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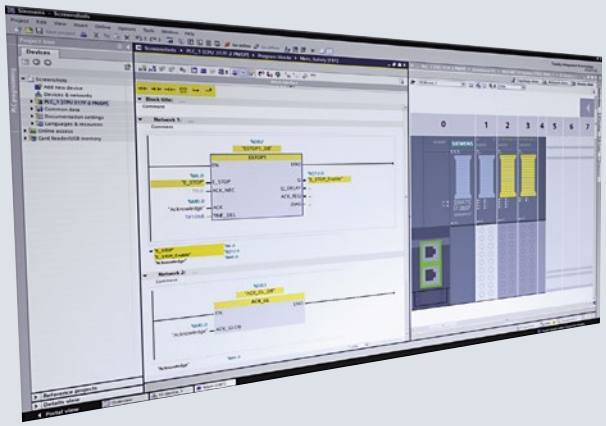
Products and Systems for Totally Integrated Automation

Automation Technology

Safety and technology integrated



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Answers for higher efficiency

Under the theme "Making Things Right – Connecting Productivity and Efficiency," Siemens is introducing at Hannover Messe 2013 the latest products, systems, and services for industry, all of which contribute to higher profitability as well as a sustainable interaction with the environment.

The key to higher efficiency and productivity is the use of efficient products. As an experienced industry partner, Siemens has the corresponding portfolio. From the product design and product planning phases, to engineering and production, to maintenance and modernization, all solutions are coordinated with each other and cover the entire value-added chain. At the booth in Hall 9, Siemens is presenting technologies and solutions that focus on efficiency and productivity.

Sustainable solutions for energy efficiency

In the area of drive technology, a number of innovations have been introduced that offer more performance while consuming less energy. For example, the new Simogear geared motors with a torque spectrum expanded by helical geared motors, offset geared motors, and bevel gear motors in the sizes 109 and 129 up to 5,000 Nm are now also available in the high efficiency class IE3.

In the Simotics portfolio, two new developments contribute to the reduction of energy costs and CO_2 emissions: in the case of the high-voltage motors Simotics HV, the series H-compact Plus has been innovated; in the low-voltage area, the Simotics XP explosion-protected motors of the 1MB10 series are available in efficiency classes IE2 and IE3. And with the Drive Technology DT-Configurator, users can select the optimal products for their application – also for fans, pumps, and compressors.

Cost-efficient production

However, not only energy-saving aspects count in production. Efficiency and productivity are just as important. Both can be increased over the long term by using the right systems. The Simatic S7-1500 controller family stands for highest efficiency and productivity in this process. It offers an especially high system performance and – due to integration into TIA Portal – maximum engineering efficiency. Through integrated safety hardware and software, the engineering framework has once again been supplemented by important elements.

Siemens offers machine manufacturers and plant operators more added value with new solutions for plant monitoring. Thanks to the new module for the Siplus CMS2000 condition monitoring system with additional inputs for vibration sensors, plants can be monitored even more extensively than before. The Sinema Server network management system makes the fast diagnosis of faults in infrastructure networks possible. The Sitop UPS1600 uninterruptible DC power supply with intelligent battery management provides the user with comprehensive diagnostics and operating data. It also enables complete system integration in Totally Integrated Automation and convenient engineering in TIA Portal. ■

INFO

www.siemens.com/hannovermesse

TIA Portal/Simatic S7-1500

Safety and technology integrated

The Simatic S7-1500 controller stands for superior performance and productivity, and TIA Portal V12 for efficient engineering. Safety-related tasks and technological functions can be integrated seamlessly into the engineering framework, thanks to new hardware and software modules.

Superior performance and enhanced usability – this is how the Simatic S7-1500 controller can be characterized in brief. It sets new standards for productivity thanks to versatile innovations. With the F-series controllers (safety) and the integrated technology functions (motion control), the S7-1500 provides maximum engineering efficiency and is perfectly integrated into TIA Portal.

Safety Integrated

In addition to the seamless integration of drives, TIA Portal now also provides the user with integrated safety functionality. For this, the Simatic S7-1500 and the Simatic ET 200SP distributed I/O system are complemented by Safety Integrated on the hardware side. Both devices are certified in accordance with EN 61508 and approved for use in safety-oriented applications up to SIL 3 in accordance with IEC 62061 and PLe in accordance with ISO 13849. The Simatic S7-1500F can be connected to Profisafe devices via Profinet and Profibus. The proven coded processing, instead of a multiprocessor system, and an F-runtime group for self-sufficient prioritization also contribute to the integrated failure safety of the control, as well as password protection for the F-configuration and F-program. In addition to the features characteristic of the Simatic ET 200SP, such as an up to 50 % reduction in the module width and formation of load groups without power modules, the Simatic ET 200SP F also includes the fail-safe F-DI, F-DQ, and F-PM E modules. The safety-related switch-off is carried out by a standard DQ module without the use of an F-CPU via F-PM E. As no DIL switches for F-addresses are required in the system, project planning can be carried out via the software exclusively.

On the software side, V12 increases the performance of Step 7 Safety Advanced with versatile functions such as enhanced compilers, no-DIL switch support, simplified adjustment of F-monitoring time, simplified acceptance printouts, functional signatures, a new security concept for remote access on the S7-1500F, and self-sufficient

prioritization and timing settings. The operating concept is the same as for standard automation, giving the user an easy approach to safety engineering.

Technology Integrated

Challenging motion control tasks can now be performed with the Simatic S7-1500 without additional hardware and software components through the integrated technological functions. These functions are possible thanks to technology objects that are integrated as standard in every CPU:

- Speed-controlled axes and positioning axes with versatile referencing options (also with absolute value transducers) in TIA Portal
- Continuous controller and step controller with autotuning
- Integrated counter module for high-speed counting

PLCopen-standard-compliant function modules are used for programming. In addition, the Simatic S7-1500 provides for the flexible connection of analog and Profidrive-capable drives via Profinet, Profibus, or analog interfaces.

The recently integrated Startdrive package in TIA Portal significantly simplifies the parameterization of drives. A control panel and real-time trace are available for rapid and efficient commissioning and diagnostics.

Simatic S7-1500 highlights

- Excellent system performance for ultrashort reaction times and superior control quality
- Integrated technology functions for perfect drive integration via motion control functions and Profidrive
- Security Integrated for the protection of system and intellectual property
- Innovative design and easy handling for safe and user-friendly operation and commissioning
- Integrated system diagnostics for full transparency of the plant status
- Optimum integration into TIA Portal for maximum engineering efficiency – also with Safety Integrated
- Standard and fail-safe automation in one system

INFO

www.siemens.com/S7-1500
www.siemens.com/tia-portal

Sitop UPS1600 DC UPS

High performance for PC- and PLC-based automation

The new 24-V Sitop UPS1600 DC UPS modules provide uninterrupted 10-A or 20-A rated output current from battery modules with 3.2 Ah or 7 Ah. The UPS1100 battery modules consist of maintenance-free lead-acid batteries and have an electronic system with temperature sensors so that the UPS1600 is able to recognize the battery type and load it gently with optimum temperature-controlled charging characteristics. The narrow DC UPS modules have a high overload capacity, and the high charging current provides for a fast return to buffer readiness.

