

Introduction



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Introduction

Controls made easy: SIRIUS modular system

Overview

SIRIUS has long been synonymous world-wide with industrial controls, and was a trendsetter in this field from the very beginning.

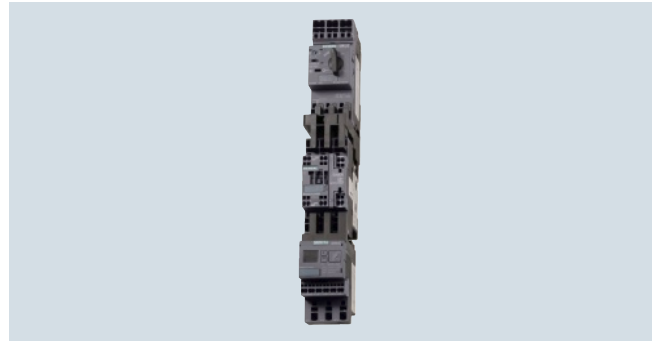
The SIRIUS modular system with its components for the switching, starting, protection and also monitoring of motors and industrial systems stands for the fast, flexible and space-saving design of control cabinets.

The consistent further development of SIRIUS takes even better account of current market requirements, particularly the call for fewer variants, greater flexibility and reduced cost and time. The advantages for you are: higher productivity and cost efficiency in your company.

More space in the control cabinet

The modular system packs powerful performance into its compact sizes:

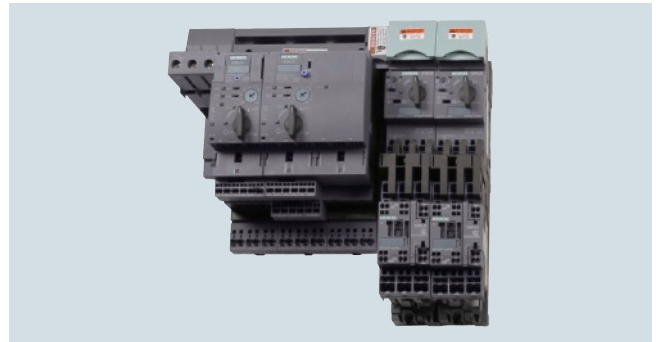
- Integrated monitoring relay in the motor feeder
- Application monitoring in the main circuit
- Integrated plug-in design combined with spring-type terminals



Achieve faster results with pre-configured components

Simply connect pre-configured components via the infeed system and save wiring outlay:

- Time-saving plug-in design for motor feeders
- Replacement of the compact starters and load feeders without disconnecting the main circuit wiring
- Reduce effort and downtimes
- Solutions for direct-on-line starters, reversing starters, contactor assemblies for wye-delta starting, soft starters and safe load feeders



Less wiring

The SIRIUS modular system is based on IO-Link:

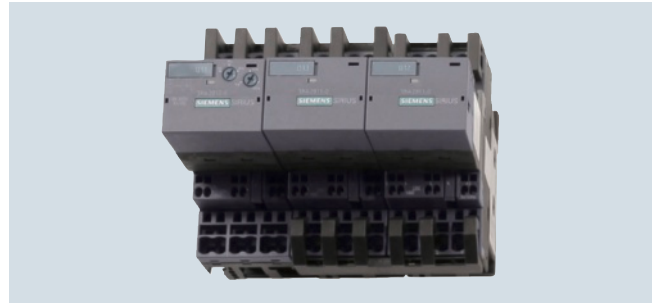
- Less wiring outlay for actuators
- Connection of up to four starters with one IO-Link connection saves space
- Full transparency right down to the field level
- Simple installation



Controls made easy:
SIRIUS modular system**Time savings with full functionality**

Select and order functions directly from the Siemens Industry Mall.

- Quick and easy product search
- Reliability and elimination of errors by means of pre-mounted elements
- Prefabricated function modules save engineering and time

**From old to new: The new conversion tool**

Every automation system becomes obsolete at some time. Replacing installed products used to involve significant time and costs. But now, with the new conversion tool, you'll find the right product more quickly – this allows you to conveniently switch to SIRIUS Innovations:

- A user-friendly interface enables intuitive searches.
- Simply enter the article number of the current device or descriptive text (e.g. *contactor*).
- The search result provides you with the article number of the desired device, including current data and information for using the new product.
- Order conveniently through the Industry Mall.

You can find more information under
www.siemens.com/sirius/conversion-tool.

