitalization. Using the Simaris control visualization software, users can operate and monitor as well as parameterize communication-capable switching devices and motor loads on-site. The Sivacon S8 data are available for high-level automation and energy management systems or for cloud-based analysis systems. With its modular design and special features such as the active protection system against internal arcing and powerful motor management systems, the switchboard is very reliable, safe, and flexible.

Sivacon S8 has many intelligent switching devices that can be operated and monitored via Simaris control. Status information and measurement data are presented clearly, creating high transparency all the way to the individual feeders. Detailed warnings and fault signals allow for fast diagnosis of fault causes. Statistics data helps optimize and plan maintenance. Sensor data such as temperature values are also visualized in order to reduce downtime. The plant’s energy requirements can be analyzed and optimized using the consumption values of the feeders. Changes to the switchboard can also be recreated on the digital twin. Using the integrated interfaces, the Simaris control hardware can be connected to higher-level automation or energy management systems as well as cloud-based operating systems such as MindSphere in order to plan for processes such as maintenance strategies throughout the entire company.

Sivacon S8 stands for safety at a high level. The design verification of power switchgear and controlgear assembly is proven in accordance with IEC 61439-2. The verification with testing under arcing conditions in accordance with IEC/TR 61641 also ensures personnel safety. The active protection system against internal arcing of Sivacon S8 detects and quenches an arc fault quickly and reliably. The patented forced cooling technology reduces the derating, and the low temperature profile inside an MCC ensures the safe and long-term operation of sensitive electronic equipment.

Sivacon S8 offers solutions for all requirements. Different mounting designs can be combined in one cubicle with ease. The flexible modules allow for the simple exchange or addition of functional units.

siemens.com/sivacon-S8

HIGHLIGHTS

• Simaris control – the digital twin of the Sivacon S8 switchboard
• Increased protection against internal arcing for a high level of personnel and switchboard safety
• Higher ratings through energy-efficient cooling for reliable operation
• Optimal use of space with 300 mm-high small withdrawable units
• Powerful motor management systems for high flexibility and reliability
Sivacon 8PS busbar trunking systems

Innovative alternative to cables

Whether it is for an infrastructure or an industrial application, the Sivacon 8PS busbar trunking systems are an alternative to cables that is superior both technologically and economically. They are highly flexible both during the planning process and in operation. Their compact design enables fast installation compared with cables, saves space, and — with the Simaris sketch software tool — it is easy to create three-dimensional line routing plans for the busbar trunking systems. BIM (building information modeling) data are available for a consistent database. The digital twin of the power distribution system therefore integrates into extensive constructions — for efficient planning, implementation, and maintenance.

It is easy to plan and implement plant extensions or changes using the Simaris planning tools. For a simple and high-quality installation and documentation an installation app is available. During operation, outgoing electrical feeders can be varied by means of flexible-use tap-off units. In order to generate the data required for efficient energy management, communication-capable measuring and switching devices can be integrated in these tap-off units. In addition, the decentralized installation with switching devices close to the consumers makes the operation more transparent, and faults are easier to eliminate.

HIGHLIGHTS

- High flexibility in the planning process and in operation
- Space-saving due to compact design
- Fast, easy, and safe installation
- Energy transparency thanks to communication-capable measuring and switching devices
- Greater plant and operating safety
- Support from building information modeling (BIM)
- Simple and high-quality installation and documentation via Sivcon 8PS installation app

⇒ siemens.com/busbar
Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

Security information
Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines, and networks. In order to protect plants, systems, machines, and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens’ products and solutions only form one element of such a concept. Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines, and components should only be connected to the enterprise network or the Internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place. Additionally, Siemens’ guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit siemens.com/industrialsecurity

ET 200, LOGO!, S7-1200, S7-1500, SCALANCE, SENTRON, SIDIOR, SIMARIS, SIMATIC, SIMATIC HMI, SIMATIC IPC, SIMATIC IT, SIMATIC MV, SIMATIC RF, SIMIT, SIMOCODE, SIMOTICS, SIMOSIM, SIMOTION, SINAMICS, SINALT, SINEMA, SINETPLAN, SIPLUS, SIRIUS, SITOP, SIVACON, SIVArc, STEP, TIA, TIA Portal, WinCC are registered trademarks of Siemens AG. Any unauthorized use is prohibited. All other designations in this document may represent trademarks whose use by third parties for their own purposes may violate the proprietary rights of the owner.