The battery management monitors wire breaks, fuse trips, charge status, and service life. The alarms are carried out by means of signaling contacts or USB or Industrial Ethernet / Profinet interfaces. These interfaces enable open communication with PC- or PLC-based automation systems. Status diagnosis can be carried out via the Internet, thanks to an integrated web server. The DC UPS also provides comprehensive software support. It can therefore be easily configured and monitored in PC-based automation systems thanks to the Sitop UPS Manager. Furthermore, the DC UPS is completely integrated into TIA, which results in efficient engineering via TIA Portal, easy connection to S7 application programs via function blocks, and quick visualization on Simatic Panels and PCs with WinCC faceplates.

www.siemens.com/sitop-ups

New features

- Intelligent battery management with comprehensive diagnosis and battery-saving charging technology
- Dynamic overload characteristics and high charging current
- Open communication via two Industrial Ethernet / Profinet ports
- Comprehensive system integration in TIA, S7, and WinCC

Simatic CP 1542-5

Integration into smaller Profibus networks

With the CP 1542-5 communication processor, the Simatic S7-1500 product range is extended by another Profibus module that can be used to integrate smaller Profibus networks into the control system. The Profibus CP 1542-5 makes it possible to connect Profibus devices to Simatic S7-1500 controls without a CPU providing a Profibus interface as well as to connect additional Profibus segments. The CP 1542-5 supports the Profibus DP master and Profibus DP slave functions in accordance with the international IEC 61158/61784 standard and S7 routing. Configuration is carried out with the Step 7 Professional engineering software in TIA Portal V12 SP1.

www.siemens.com/industrial-communication

New features

- Easy connection of up to 32 Profibus devices as DP slaves
- Separation of Profibus segments for separate automation tasks
- Takes over communication and thus relieves the Simatic S7-1500 CPU

Simatic CP 1543-1 function update

High performance and improved security

The CP 1543-1 communication processor enables the connection of the Simatic S7-1500 to an Industrial Ethernet network for the networking of controls and connection to higher-level control systems. Security functions are integrated: the CP 1543-1 provides a stateful inspection firewall for secure access to the Simatic S7-1500 station. Moreover, transmitted data can be encrypted and thus protected from interception or manipulation. To do so, the communication processor establishes VPN connections to the communication partner. Encryption is carried out via the standardized IPsec process, which is supported by all VPN-capable components in the Siemens Industrial Security concept. Project planning is carried out with Step 7 Professional in TIA Portal V12 SP1.

www.siemens.com/industrial-communication

New features

- Secure connection of Simatic S7-1500 to Industrial Ethernet via VPN
- Interception and manipulation protection through encrypted data transmission
- Secure e-mail transmission via SMTPS protocol

Simatic Top Connect

Optimized connection modules for Simatic S7-1500 / ET 200MP

The fully modular Simatic Top Connect connection enables the fast and secure wiring of input and output modules with the signals from the field. This modular connection consists of a Simatic S7-1500 front connector module, which the ready-to-use connection cables are plugged into, and connection modules for the other cable end.

Signal lines from the field are connected to these. Connection modules are now available that are perfectly adapted to the Simatic S7-1500 and ET 200MP from a design perspective. The cover with the new Simatic look serves as touch protection for the terminals and can be opened or removed for wiring. Thanks to their narrow design, the new modules need little space on the DIN rail. Available versions provide screw technology, either with

Simatic S7-300 Technology CPUs

Fit for Profinet with improved performance

With the Simatic S7-300 Technology CPUs, the modular controller series provides modular CPUs for typical motion control applications such as interconnected motion sequences of several axes. In the new generation of the CPU 315T-3PN/DP, CPU 317T-3PN/DP, and CPU 317TF-3PN/DP, these CPUs are additionally equipped with a Profinet interface and, thanks to innovative control hardware, they are even more powerful than ever before.

The Profinet interface for the control side, with an integrated two-port switch, is perfect for the connection of peripheral systems, HMIs, and PG. The CPU 317TF-3PN/DP now enables the use of fail-safe I/O devices via Profinet as well. The innovative control hardware increases performance, supports the protection of know-how with S7 Block Privacy, and offers a web server. The memory of the 21CPU 315T has been extended. The firmware version corresponds to that of the standard CPUs.

New features

- Easy integration into Profinet systems
- Higher data throughput compared to communications processor solution
- Use of Kinematics Simulation Center (KSC) without Industrial Ethernet communications processor
- Significantly enhanced control performance
- Easier transfer of projects with standard CPUs

www.siemens.com/S7-300

or without LED display, for digital and analog signals. Products are selected via the TIA Selection Tool – for every S7 I/O module, the matching products for system cabling are automatically presented and can be directly added to the order list.

www.siemens.com/simatic_tc

New features

- Detachable cover in S7-1500 design
- Device versions with screw terminals, with or without LED display
- Compact design saves space on the DIN rail

Simatic S7-1217C

Greater functionality for even more applications

The compact Simatic S7-1217C CPU with firmware version 4.0 expands the line of Simatic S7-1200 controllers in the higher performance range. In addition to the memory expansion to 125 Kb, the new firmware version 4.0 convinces with the integrated Profinet controller and iDevice functionality in the entire PLC spectrum.

The trace functionality enables application diagnosis and real-time debugging. Efficient recipe management is additionally implemented directly on the control, which makes recipe data available as .csv files. Enhanced access protection against unauthorized configuration modifications is guaranteed by Security Integrated. Up to four security levels and the granular assignment of security access levels are possible.

www.siemens.com/S7-1200

New features

- 2 Profinet ports as controller and iDevice
- 125 Kb user memory
- 85 ns bit performance
- 14 DI / 10 DO integrated, 4 of them DO as Line Driver IO with 1MHz
- 4 PTO for control of stepping motors
- 2 AI / 2 AQ integrated

Simatic IFP1900 MT

Intuitive gesture and multitouch operation

The new Simatic IFP1900 MT industrial monitor expands the product spectrum of fail-safe and durable Simatic industrial flat panels. The sturdy device for built-in installation is designed for around-the-clock operation, even where temperature, vibration, shock, and EMC requirements are stringent. The projected capacitive touch (PCT) technology of the IFP1900 MT enables efficient and fast operation. Through simple gestures with one finger or with up to five fingers simultaneously, it is possible, for example, to move or zoom image contents quickly and intuitively or to add hidden components. Existing applications with single-touch operation can still be used as well.

The 19" HD-ready wide-screen display has a resolution of 1366 x 768 pixels. The monitor on the front with protection type IP65 can be positioned up to 30 m from the industrial PC, using the display port or DVI-D interface, and is also suited for mounting in portrait orientation. A 24-V DC and 100- to 230-V AC power supply as well as two USB interfaces are integrated.

www.siemens.com/simatic-ifp

New features

- 19" industrial monitor with projected capacitive touch technology
- Suitable for industrial use with intuitive gesture and multitouch operation
- 100% antiglare glass front, scratchproof and chemical-resistant
- Automatic detection of spurious touching and operator actions
- Support via Simatic WinCC V7.2 visualization software and Microsoft operating systems Windows 7 and 8

Simatic HMI

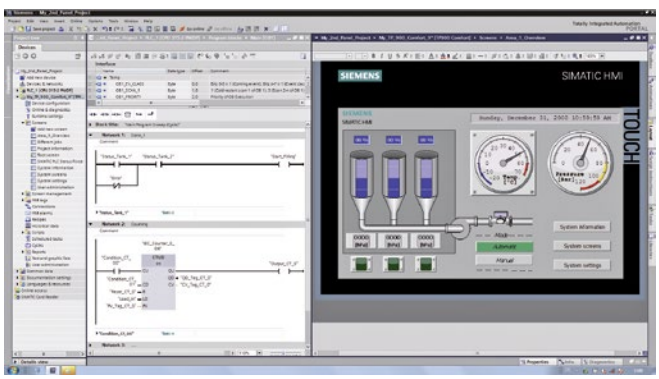
Consistent configuration in TIA Portal

With Simatic WinCC, all Simatic HMI controllers can now be consistently configured in TIA Portal. Simatic WinCC in TIA Portal gives users maximum configuration efficiency and consistent engineering – from basic and comfort panels all the way to PC-based multiuser systems. In addition to prefabricated objects, reusable images, and intelligent tools, the software also enables the realization of multilingual projects. Simatic WinCC in TIA Portal is available in different versions offering different price and performance levels.