Conversion Tool

Product search

Search criteria:

Manufacturer: Siemens Product no. / MLFB: 3RV117-1A EAN / UPC:

Containing description text: "contactor"

12 Product(s) were found.

Sel.	Manufacturer	Product no. / MLFB	Description	EAN / UPC
☐	Siemens	3RV117-1A	CONTACTOR BOOKLET FOR CONTACTOR SIZE 800 WITH CABLE CLAMP CONNECTION, MULTISUBSET PACKAGE (10PCS.)	4011209570004
☐	Siemens	3RV117-1AA00	CONTACTOR BOOKLET FOR CONTACTOR SIZE 800 WITH CABLE CLAMP CONNECTION, BRIGLEURITE PACKING	4011209570008

Introduction

Controls made easy: SIRIUS Planning Efficiency

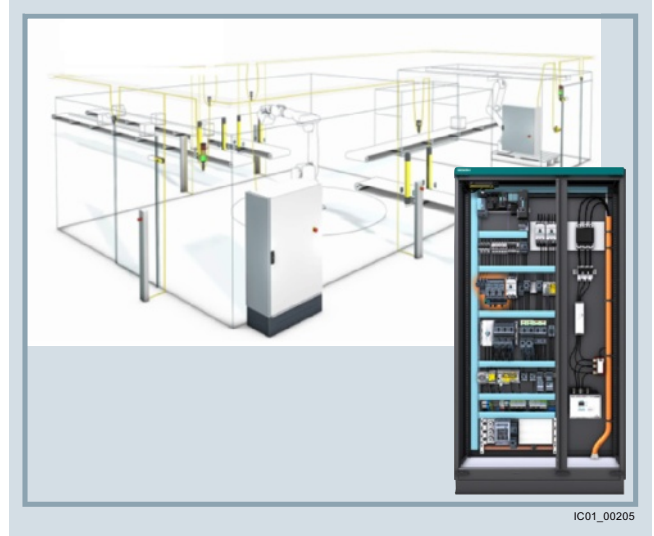
Overview

With Planning Efficiency, Siemens Industry has provided answers to typical questions that often come up in electrical planning:

- What is the right product for my application?
- Where can I find product data?
- How can I design processes in a more efficient and time-saving way?

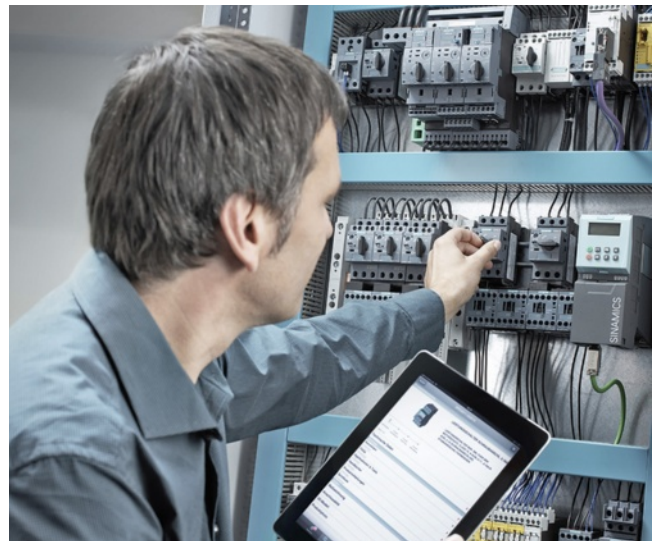
Planning Efficiency brings together the whole of Siemens Industry's electronic support. At each stage of the project, online functions make the everyday life of the planner easier through greater efficiency. At the same time, Planning Efficiency focuses on aspects such as optimization in the configuring of control cabinets.

In this early phase in electrical planning in particular, savings of up to 80 % can be made in time and costs.



In order to supply planners with everything they need and make modern electrical planning easier when configuring control cabinets, the electronic support provided by Planning Efficiency focuses on four advantages:

- Get to the right product faster with intuitive product selection
- Time savings of up to 80 % with universal product data for your CAE and CAD system
- User-friendly compilation of project-specific documentation
- Comprehensive support – anywhere, anytime



Process phases

In each process phase, Siemens Industry provides comprehensive and online functions free of charge. This enables you

access to all the information and product data you need worldwide and around the clock.



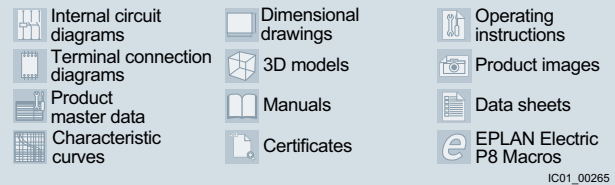
With the intuitive operation of the configurators, you can quickly and easily create individual feeders. The corresponding 3D models and dimensional drawings for the control cabinets are provided for this purpose.