www.siemens.com/simatic-wincc

New features

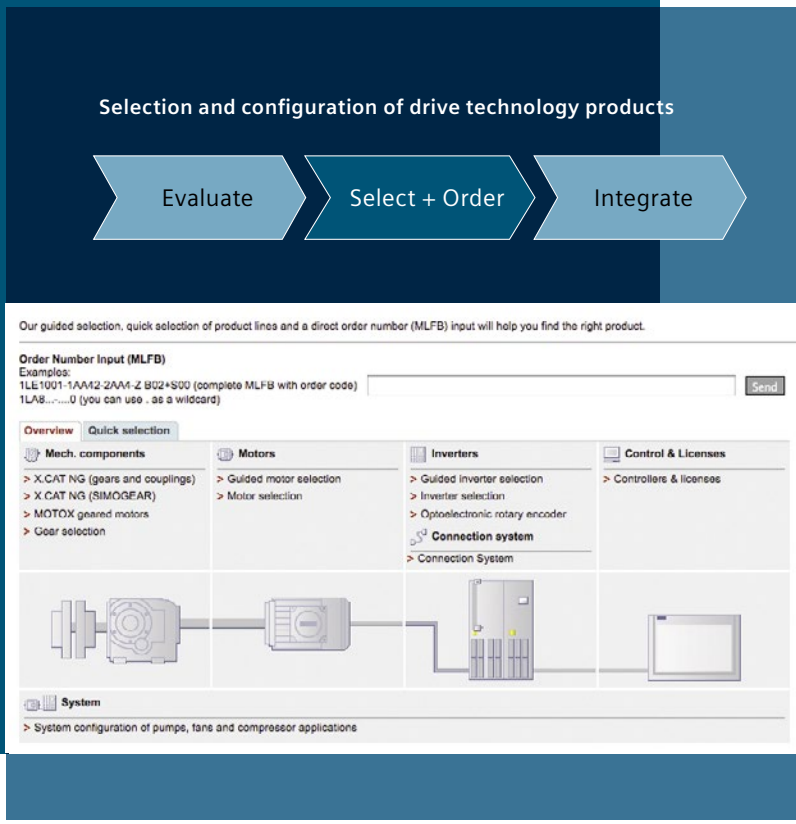
- Optimal interaction between controller and HMI
- Intuitive user interface with maximum user-friendliness
- Intelligent tools for efficient configuration
- Image editor for fast and efficient image configuration
- Object-oriented data storage with convenient search and change options



DT-Configurator

Efficient drive configuration

The Drive Technology DT-Configurator supports users in selecting the optimum products for their applications – from gearboxes, motors, and inverters to associated options to controls. The selection and configuration tool is integrated perfectly into the Siemens drive technology tool landscape.



Siemens provides various tools for the efficient engineering of motors and inverters that make evaluation, selection, ordering, and integration of products easier for users. Thus, for example, SinaSave detects savings potential, flexible drive engineering is carried out with Sizer Web Engineering or Sizer for Siemens Drives, and suitable products are selected with the DT-Configurator and then commissioned quickly and easily with Starter.

Intuitive operation

The DT-Configurator impresses with an intuitive, modern interface with graphical elements for userfriendly guidance and supports users during the configuration process with short descriptions and tool tips. Configuration is quick and easy, as users are guided through the tool step by step with the help of product group preselectors or via selection menu – from selecting and dimensioning products to providing documentation and even to ordering via Industry Mall. Alternatively, products can be selected directly by entering item numbers; multiple products can be selected and managed in one list. Even users with little product expertise find their way through quickly. Comprehensive documentation is available in downloadable formats such as PDF or RTF – from data sheets and operating instructions to 2-D drawings and 3-D models.

System configuration for pumps, fans, and compressors

Not only drive components can be selected quickly and easily by using the DT-Configurator. It also supports to configure systems for applications like pumps, fans and turbo compressors in the range starting from 1 kW up to 2.6 MW based on application specific parameters. The drive system configuration is the latest enhancement of DT-Configurator. ■

INFO

www.siemens.com/dt-configurator

CU230P-2 control unit for Sinamics G120 and Sinamics G120P

Profinet for efficiency and performance

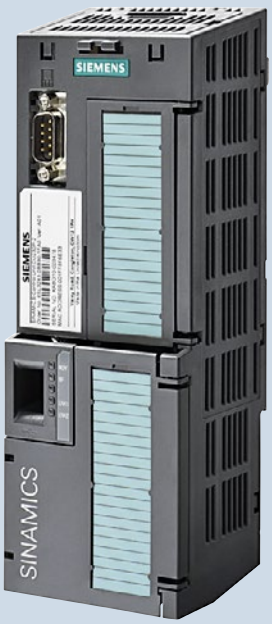
For even more flexible communication, Profinet was added to the CU230P-2 control unit. The control unit has been designed for drives with integrated technology functions for pump, fan, and compressor applications. It has an I/O interface, fieldbus interfaces, and additional software functions that provide optimal support for these applications.

The CU230P-2 control unit controls and monitors the power module and the connected motors in several selectable control types. It supports communication with a local or central control as well as the monitoring equipment and enables the connection of all process-relevant auxiliary units. Thanks to the new, integrated Profinet communication version, advanced communication functions such as neighborhood detection (LLDP), ring structure (MRP, MRPD), real-time capability through transmission of the IRT protocol, Profienergy, and shared device are supported.

www.siemens.com/sinamics-g120

New features

- Profinet communication
- Fast communication with innovative functions
- Simple replacement in case of faults
- Diagnostic capability and energy management



CU250S-2 control unit for Sinamics G120

Positionable version for Sinamics G120

The Sinamics CU250S-2 control units supplement the existing control units of the Sinamics G120 through the functional support of vector control with sensor evaluation. The control units support operation of single-axis applications with asynchronous motors as well as applications with simple positioning tasks or high I/O volumes. The new control unit rounds off the Sinamics G120 product portfolio toward the top of the range and replaces the CU240S control unit with sensor interface. The CU250S-2 control units can be freely combined with almost all power modules and support all applications of the Sinamics G120 addressed to date.

Moreover, STO (Safe Torque Off), SBC (Safe Brake Control), and SS1 (Safe Stop 1) are already integrated into all CU250S-2 control unit versions, enabling the realization of applications with simple safety requirements with standard delivery. Extended safety functions can be activated with every CU250S-2 via an optional software license.

www.siemens.com/sinamics-g120

New features

- Support for vector control with and without sensors with asynchronous motors
- Easy positioning in vector mode
- Large I/O volume available (up to 18 DI/DO, 2 AI, 2 AO) as well as various encoder interfaces
- STO, SBC, and SS1 safety functions integrated as standard
- Easy functional extension via licenses (Safety, Easy Positioner [Epos])
- Support for the modular concept of the Sinamics G120 – any control unit can be combined with almost any power module

Sinamics V20

Voltage range expanded downward

The Sinamics V20 frequency inverter is now also available for single-phase mains operation in the voltage range between 200 and 240 V. Until now, it was only possible to use the compact drive on three-phase grids between 380 and 480 V. With the extension of the voltage range downward, the inverter is now also usable for additional applications in environments with a single-phase mains connection as well as applications with less output, starting from 0.12 kW.

The compact and sturdy single-axis drive is characterized by short commissioning times, cost-effectiveness, and easy operation. The Sinamics V20 is available in four sizes and covers an output range of 0.12 to 15 kW. It can be used around the world for operating pumps, fans, compressors, and conveyors, as well as for simple drive tasks in the process and manufacturing industries.

www.siemens.com/sinamics-v20

New features

- Single-phase mains connection between 200 and 240 V
- Extension of use for applications with less output

Sinamics G180

Strong drive for the chemical, oil, gas, and process industries

The Sinamics G180 is a specific drive solution for the chemical, oil, gas, and process industries. During the further development of the Loher Dynavert-T frequency inverter, the user-friendliness and commissioning in particular were optimized, allowing the drive to be integrated into the Sizer and DT-Configurator design tools. This makes it quick and convenient to configure, and it fits seamlessly into the Sinamics system architecture. Due to its industry-specific features such as du/dt filters, line filters, and PTC evaluation for motors certified for hazardous areas, the efficient drive is also optimally suited for use with explosion-proof motors. Through the integrated du/dt filter, even motor cables with a length of up to 350 m can be controlled. Designed to comply with recommendation NE 37 of the NAMUR standard, the frequency inverter has a standard terminal strip for variable-speed drives. Because of the certified temperature monitoring in combination with the STO function, operation of the explosion-proof motor is possible without the otherwise customary external mains contactor. The evaluation takes place with the PTC temperature sensors built into the motor winding through sole protection. Optimized modulation patterns make full utilization of the motor voltage possible with little additional engine noise.

The variable-output inverter covers an output range between 2.2 kW and 6,600 kW on the 400-/500-/600-V voltage levels. It is suitable for use in pumps, fans, and compressors, but also for extraction applications as well as for mixers and extruders in the chemical, oil, gas, and process industries.

www.siemens.com/sinamics

New features

- Further development of the Dynavert-T inverter with improved user-friendliness
- Especially suitable for operation with explosion-proof motors

Simotics M-1PH8 main motors

Even more application options

The Simotics M-1PH8 main motor can be used even more flexibly with the Sinamics S and Sinamics G drive systems. With the Sinamics S it is possible to use the Simotics M-1PH8 for high-performance applications. The Sinamics G further extends the field of applications in asynchronous models. For example, mixers, extruders, or applications with low dynamic requirements can now be operated even more economically with Sinamics G drives. The configuration of the Simotics M-1PH8 main motor with the Sinamics S or G drive systems is optimally supported by the Sizer tool.

www.siemens.com/main-motors

New features

- Compact machine design thanks to high power density
- Increased speed range compared to standard asynchronous machines (speeds of up to 20,000 rpm)
- Different cooling systems, making the motor especially flexible and adaptable

Simotics M-1PH8 main motors

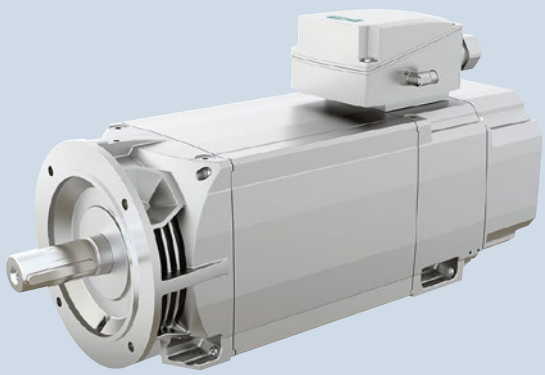
Optional stopping brake

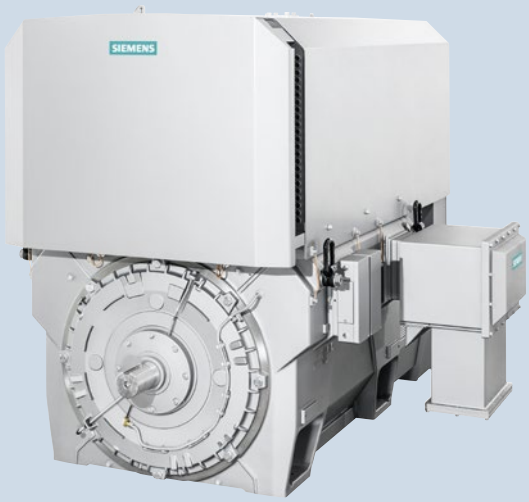
Many drives require a stopping brake for process- or safety-related reasons. It is possible to add a brake to the Simotics M-1PH8 motors with shaft heights of 80, 100, 132, 160, 180, and 225 mm on the drive end of the motor. The brake operates according to the closed-circuit principle, meaning that the spring-actuated brake brakes and stops the drive even when currentless. In case of a power failure or emergency stop, the drive is decelerated from its current speed to a standstill. In these cases, about 2,000 braking processes are possible with maximum switching energy. If required, the braking effect can also be canceled during standstill through an additionally installed manual release.

www.siemens.com/main-motors

New features

- Designed for motors with shaft heights of 80, 100, 132, 160, 180, and 225 mm
- About 2,000 braking processes possible with maximum switching energy in case of power failure or emergency stop
- Cancellation of the braking effect during standstill through a manual release





Simotics HV series H-compact Plus

Second-generation efficiency

The second generation of the Simotics HV series H-compact Plus for applications with high output is now available. The energy-efficient high-voltage AC motors are low-maintenance and reliable across their entire lifecycle. They offer a large selection of configuration options, which makes it easier to adapt the motor to the user's output requirements with regard to fixed or variable speeds. The new cooling design of the two-pole and four-pole motors results in less engine noise.

The environmentally friendly motors are up to 98% recyclable and are suitable for direct mains operation as well as for operation on low-voltage and medium-voltage converters. The output of the second H-compact Plus generation ranges from 900 kW to 4,000 kW, while motors of the first generation continue to reach outputs of up to 11,700 kW. The new motors can also be ordered in explosion-protected versions and are available in shaft heights of 450, 500, and 560 mm. In this process, the compact design of the space-saving motors has been further optimized from a technical point of view. The motors are equipped with the Siemens Micalastic insulation system in VPI technology, are produced in Europe, and meet even the strictest industrial standards specified by IEC, ANEMA, and API.

www.siemens.com/simotics

New features

- New cooling system for the newly developed two-pole and four-pole motors
- Low noise generation and smaller energy losses
- Available in shaft heights of 450, 500, and 560 mm

Simotics XP 1MB10 series

Explosion-protected and energy-efficient

The range of Simotics XP explosion-protected motors has been extended with the 1MB10 series, which is now also available in efficiency class IE3. The 1MB10 motors are designed for use in pumps, fans, and compressors and meet all the requirements for potentially explosive environments. They are available in the versions "Dust explosion protection" (Ex t) and "Non-sparking" (Ex nA) and are usually used in zones 21/22 (dust) and 2 (gas, steam, fog). These zone classifications correspond to explosion protection directive 94/9/EC (ATEX 95) for devices and protective systems intended for use in potentially explosive areas.

With the 1MB10 motors, Siemens offers a modified version of the standard motors of the 1LE10 series.

In addition to efficiency class IE1 (standard efficiency), they are available in IE2 (high efficiency) and IE3 (premium efficiency). The motors in efficiency class IE2 and IE3 in particular help reduce energy costs and CO_2 emissions. The 1MB10 motors cover an output range between 0.75 and 18.5 kW and are available in shaft heights from 100 to 160 mm.

www.siemens.com/simotics-xp

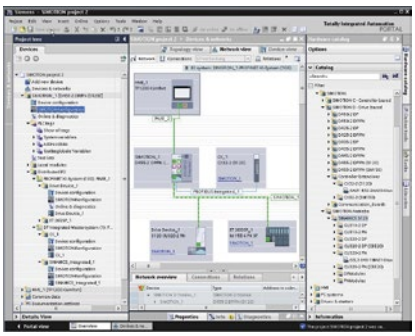
New features

- Reduction in operating costs through energy-efficient operation with IE2 and IE3 motors
- Same design as the 1LE10 standard motors
- Low weight due to aluminum housing
- Optimally suited for use in pumps, fans, and compressors

Simotion in TIA Portal

More efficient engineering of motion control tasks

With the integration of Simotion into TIA Portal, engineering motion control tasks becomes even more intuitive and thus easier and more efficient. In the future version 12.5 of the engineering framework, all the functionalities of Simotion V4.4 can be used with all the options of TIA Portal. This way, Simotion users can also use the latest hardware and software components. At the same time, the Simotion Scout engineering system is being further developed, which will allow existing Simotion applications to be ported into TIA Portal and used there.