Additional types of data for mechanical and electrical engineering can be directly called up via the CAx Download Manager. The universal CAx data types can be quickly and easily integrated into various CAE systems, e.g. E³.series, WSCAD, ELCAD, COMOS etc.

With only a few clicks, the standard-compliant plant documentation can be compiled individually in mySupport. Simply select the desired chapters from the existing manuals of the installed Siemens products. With this solution, quality goes up and workload comes down.

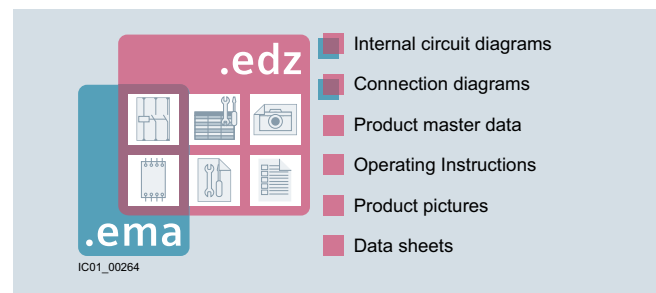


The 12 CAx data types in detail:



The benefits for EPLAN users

With the exchange format EPLAN Data Archived Zipped (.edz), the overall time required for integration can be reduced even further. With just a few clicks, the contained data types can be imported for any number of article numbers, and they remain linked. In this way, the installed Siemens products can be represented across different circuit diagram pages quickly and easily.



Without Planning Efficiency a lot of time used to be wasted in manual data transmission. Now you can concentrate on the essentials again.

All the information and product data you need are provided by Siemens Industry and are easily accessible. This makes configuring control cabinets more efficient and makes your everyday work easier.

For more information see www.siemens.com/planning-efficiency.

Planning Efficiency



Introduction

Controls made easy: SIRIUS configurators

Overview

For the SIRIUS product range, we offer a variety of configurators. These facilitate the selection of the right products and systems for your application.

Simply choose the desired characteristics and after a few clicks, the optimal solution will be presented to you.

The products can then be ordered conveniently through the Industry Mall.

You can find more information under www.siemens.com/sirius/configurators.

Detection/Signaling

SIRIUS 3SB3/3SF5 pushbuttons and indicator lights

- Individual control elements or complete enclosures can be assembled just the way you want them.
- All combinations of buttons, enclosures and switching elements can be selected individually.



SIRIUS 3SE5/3SF position switches

- Selection of basic switch, actuator head, as well as a matching actuator can be performed in just a few clicks.
- Individual elements can be mixed and matched and assembled to create your individual versions.



Evaluating

SIRIUS 3SK1 safety relays

- Fast and user-friendly creation of safety-related applications (e.g. EMERGENCY STOP and protective door monitoring)
- Simply enter the number of sensors or outputs and select any combination of accessories.
- Once the configuration is complete, you are presented with the article numbers along with technical data and 3D models corresponding to the products.

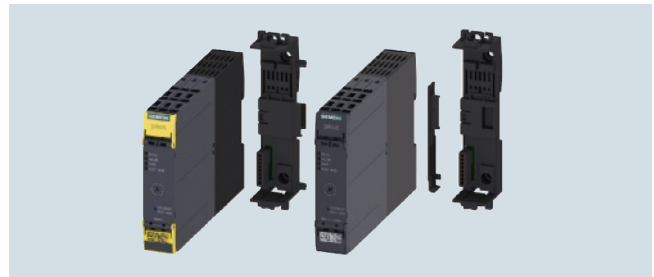


Switching/Protecting/StartingSIRIUS Innovations system configurator

- The easy way to find the right combination of motor starter protectors/circuit breakers, contactors and matching accessories
- Input of motor data and your desired features
- Once configuration is complete, you are presented with all the necessary product numbers along with technical data and 3D models corresponding to the products
- It also allows for more complex designs such as 3-phase busbar systems, along with complete infeed systems

SIRIUS 3RM1 motor starter

- Create individual motor starters or a complex motor starter group
- Individual selection options, such as direct or reversing starting, spring-type or screw terminals, as well as motor current and control voltage
- Graphic representation of the design during configuration
- Automatic calculation of the matching motor starter protector/circuit breaker (for group configuration)

SIRIUS 3RA6 compact starter and infeed system for 3RA6

- Simple usage – from individual compact starters or also with corresponding infeed system and AS-i connection
- In the final configuration, you will be presented with additional technical information such as CAD data and product data sheets as well as characteristic curves, operating instructions, manuals etc.

SIRIUS 3RW soft starters

- Easy and quick selection option of matching soft starters
- Note: For the proper dimensioning of the soft starter, you should use the Win-Soft starter tool. The link to the software is provided in the configurator.

SIRIUS 3RF solid-state switching devices

- Simple selection of individual solid-state switching devices by means of technical characteristics (e.g. zero-point switching, spring-type terminal and rated current)
- Once configuration is complete, you receive the article numbers corresponding to the products.



Introduction

Controls made easy: SIRIUS apps

Overview

Apps for SIRIUS Planning Efficiency

Online Support app

The Online Support app allows you to access over 300 000 documents on all Siemens Industry products, anywhere and any time. Whether you need help with implementing your project or with troubleshooting, or want to expand your plant or plan a new one, you now have around-the-clock access to FAQs, manuals, certificates, characteristic curves, sample applications and tools, product news and more.

The app is available free of charge from the Apple App Store and on Google Play (Android Market) using the search string: "Siemens Industry Online Support".

For more information see
www.siemens.com/sirius/support-app.

Industry Online
Support App



SIRIUS Innovations DVD - also available as a web app

Thanks to the modular design of SIRIUS Innovations, our products are particularly easy to plan for the control cabinet, install and monitor. All the advantages of SIRIUS Innovations are available offline in 9 languages with 3D animations, films and screen recordings of our planning and configuring tools. Ask your sales contact person about the SIRIUS Innovations DVD.

The SIRIUS Innovations DVD is now also available as a web app¹⁾ (Ge/En): www.siemens.com/sirius/dvd.

SIRIUS Innovations
WebApp



¹⁾ Optimized for use with a resolution of 1024 x 768 on iPads and tablet PCs.

Interactive control cabinet

The interactive control cabinet shows you a selected product overview, and provides you with useful information and technical data on the relevant components, thus allowing you to plan your control cabinet in advance, efficiently and easily. This saves precious time during project implementation.

Discover the interactive control cabinet¹⁾ at
www.siemens.com/sirius/cabinet.

Interactive control
cabinet

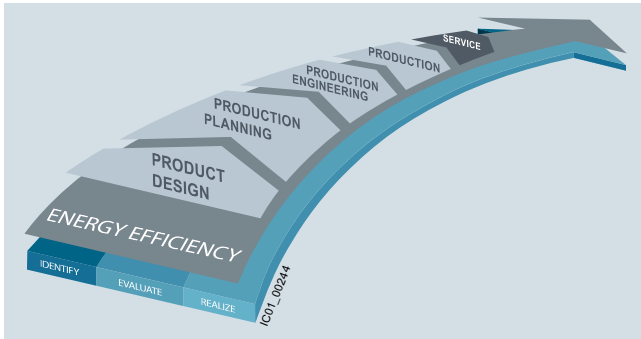


¹⁾ Now also available as an iPad app in the Apple App Store.

Energy-efficient controls: SIRIUS brings down energy costs

Overview

Energy management in industry



Overview of the energy management process

Whether you are a plant operator, planner or machine manufacturer: Energy-efficient production is a challenge and an opportunity in equal measure.

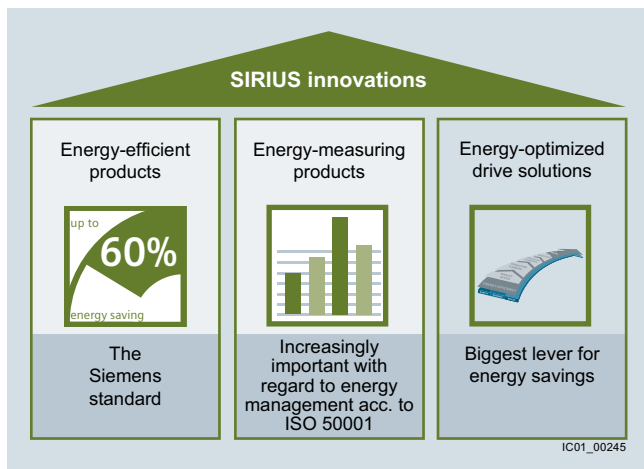
Energy-efficient production as a success factor

In order to harness energy potential, with our vast portfolio, we always maintain a clear view of the overall product development and production process. Because maximum energy efficiency in production can only be achieved through perfect interaction of all components.

That is why it is important to first create an awareness for existing energy-saving potential, recognize (identify) and assess (evaluate) opportunities for optimization through precise analysis. Finally, appropriate measures must be implemented (realized).

With our full-range portfolio of energy-efficient drive solutions, automation and services, you too will reach maximum energy efficiency, higher productivity and lasting competitiveness in your company.