New features

- Integration of Simotion into TIA Portal
- Simple and efficient engineering
- Reuse of existing Simotion applications
- Use of TIA Portal features and hardware

The developers changed the hardware and network configurations to the simplified mechanisms of TIA Portal and combined them into one consistent editor. Both project data storage and project management have been standardized and combined for all components. The proven editors and wizards for parameterization, as well as all the relevant programming languages, test tools, and diagnostic tools, were intentionally retained.

Users specify during installation whether they want to use Scout on the Simatic Manager platform and/or TIA Portal.

www.siemens.com/simotion

Simotion TMC

High-speed modules with Profinet IO

With Simotion TMC (Terminal Module Compact), digital I/O modules are available that are optimized for motion control applications with Simotion. These modules are characterized by an extended range of functions and services, space-saving construction, and high performance.

The modules with a width of 75 mm offer two Profinet IO connections with real-time functionality (IRT) for connecting to the Simotion control or for adding more Profinet components to the network, as well as more than 80 channels for digital inputs and outputs. In order to guarantee the optimal efficiency of the digital inputs and outputs for motion control applications, the modules ensure real-time behavior and very short signal transmission times, as well as meeting stringent requirements regarding the reproducibility of signal capturing and signal output. There are two versions available for the flexible wiring of the digital inputs and outputs: the TMC108 PN, which guides the signal leads directly to the terminals of the module, and the TMC1180 PN, which enables the terminal strip to be relocated to a separate terminal module.

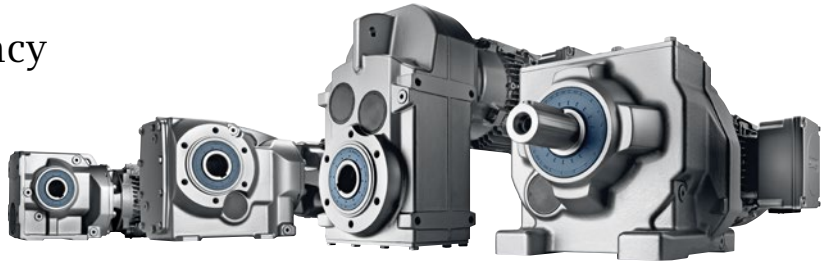
www.siemens.com/simotion

New features

- Space savings in the control cabinet thanks to the compact drive design; suitable for Sinamics S120
- Simple configuration and integration through connection via Profinet IO
- High volume of fast, precise I/O devices synchronized with motion control
- Time savings thanks to cable installation through offset wiring modules

Simogear geared motors

More power, more efficiency



The torque spectrum of the Simogear geared motors has been expanded with new helical geared motors, offset geared motors, and bevel gear motors in frame sizes 109 and 129 up to 5,000 Nm. The entire motor series is therefore also available now with a higher output range, between 0.9 kW and 30 kW. The Simogear gear units will also be available with ATEX 94/9/EG certification for zones 1/2 (gas) and 21/22 (dust) for use in potentially explosive environments.

The entire geared motor series can also be delivered in the IE3 efficiency class along with the IE2 version. Together with Simogear high-efficiency geared motors, this results in an optimal efficiency level both on the motor side and on the gear unit side. The motor shaft height of the standard sizes remains the same, making the entire transmission ratio available to the user with efficiency class IE3.

Thanks to their plug-in pinion system, the Simogear geared motors offer a high efficiency level. In certain cases, it is thus possible to operate in a lower gear. This results in higher efficiency, as the efficiency level usually decreases by 2% for every additional gear.

www.siemens.com/simogear

New features

- Helical geared motors, offset geared motors, and bevel gear motors in sizes 109 and 129 up to 5,000 Nm
- Output range between 0.9 kW and 30 kW
- High energy efficiency class IE3 for the entire Simogear motor series

Arpex turbo couplings

Light weight, increased torque capacity

Siemens is presenting new Arpex all-steel turbo couplings with improved performance characteristics at Hannover Messe 2013. Arpex turbo couplings are used above all in gas and steam turbines, generators, compressors, and pumps for high-speed applications in the energy-generation industry, oil and gas industries, and petrochemical and chemical industries. The couplings can be used in explosive environments in accordance with directive 94/9/EC and fulfill the requirements of the API 671/ISO 10441 standard. The application range of the couplings is between -40°C and +280°C. Optionally, the couplings can be modified for operation in other temperature ranges.

The Arpex turbo couplings of the ART and ARE series transfer the torque through a patented cone connection and plate packs in versions with 6, 8, or 10 corners in a torque range between 1,000 Nm and 588,500 Nm with a maximally permissible angular misalignment between 0.16° and 0.35°. The high-quality material and the compact design make high peripheral speeds and high torque possible with little weight.

www.siemens.com/arpexart

New features

- Compact, lightweight design
- Design optimized for the center of gravity through improved component geometry
- Can be used in explosive environments in accordance with 94/9/EC

Simatic RF620R/RF630R

Expanded filtering and diagnostics functions

With the new firmware version 2.5, the Simatic RF620R and RF630R UHF RFID readers have new functions for diagnosing readers and filtering transponders based on their EPC ID. In addition to the previous information, the readers now also deliver data on, for example, why a transponder was not captured. This status information can be logged in the PLC program in a ring buffer, making it possible to determine the cause of sporadic reading errors even after the fact. For example, the reader indicates whether the transponder was recognized via radio but was filtered out by the software algorithms. The actually required transmission power for reading a transponder is also supplied, thus creating a basis for optimization.

www.siemens.com/ident/rfid

New features

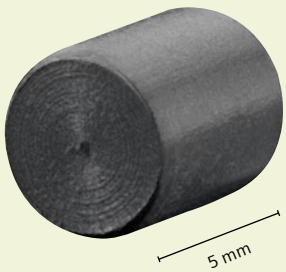
- Easy commissioning and maintenance of the readers through filter diagnostics in Step 7
- Fast on-site diagnostics and troubleshooting through extended LED displays directly on the reader
- Expanded online diagnostics through Simatic commands for better evaluation of the performance quality of a reader
- EPC data filters for automatically filtering out transponders not necessary for operation