Three columns of energy efficiency with innovative SIRIUS products



Energy-efficient products – SIRIUS reduces power loss



3RR2 monitoring relay, 3RB3 overload relay, 3RT2 contactor, 3RW soft starter, 3RV2 motor starter protector/circuit breaker and 3RA6 compact starter

SIRIUS Innovations controls are characterized by extremely low intrinsic power loss. This not only lowers energy costs, but also reduces the amount of waste heat in the control cabinet. This achieves higher packing density in the control cabinet and reduces the required cooling capacity in the control cabinet.

Energy-measuring products



SIMOCODE pro 3UF7 motor management and control device, 200D motor starter, ET 200S High-Feature motor starter/direct-on-line starter

Energy management can be instrumental in increasing plant productivity to bring about a significant improvement to the competitive ability of a company – in all industries.

Communication-capable SIRIUS switching and protection devices deliver measured energy data without any additional installation outlay.

Best drive solutions in terms of energy

In order to design processes for optimal energy efficiency, it is not enough to simply measure the energy flow and deploy energy-efficient products. The greatest lever for saving energy can be derived from closely examining the application:

With which load profile is the system being operated?

Example applications in the Internet:

www.siemens.com/sirius/energysaving → Applications

Industrial Communication:
SIRIUS for AS-Interface

Overview



AS-Interface

AS-Interface – the smart communication standard for universal connection of the field level to the control system

The AS-Interface (AS-i) – the Actuator-Sensor-Interface, to be more precise – is a smart bus system for the field level that connects all the sensors and actuators in the field to the higher-level control system more simply, flexibly and efficiently than any other.

The structure of a complex automation system is not always clear at first glance. The field level in particular, with its large numbers of devices with real-time requirements, needs a clear structure.

That is exactly what the AS-i fieldbus delivers: Via a simple two-wire cable – the yellow AS-i cable – in an AS-i network up to 62 bus nodes can be connected to the AS-i master and simultaneously supplied with power. The standard here is robust data transmission in a rugged environment with a high degree of protection for the AS-interface.

AS-i = simple!

- Only one cable for data and energy
- Time-saving assembly/installation
- Engineering in the TIA Portal
- User-friendly maintenance

AS-i = flexible!

- Flexible topologies
- Open standard
- Expandability
- Safety engineering

AS-i = efficient!

- User-friendly addressing
- Fast device replacement
- Ruggedness and stability
- Device and network diagnostics

IC01_00210

AS-i from Siemens has everything in its favor

- Complete AS-i product range for bus-based standard and safety technology from a single source
- Consistent integration of the Siemens AS-i devices into the SIMATIC programming and diagnostics concepts and into the TIA Portal engineering framework
- Integration of ASIsafe applications into SIMATIC safety programming (e. g. distributed safety)
- Planning, calculation and verification of the whole safety chain based on ASIsafe in the Safety Evaluation Tool (TÜV-approved)
- Integration of lower-level AS-i networks into the PCS 7 process control system
- Global spare parts logistics, consulting and service

Engineering in the Totally Integrated Automation Portal (TIA Portal)

The TIA Portal – as a key component of TIA – is an innovative engineering framework for all automation tasks. It combines control programming and configuration of visualization, and integrates the parameterization of operating mechanisms and networks, together with the programming of fail-safe applications.

The TIA Portal is particularly intuitive to operate. For example, configuring is easy using drag & drop from the hardware catalog, and you get realistic displays of all network nodes and components down to actuator/sensor level.

In addition, the engineering framework allows you to get started quickly in safety programming by means of a library with certified safety functions.

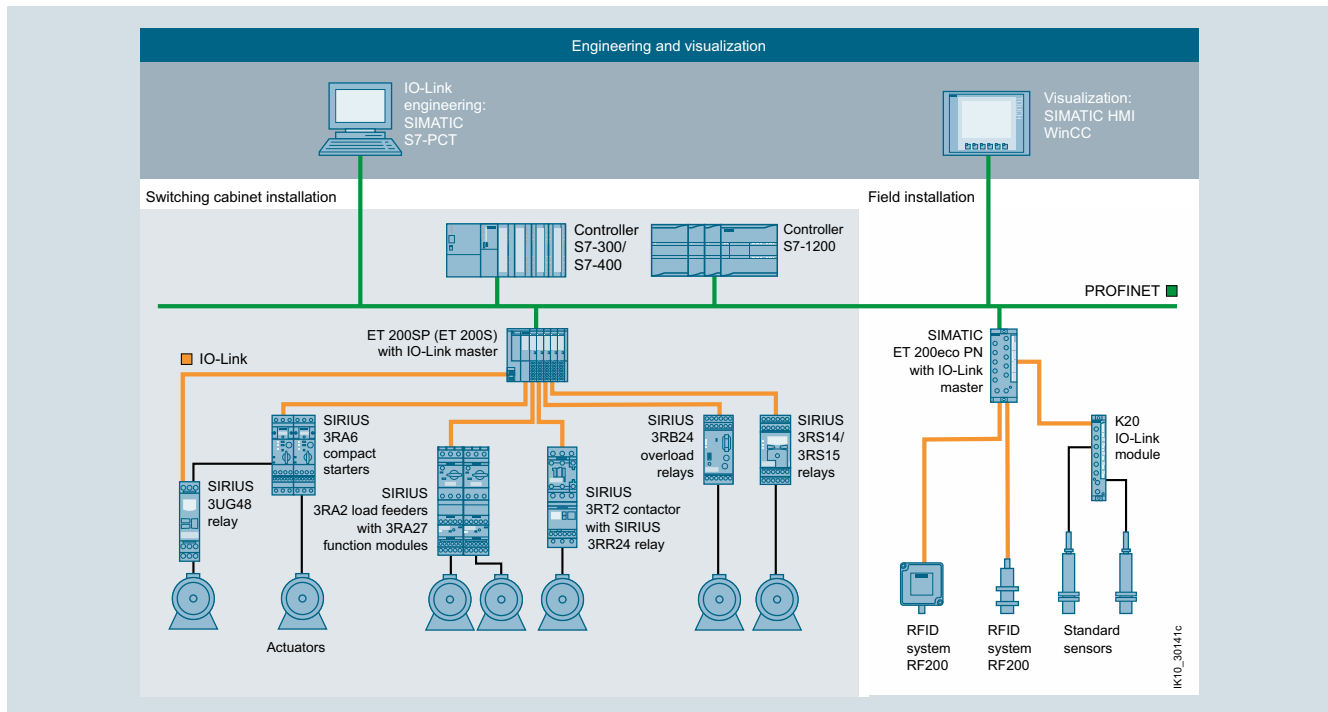
Device and network diagnostics:

- Diagnostics and error signals can also be tracked through all bus hierarchies down to the lowest actuator/sensor level and described in plain text. The basis for this is a realistic depiction of the bus topology concerned.
- The TIA Portal also sets standards where efficiency is concerned. Data from lower-level AS-i networks can be flexibly integrated using drag & drop based on SIMATIC HMI and WinCC. All you need do is "drag" the signal information from any AS-i slave into the control display of an HMI basic panel.
- Furthermore, integrated web servers and diagnostics based on user-specific websites allow the data from all connected AS-i networks to be displayed and integrated into user-specific control concepts (e.g. website for documenting and operating a SIMATIC S7-1200).

Whatever your industry, the TIA Portal allows you not just to work more efficiently, but also to achieve lasting increases in productivity and competitiveness.

For more information see
www.siemens.com/as-interface
www.siemens.com/tia-portal.

Overview



Engineering and visualization

IO-Link – more than just a further interface

IO-Link is a smart concept for the uniform connection of switching devices and sensors to the control level by means of a low-cost point-to-point connections.

The IO-Link communication standard below fieldbus level enables central error diagnostics and localization down to actuator/sensor level, and facilitates both start-up and maintenance by allowing parameter data to be dynamically changed directly from the application.

The increasing intelligence of field devices and their integration into automation as a whole now allows data to be accessed right down to the lowest field level. The result was: greater plant availability and less engineering work.

As an open interface, IO-Link can be integrated into all standard fieldbus and automation systems.

The advantages of IO-Link at a glance

- Engineering → reduced engineering times
 - Standardized, open system for greater flexibility (non-Siemens IO-Link devices can be integrated in engineering)
 - Uniform, transparent configuring and programming through integrated engineering (SIMATIC STEP 7)
 - Unassigned function blocks for SIMATIC for easy parameterization and diagnostics, and for reading out measured values
 - Efficient engineering thanks to pre-integration of Siemens devices into SIMATIC HMI
 - Low error rate in CAD circuit diagram design as a result of reduced control current wiring
- Installation and commissioning → reduced start-up times
 - Faster assembly with minimized error rate as a result of reduced control current wiring
 - Less space required in the control cabinet
 - Low-cost circuitry where there are several feeders by making unlimited use of existing Siemens components

- Operation and maintenance → greater plant availability
 - High transparency in the system right down to field level
 - Reduction in downtimes and maintenance times thanks to system-wide diagnostics and faster fault correction
 - Support of predictive maintenance
 - High transparency through integration into energy management systems, reading out of current values and diagnostic signals
 - Shorter changeover times, even for field devices, by means of parameter and recipe management

Transparency in the process through IO-Link

High system availability and data transparency are market requirements that must also be met by the connecting of innovative control technology to a control system. A systematic diagnostics concept and efficient handling of parameter data are required for this purpose in automation.