MDS D117 transponder

Especially small and glueable to metal

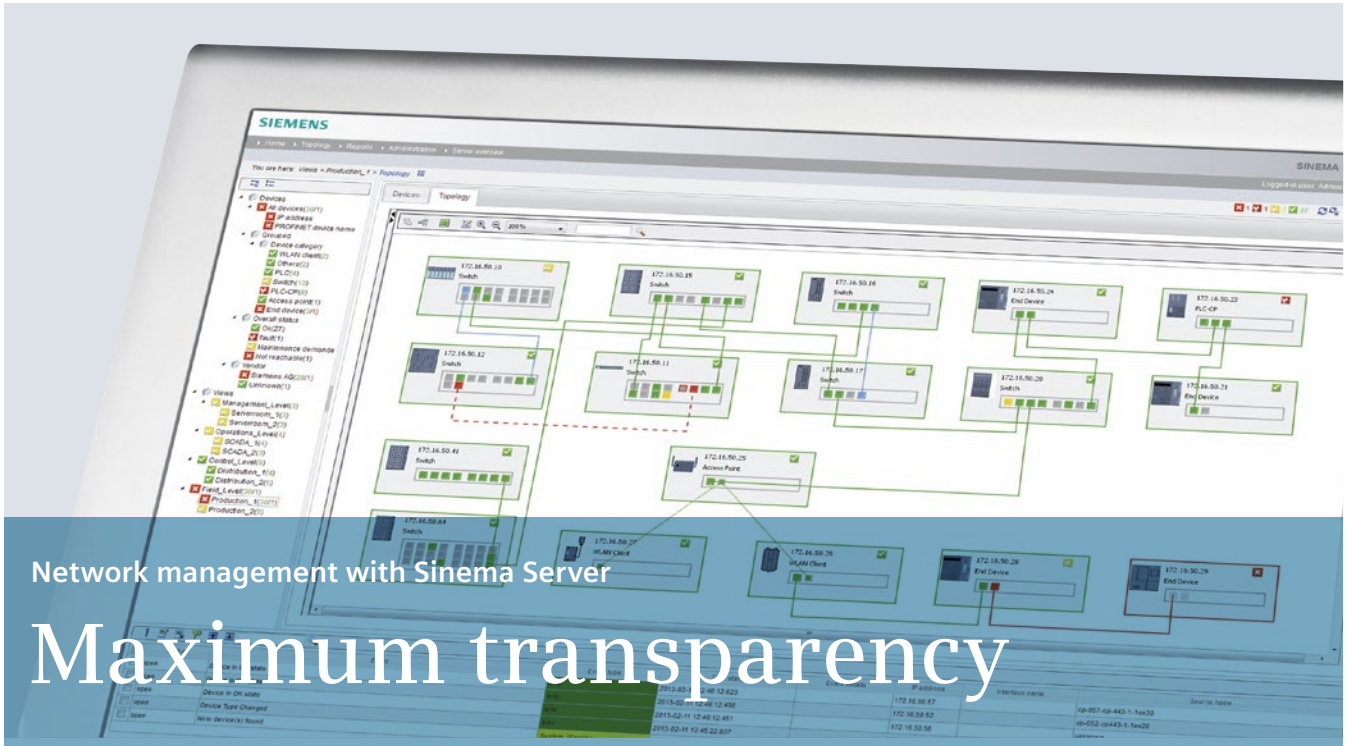
The new MDS D117 transponder now expands the ISO 15693–compliant transponder portfolio with an especially small version (4 × 5 mm) with a high degree of protection (up to IP67/IPx9K). It is thus suitable for tool identification or use in small workpiece carriers. With a temperature range of –25 °C to 100 °C, the transponder with 112-byte EEPROM storage can also be used at elevated temperatures. The frequency is 13.56 MHz and the reading/writing distance up to 5 mm. The plastic enclosure can be glued flush into metal. This protects the transponder from mechanical impacts in harsh industrial settings. Siemens' broad range of ISO 15693–compliant transponders can be used with the Simatic RF300 system in ISO mode and the especially compact Simatic RF200 RFID system. As important control elements of logistics chains and production processes, the electronic labels and data carriers are as diverse as their applications and the prevailing circumstances.

www.siemens.com/ident/rfid



New features

- For the direct identification of metal workpiece carriers, small workpieces, or containers
- Very small, compact design
- High degree of protection (IP67/IPx9K)
- Suitable for elevated temperatures (up to 100 °C)
- Can be glued flush into metal
- Can be used with the Simatic RF200 and RF300 HF systems



Network management with Sinema Server

Maximum transparency

Network outages in an industrial enterprise not only prevent the plant operators' access to field equipment; in many cases, the field devices are also no longer able to communicate with each other, which in the worst case can result in production downtimes. With the Sinema Server network management system specifically developed for industry, problems can be detected and corrected at an early stage.

The number of Industrial Ethernet or Profinet-based devices in production networks as well as in infrastructure networks is constantly increasing, and with it the necessity to use a network management system that detects errors early on.

Diagnostics and reporting included

Sinema Server has been developed specifically for industrial applications and ensures the highest transparency in an industrial network, with its automated topology detection, continuous network monitoring, and comprehensive diagnostic and reporting functions. The integration of the network diagnostics in HMI/SCADA systems such as WinCC, but also in external systems, can be realized without great effort. In addition, Sinema Server offers the complete integration of the topology into the HMI/SCADA system via web browser. Warnings and error messages can be transmitted through the integrated OPC interface.

Guaranteed consistency

Based on the continuous expansion of Profinet and Industrial Ethernet–based devices, Siemens offers integrated network management with Sinema Server in the context of Totally Integrated Automation and Totally Integrated Power – from the automation system to the network components to the field level, including the drive technology and even the power supply. Sinema Server also enables the highest degree of openness toward Industrial Ethernet–based devices of other manufacturers, which can be easily and conveniently identified and diagnosed via SNMP, meaning that Sinema Server can also be used in infrastructure networks, for example, in transportation.

Monitoring of large networks possible

Thanks to the 500 nodes per license, Sinema Server enables the monitoring of large networks. If additional nodes are required, any number of additional Sinema Servers can be monitored through one central Sinema Server – for example, individual manufacturing cells can be centrally monitored from a single Sinema Server station. ■

INFO

www.siemens.com/sinema

Scalance key plug W700 iFeatures

Real-time transmission for IWLAN

Using one of the new key plugs, the Scalance W product line can be equipped for continuous real-time transmission via IWLAN in accordance with the IEEE 802.11n standard. The key plug is available in two versions: Key Plug W780 iFeatures for Scalance W access points and Key Plug W740 iFeatures for Scalance W client modules.

The key plug can be used to activate so-called iFeatures. These additional functions designed specifically for industrial use supply the deterministic data communication necessary for real-time communication. With the activated iPCF (industrial Point Coordination Function), minimum cycle times of 16 ms are possible using Profinet IO. It is even possible to trigger a Profisafe emergency stop command using IWLAN. This enables data communication via IWLAN to be used in critical areas, for example, in passenger transport, but also in areas where laying cables requires a great deal of effort or money, or where cables are subject to quick wear. Configuration data can be stored using the key plug, making it possible to quickly replace a device in case of failure without needing to plug in a PC or PG. The requirements regarding real-time transmission via IWLAN that are important for industrial applications can be retrofitted specifically via iPCF.

www.siemens.com/plugs

New features

- Real-time transmission via IWLAN (e.g., with Profinet IO)
- Reliable wireless connection in accordance with the IEEE 802.11n standard
- Faster and easier device replacement without reconfiguration of the replacement item (C-plug functionality)
- Minimization of downtime in the event of fault

Scalance W788-M12 EEC

Wireless communication for rail traffic

The new IWLAN access points and client modules of the Scalance W788-M12 series have now also been designed for use in demanding environments, especially in transportation. The devices comply with all relevant parts of the EN 50155 permit for railway applications, making it possible to use wireless communication networks in rail traffic. Thanks to the sturdy casing material and IP65 class of protection, the modules are especially suited for harsh ambient conditions (humidity, dirt, shocks, and vibration). Due to the additional coating on the PCB and the electronic components (conformal coating), the products have increased protection against condensation. This makes them less susceptible to failure and enables higher availability of the plant network.

When external antennas are connected via N-Connect antenna connections (female), the Scalance W products are able to create a reliable IWLAN wireless infrastructure outdoors. Combined with the antennas approved for the rail environment, this system enables the realization of a reliable wireless network for this and other fields of application. Antennas are available for IWLAN solutions both in rolling stock and trackside.

www.siemens.com/iwlan

New features

- Rail certification according to EN 50155
- PCBs coated to protect against condensation, dirt, shocks, and vibration (conformal coating)
- Especially rugged due to IP65 type of protection
- Also available as a controller variant

Scalance XC100-4OBR

"Mechanical" redundancy in the network

The new Scalance XC100-4OBR optical bypass relay (OBR) enables Industrial Ethernet network users to be switched on and off smoothly in both line and ring structures without interrupting communication to other users in the network. Above all, this makes maintenance work easier – for example, in offshore wind parks or in chemical plants – when individual users must be switched off.