With the aid of the IO-Link communication standard, a communication link is established between switchgear and controller, and this allows data to be exchanged efficiently. Based on a standard cable, it is therefore possible to integrate parameter, process and diagnostic data and measured values into the plant automation with ease. For example, the available diagnostic data allow potential errors to be detected quickly, thus avoiding lengthy plant down times.

As a consequence of their basic function, such as overload protection (SIRIUS 3RB24), many controls have measured values. The availability of these via IO-Link now allows conclusions to be drawn at an early stage concerning wear and tear in the application.

At the same time the option of parameterizing via IO-Link supports the device not just when parameters concerning operating time are changed, but also when the device is replaced. In the case of a spare part, for example, the parameters can be quickly transmitted to a new device via the communication system.

For more information see
www.siemens.com/io-link.

Introduction

Systematic industrial safety technology: SIRIUS Safety Integrated

Overview



Safety Integrated – safety engineering for machines and plants

Manufacturers and operators of machines must fulfill numerous requirements: reducing costs, improving productivity, and ensuring the safety of machines.

The industrial safety technology from Siemens offers innovative, economical solutions for the functional safety of machinery.

Machine safety – compliance with directives

Before any machines or plant can be supplied or operated, they must meet the fundamental safety requirements of the EU Directives.

In order to ensure compliance with the European Machinery Directive, it is recommended that the suitably harmonized European standards EN 62061 or EN ISO 13849-1 should be applied. This gives manufacturers and operators legal certainty regarding compliance with both national regulations and the EC Directive.

The machine manufacturer uses the CE marking to document the compliance with all relevant directives and regulations in the free movement of goods. As the European directives are recognized worldwide, their use is of great help when exporting to other countries.

The aim of safety technology is therefore to allow people, machines and the environment to be protected and statutory safety requirements to be satisfied.

The quick and easy way to safe machinery

In addition to the statutory regulations governing the protection of people there are also economic reasons for avoiding personal injury and the resulting down times, and for protecting both machinery and equipment from damage.

Safety Integrated benefits machine manufacturers and plant operators in many ways:

- Lower costs for hardware, assembly and engineering
- Higher availability thanks to faster diagnostics and fewer down times

At the same time, using modular safety concepts allows them to modernize their plants more easily and at lower cost.

Smart controls ensure the functional safety of machinery

Our SIRIUS Safety Integrated controls are a central element of the Siemens Safety Integrated concept, based on Totally Integrated Automation. Whether for reliable detecting, commanding and signaling, monitoring and evaluating or starting and safe disconnection, our SIRIUS Safety Integrated controls provide cost-effective solutions for the safety of your machine or plant.

Take the new SIRIUS 3SK1 safety relays for example: They are modularly expandable, and can integrate compact motor starters such as the SIRIUS 3RM1 very simply via the rear panel device connector. Or the SIRIUS 3RK3 Modular Safety System: this provides a high degree of functionality as an autonomous safety control downstream of a standard control, and also makes smart safety solutions possible via AS-Interface.

The SIMOCODE pro modular motor management system combines all required protection, monitoring, safety and control functions for motor feeders. It can be connected to fail-safe controllers via PROFIBUS or PROFINET and shut down motors in emergency situations.



Control technology for safety solutions – SIRIUS Safety Integrated

SIRIUS Safety Integrated uses fail-safe communication via standard fieldbus systems, such as ASIsafe via AS-Interface and PROFIsafe via PROFIBUS and PROFINET, to solve even networked safety tasks of greater complexity. This opens the door to flexible safety solutions for compact machines or large-scale plants – naturally compliant with current standards up to SIL 3/PL e.

A particular highlight: The world's first integrated ASIsafe connection to the distributed I/O system ensures even more consistency. With the SIMATIC AS-i F-Links, AS-i networks can be connected quite simply to safety controls via PROFIsafe via the SIMATIC ET 200SP.

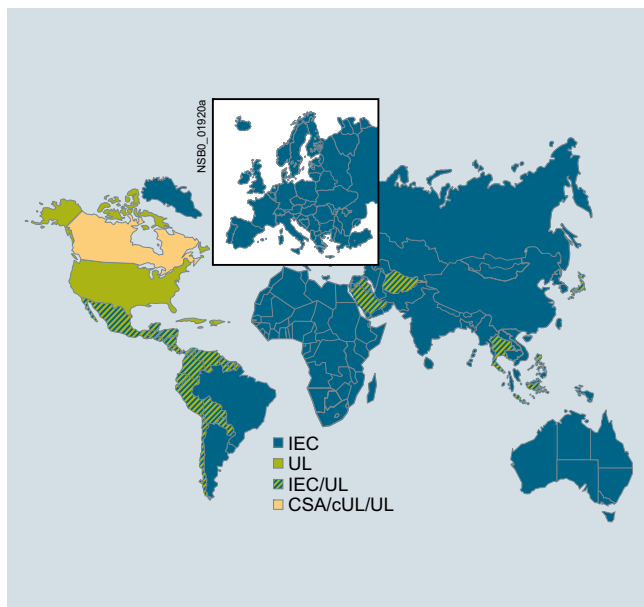
Your partner for machine and plant safety

With Safety Integrated, Siemens has provided the smart answer to constantly increasing requirements for the functional safety of a machine and for its cost-effectiveness and flexibility. Our comprehensive portfolio of safe controls, control technology and drive technology provides scalable solutions for precisely tailored safety concepts for protecting people, machines and the environment. Our products meet the current safety standards in the industry, including IEC, ISO, NFPA and UL.

As a partner for machine and plant safety, Siemens also supports users with examples of functions and up-to-date know-how concerning international standards and directives. In addition to the free TÜV-approved Safety Evaluation Tool for evaluating safety functions in accordance with EN 62061 and EN ISO 13849-1, requirements-based training is available on CE marking, functional safety and risk assessment, and on our Safety Integrated Products.

For more information see
www.siemens.com/safety-integrated.

Overview



SIRIUS applications

We support you where UL is concerned

Product liability laws in the USA are way stricter than in Europe. Whoever plans to export products to North America should have them UL-certified, particularly when it comes to electrical equipment. We can help you with our comprehensive know-how and broad portfolio of UL-certified low-voltage controls

Who or what is UL?

UL (Underwriters Laboratories Inc.®) is one of the world's leading organizations for testing and certification in the field of product safety. This independent, nonprofit US organization was founded in 1894 at the request of American fire insurance companies to analyze the fire hazards posed by electrically operated devices.

Today, UL tests and certifies the most varying materials, components and end products for their reliable operation, particularly with regard to potential personal injury and fire formation. The organization maintains subsidiaries in numerous European countries. Detailed information on the US organization as well as contact details for the various European subsidiaries are also available on the Internet at www.ul.com.

Differences between UL and IEC

The IEC standards for the IEC market merely specify the minimum safety requirements of a device or system. Technical details of the safety requirements' constructional implementation are up to the manufacturers.

In contrast, the standards for the American market are far more detailed. Depending on the standard, the required process may be monitored from product design to product production down to application, mounting and operation.

NFPA79 is the electrical standard for industrial machinery outside the control cabinet. As such it differs from and is the counterpart to the control cabinet standard UL 508A.

UL partner since 1969

Enlisting the expertise of a partner such as Siemens is a wise move for anyone who wishes to avoid unnecessary aggravation and save both time and money.

Ever since 1969 our production facility in Amberg, where the complete diversity of our low-voltage controls and distribution portfolio is developed and produced, has been working closely with Underwriters Laboratories Inc.

Our consideration not only of EU directives and IEC standards but also UL standards begins as early as in our products' development phase. This has resulted in a wide-ranging portfolio of UL-certified low-voltage switchgear, controlgear and protection circuit technology.

As a result we have comprehensive know-how on the subject of UL certification and approval, ranging from production down to the wiring of control cabinets (panels) according to UL standards, and we would be pleased to pass this knowledge on to you as part of our application consulting service.

Our portfolio of low-voltage controls ensures your being on the safer side in terms of UL and facilitates the easy and fast assembly of control cabinets according to UL.

Cost-efficiency in the construction and operation of industrial control panels for North America

- Stay flexible for a highly diverse range of solutions and additions with our comprehensive and matched product portfolio, from the supply of the industrial control panel to the machine's smallest actuator.
- Benefit from efficient stock-keeping thanks to the universal applicability of the products (IEC-UL/CSA).
- Arrive at a uniform operating and maintenance concept through our standard system.
- Save space and costs through coordinated product interfaces and compact designs.
- Experience convenient, efficient local operation thanks to easy-to-use systems.

UL-certified SIRIUS products and systems

UL-certified products to be found in this catalog include for example:

- Controls, from motor-protective circuit breakers and starters to contactors and overload relays
- Circuit breakers for plant and transformer protection
- Detection and command devices
- Transformers and power supplies

You will also find a complete selection of controls and components according to UL in catalog LV 16.

On the Internet you will find information on, for example, UL standards, UL classification and a number of technical particularities of UL.

Under "Information Material" → "Standards and Approvals" we have summarized the available products and product groups. A table lists the UL standards to which the products conform and contains links to the corresponding UL reports.

For more information see www.siemens.com/applicationconsulting/ul.

Introduction

Notes