If the voltage of the Scalance XC100-4OBR bypass relay and the relevant active network components is switched off, the OBR connects the two network interfaces with each other within 10 ms. This is possible even in ring structures without activating the redundancy manager. The connection to the switched-off network component is thereby bridged and the OBR forms the contact to adjacent components or additional Scalance XC100-4OBR devices in a voltage-free state. If the voltage of the active components and the Scalance XC100-4OBR is switched on again, the two network interfaces remain connected until the network component behind them is ready for use and the connection to the adjacent devices is reestablished. The network interfaces are only then switched through to the terminal equipment interface of the relay.

The Scalance XC100-4OBR is available as a multimode version with TAP function for ring structures, as a single-mode version with TAP function for ring structures, and as a single-mode version with reduced damping for line structures.

New features

- For harsh industrial environments with an extended temperature range (-40°C to +70°C) and coated PCBs (conformal coating)
- For extended networks with fiber-optic connections (multimode and single-mode)
- Connection delay and voltage range configurable via the SET push button on the device
- Function check by means of a digital input contact

www.siemens.com/x-100

Simatic CP 443-1 RNA

Seamless data transmission for Simatic S7-400

With the CP 443-1 RNA (Redundant Network Access) communications processor, Siemens expands its Industrial Ethernet portfolio to include a communications processor for the Simatic S7-400 with high-availability redundancy. The redundancy method used is the Parallel Redundancy Protocol (PRP) based on the IEC 62439-3 standard. The communications processor has been designed for all applications and industries in which fault-related time delays in communications must not occur, as in process plants or in power generation and distribution, for example. Eliminating these delays significantly minimizes costly downtimes and reduces high restart costs and the loss of valuable data.

The CP 443-1 RNA duplicates the frame and feeds it into both connected networks. The access point at the receiving end – for example, a PC with Softnet IE RNA or a Scalance X204 RNA – forwards the first incoming frame to the recipient; the frame arriving later is discarded. Even if a fault occurs, the transmission of the frame is thus always ensured without delay. Open communication, S7 communication, and PG/OP communication are available as communications services. All functions of the communications processor are configured with Step 7 V5.5 SP2 plus the hardware support package.

New features

- Very high plant availability due to parallel data transmission using separate network structures
- No delays in frame delivery in case of failure of one of the two network structures
- Use in fail-safe and redundant Simatic S7-400 automation systems

www.siemens.com/rna

Profibus USB A2 PC adapter

Increased flexibility for diagnostics and commissioning

The Profibus USB A2 PC adapter, a USB adapter with a nine-pole D-sub socket, supplements the product spectrum of the Profibus PC modules for mobile devices such as notebooks. New capabilities were added to the already familiar range of functions of the Simatic USB PC adapter. The Profibus USB A2 PC adapter makes it possible to connect Simatic PG/PCs and PCs with a USB interface to the Simatic S7-200/300/400 and S7-1200/1500. It can be coupled both with the multipoint-capable MPI interface and with the Profibus interfaces of Simatic S7 systems. All Profibus baud rates up to 12 Mbaud are supported.

Thanks to the option to connect it to portable PCs, for example, for diagnostics and commissioning, the Profibus PC adapter offers the highest degree of portability and flexibility. Three LEDs, which allow the user to quickly identify different operating and signal states, are available for diagnostics. Installation and commissioning is done via easy plug and play. The adapter can be operated on a V1.1, V2.0, or V3.0 USB port. Also new is the power supply directly from the USB interface of the PC system. The adapter can be used starting from Windows XP SP2. Applications that have previously been used with the USB PC adapter can also be used with a USB A2 PC adapter without changes to the user software.

www.siemens.com/simatic-net

Ruggedcom RSG2488

Unique port density in harsh working environments

The new Ruggedcom RSG2488 switch is available for critical real-time control applications in Industrial Ethernet networks in the field of electrical power. The expandable high-density Layer 2 switch features a compact form factor (1U), a modular construction for vertical loading, and dual redundant smart power supplies. It is designed to operate reliably in harsh environments by providing a high level of immunity to electromagnetic interference and heavy electrical surges. The RSG2488 can be placed in almost any location thanks to its operating temperature range of –40 °C to +85 °C, hazardous location certification, optional conformal coating, and extruded aluminum enclosure.

The RSG2488 provides up to 28 ports that can be configured as 10/100/1000TX copper or 100FX or 1000SX fiber. The rugged, fanless hardware design combined with the proven Rugged Operating System (ROS) offers improved system reliability, advanced cyber security, and advanced networking features.

www.siemens.com/ruggedcom

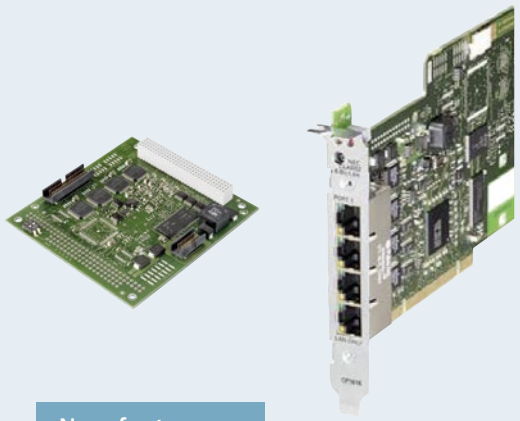
New features

- Mixture of up to 28 fiber-optic or copper Gigabit ports
- Simple and cost-effective in-field servicing and upgrading with further modules
- Meets IEC 61850 and IEEE 1613 standards

By acquiring the Canadian corporation RuggedCom Inc. in March 2012, Siemens has extended its portfolio of extremely robust network components for mission-critical Industrial Ethernet networks. The new Ruggedcom RSG2488 switch marks the launch of the Ruggedcom product line. Step-by-step all Ruggedcom products will be gradually offered under the new Ruggedcom product label with a slightly adapted housing design. The technical specifications, dimensions, certifications and functional features of the products, alongside the 5-year product warranty, will remain unaffected.

CP 1604 and CP 1616 communication processors

Fast data exchange and energy savings



The CP 1604 and CP 1616 communication processors for the connection of PC systems to Industrial Ethernet / Profinet IO offer high-performance support for control tasks on the PC. Due to their use of Profinet with IRT, the communications processors are especially suited for applications extending into hard isochronous control in the motion control area. An integrated four-port switch allows for cost-effective systems solutions and the design of different topologies.

Robot controllers frequently use IPCs, which require a significant amount of energy. With the CP 1604 communication processor, PC systems can be selectively powered down or transferred into standby mode during break periods to save energy. The communication processors are equipped with Profienergy functionality and remain operable via redundant power supply. They are thus able to reactivate the PC after an end-pause Profienergy command.

www.siemens.com/simatic-net

New features

- Fast isochronous data exchange capability with IRT
- Integrated four-port switch functionality and external power supply
- High-performance support of control tasks on the PC
- Easy realization of energy savings by intentionally switching off PC systems during break periods (with CP 1604)

Simatic AS-i F-Link

Safe connection between control system and field

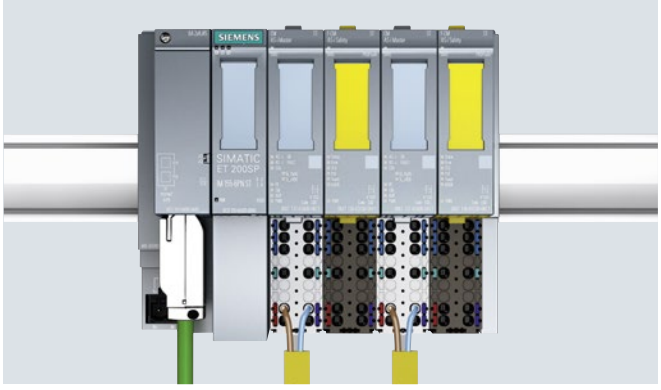
With Simatic AS-i F-Links, AS-i networks can be easily connected to safety controls via the Simatic ET 200SP. Simatic AS-i F-Links are available for one or several AS-i networks for both small plants and large, complex configurations. Via Profisafe, they can be safely integrated into higher-level safety configurations. Data exchange between Profisafe and the AS-i networks is transparent and possible in both directions. Moreover, by plugging in an AS-i safety module next to the AS-i master, it can be extended with ASIsafe without additional wiring.

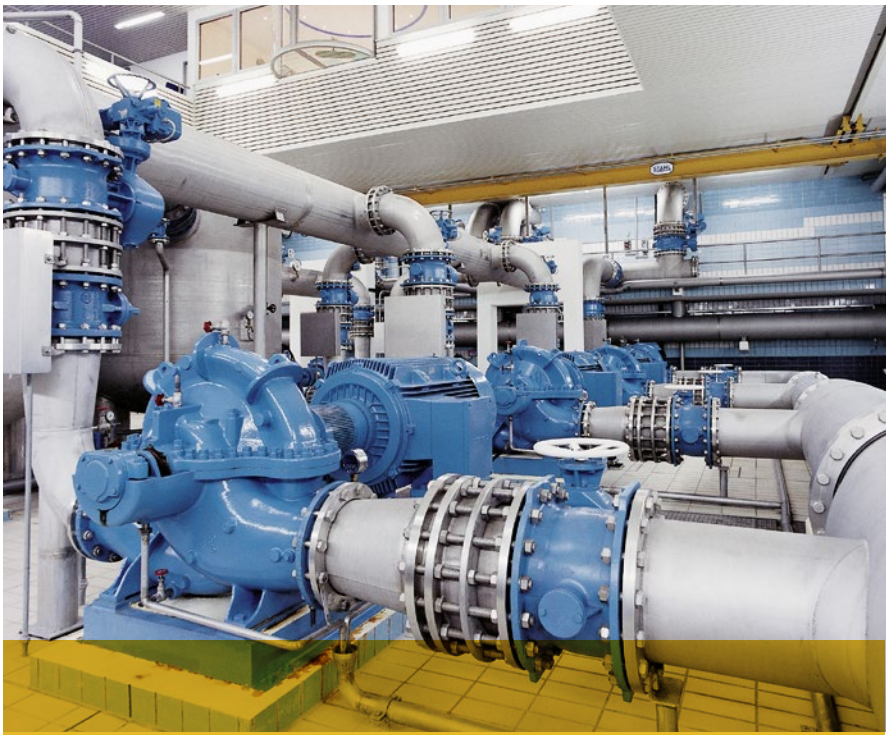
Configuration of AS-i networks is clearly arranged in TIA Portal via drag and drop – similar to Profinet and Profibus. The Simatic AS-i F-Links supply the status and diagnostic information of all the AS-i slaves of the connected AS-i networks. The diagnostics can be called up centrally in TIA Portal, at the control cabinet, or in the field via an HMI panel or web browser.

www.siemens.com/as-interface

New features

- Powerful Profisafe connection for safety-oriented AS-i networks
- Transparent exchange of standard and secure data in both directions
- Central configuration of standard and safety technology in TIA Portal
- Detailed diagnostic options via web browser, HMI, or TIA Portal





VIB-MUX module for Siplus CMS2000

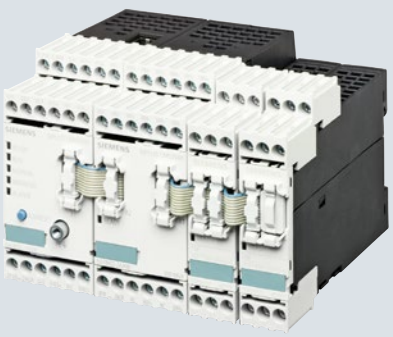
Monitor plants more comprehensively

With the new VIB-MUX module, the Siplus CMS2000 can be extended to a total of 16 connections for vibration sensors, enabling more comprehensive and cost-effective plant monitoring.

With the Siplus CMS condition monitoring systems, it is possible to continuously monitor the status of wear-prone components such as motors, pumps, bearings, and other critical process components. In addition to vibration data, the Siplus CMS2000 also captures speed as well as data from pressure and temperature sensors through additional inputs. From the continuous recording of the sensor data, operators can use trends to detect wear and imminent failures of their machines or plants. This way, maintenance work can be better planned as preventive maintenance and fit into the production cycle. Condition monitoring systems allow downtimes to be minimized and the availability and service life of the plant to be increased. In addition, high costs due to complete failure and consequent damage are avoided.

Module for vibration sensors

A new module expands the Siplus CMS2000 condition monitoring system with additional inputs for vibration sensors. The new VIB-MUX (Vibration Multiplexer) module is connected to an input of the condition monitoring system and offers eight interfaces for IEPE



(Integrated Electronics Piezo Electric) vibration sensors. Overall, the Siplus CMS2000 can be extended by two modules, that is, 16 connections for vibration sensors. The advantage for the user: plants and machines can be monitored more comprehensively than before, and the costs per channel and monitoring point are also reduced significantly.

INFO

www.siemens.com/siplus-cms

Sirius 3UG4625/3UG4825

Reliable detection of residual currents

The two relays Sirius 3UG4625 and Sirius 3UG4825 for IO-Link offer a new solution for monitoring residual currents in the range from 30 mA to 40 A. They detect residual currents resulting, for example, from faulty insulation on the terminals or lines due to moisture, contamination, or material aging in industrial plants and machines. The residual current monitoring relays have two separate outputs that can be assigned different limit values for a two-step alarm or a warning and subsequent shutdown. This way, the user can respond in time and avoid downtimes. The residual currents are measured by the also new Sirius 3UL23 differential current transformer, which monitors networks with phase currents of up to 630 A and is available in six different sizes. The measuring accuracy of the system is subject to only a slight deviation of ±7.5 %. Both the Sirius 3UG4625 and Sirius 3UG4825 for IO-Link are equipped with an LCD, making it easy for the user to assign parameters, display measured values, and diagnose faults directly on the device. The Sirius 3UG4825 with the IO-Link interface can also be connected to a higher-level control. The monitoring relay can be configured through the control system, or measured values and diagnostics data can be transmitted to higher-level monitoring applications via IO-Link.

www.siemens.com/relays

New features

- 3UL23 differential current transformer with an outlet opening of 35 mm to 210 mm
- Residual current monitoring from 30 mA to 40 A with every transducer
- High measuring accuracy of ± 7.5 %
- Determination of different limit values for alarms and shutdowns, resulting in higher plant availability

Siplus HCS3200

Compact heating control with a high degree of protection

The Siplus HCS3200 compact heating control guarantees very precise and exact control of heating elements wherever industrially manufactured products need to be heat treated – for example, in plastics processing or food packaging, as well as in the automotive and food and beverage industries.

Thanks to the high IP65 degree of protection, the Siplus HCS3200 can be used close to the heating elements, thus minimizing the need for cabling. Thanks to this protection and the compact design, the heating control is especially suited for the linear set-up of heating panels, for example, in order to heat PET preforms.

www.siemens.com/siplus-hcs

New features

- Fast, precise, and efficient control of industrial heating elements
- Can be used close to the heating elements due to IP65 degree of protection
- Easy wiring and commissioning
- Space-saving due to compact design
- Easy integration into existing automation systems, for example, Simatic or Simotion
- Fast error detection during commissioning through integrated diagnostic options

Systems and solutions: *advance*

advance product news is also included with its sister magazine, *advance*, which is issued four times a year. In this magazine you will find interesting application stories and detailed product presentations ranging from automation technology to sensor technology. Every issue features an in-depth treatment of a current topic, with news and service articles rounding off the contents to provide a fun and informative read.

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