

# SIEMENS



SIRIUS

## Industrial Controls

Catalog  
IC 10

Edition  
2022

[siemens.com/sirius](https://www.siemens.com/sirius)



## Related catalogs

### Industrial Controls SIRIUS

IC 10

PDF (E86060-K1010-A101-B3-7600)



### SIMATIC

Products for  
Totally Integrated Automation

ST 70

PDF (E86060-K4670-A101-B8-7600)



### Low-Voltage Power Distribution and Electrical Installation Technology

SENTRON • SIVACON • ALPHA  
Protection, Switching, Measuring and Monitoring  
Devices, Switchboards and Distribution Systems

LV 10

PDF (E86060-K8280-A101-B4-7600)



### SINAMICS G180

Converters – Compact Units, Cabinet Systems,  
Cabinet Units Air-Cooled and Liquid-Cooled

D 18.1

E86060-K5518-A111-A2-7600



### SITOP

SITOP  
Power Supply

KT 10.1

E86060-D4001-A510-E0



### SITRAIN

Digital Industry Academy

[www.siemens.com/sitrain](http://www.siemens.com/sitrain)

## Miscellaneous

### Industry Mall

Information and Ordering Platform  
on the Internet:[www.siemens.com/industrymall](http://www.siemens.com/industrymall)

### Siemens TIA Selection Tool

for the selection, configuration and ordering of  
TIA products and devices[www.siemens.com/tst](http://www.siemens.com/tst)

### Contact

Your personal contact can be found in our  
Contacts Database at:[www.siemens.com/automation-contact](http://www.siemens.com/automation-contact)

## Trademarks

All product designations may be registered trademarks or product names of Siemens AG or other supplying companies. Third parties using these trademarks or product names for their own purposes may infringe upon the rights of the trademark owners.

Further information about industrial controls:

[www.siemens.com/sirius](http://www.siemens.com/sirius)

## Technical Support

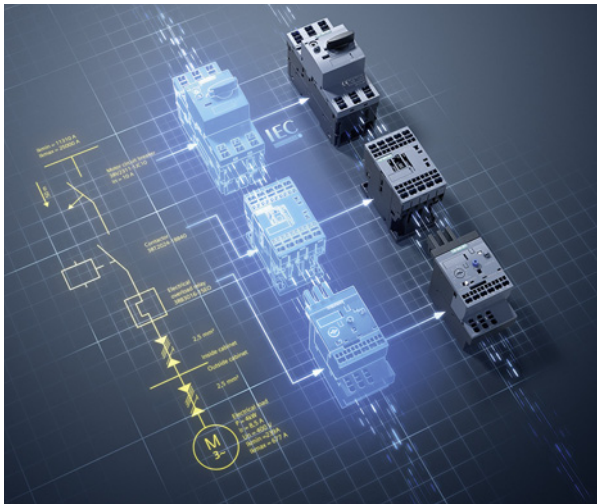
Expert technical support  
for Industrial controls:

Support Request:

[www.siemens.com/support-request](http://www.siemens.com/support-request)

# Industrial Controls

## SIRIUS



### Catalog IC 10 · 2022

Supersedes:  
Catalog IC 10 · 2021

Refer to the Industry Mall for current updates  
of this catalog:

[www.siemens.com/industrymall](http://www.siemens.com/industrymall)

© Siemens 2022



The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with EN ISO 9001 (for the Certified Registration Nos., see [www.siemens.com/system-certificates/ep](http://www.siemens.com/system-certificates/ep)). The certificate is recognized by all IQNet countries.

## 1 Introduction

## 2 Industrial communication



## 3 Switching devices – Contactors and contactor assemblies – for switching motors



## 4 Switching devices – Contactors and contactor assemblies – Special applications



## 5 Switching devices – Contactors and contactor assemblies – Contactor relays and relays



## 6 Switching devices – Soft starters and solid-state switching devices



## 7 Protection equipment



## 8 Load feeders and motor starters for use in the control cabinet



## 9 Motor starters for use in the field, high degree of protection



## 10 Monitoring and control devices



## 11 Safety technology



## 12 Position and safety switches



## 13 Commanding and signaling devices



## 14 Parameterization, configuration and visualization with SIRIUS



## 15 Power supply



## 16 Appendix

# Ordering notes

Catalog IC 10 contains all selection and order-relevant data.



## Ordering notes

### Ordering special versions

For ordering products that differ from the versions listed in the catalog, the article number specified in the catalog must be supplemented with "-Z"; the required features must be specified by means of the alphanumeric order codes or in plain text.

### Small orders

When small orders are placed, the costs associated with order processing are greater than the order value. We recommend therefore that you combine several small orders. Where this is not possible, we unfortunately have to charge a processing supplement of 20.00 € to cover our costs for order processing and invoicing for all orders with a net goods value of less than 250.00 €.

## Price units (PU)

The price unit defines the number of units, sets or meters to which the specified price applies.

## Price groups (PG)

Each product is assigned to a price group.

## Dimensions

All dimensions in mm.

## Standard delivery time (SD)

SD in days (d); ► Preferred type; X On request

Preferred types are available immediately from stock, i.e. are dispatched within 24 hours. Normal quantities of the products are usually delivered within the specified time following receipt of your order at our branch.

In exceptional cases, the actual delivery time may differ from that specified. The delivery times apply up to the ramp at Siemens AG (products ready for dispatch).

The transport times depend on the destination and type of shipping. The standard transport time for Germany is one day.

The standard delivery times specified here are only examples. They are continuously optimized. For more up-to-the-minute information, please visit [www.siemens.com/sirius/mall](http://www.siemens.com/sirius/mall).

## Packaging sizes (PS)

The packaging size defines the number, e.g. of units, sets or meters, contained in an outer packaging. Only the quantity defined by the packaging size or a multiple thereof can be ordered. For multi-unit and reusable packaging, see page 16/4.

## Example

3RA2110-0FA15-1AP0

SD: 2 working days

PG: 41D

Order quantity 1 unit or a multiple thereof

3RA1921-1D

SD: Preferred type

PG: 41B

Order quantity 10 units or a multiple thereof

3SU1900-0AB71-0AB0

SD: 5 working days

PG: 41J

Order quantity 10 units or a multiple thereof

| SD | Article No.               | Price per PU | PU (UNIT, SET, M) | PS*      | PG  |
|----|---------------------------|--------------|-------------------|----------|-----|
| d  |                           |              |                   |          |     |
| 2  | <b>3RA2110-0FA15-1AP0</b> |              | 1                 | 1 unit   | 41D |
| ►  | <b>3RA1921-1D</b>         |              | 1                 | 10 units | 41B |
| 5  | <b>3SU1900-0AB71-0AB0</b> |              | 100               | 10 units | 41J |





# SIRIUS in the World Wide Web

The most important online services at a glance.



## Industrial controls

Homepage

[www.siemens.com/sirius](http://www.siemens.com/sirius)



## Siemens Industry Online Support – SIOS

Product Support

[www.siemens.com/online-support](http://www.siemens.com/online-support)



## Industry Mall

Catalog and Ordering System

[www.siemens.com/industrymall](http://www.siemens.com/industrymall)



## Siemens Industry Online Support App

More information on the Online Support App

[www.siemens.com/support-app](http://www.siemens.com/support-app)



## Configuring products and systems

Configurators

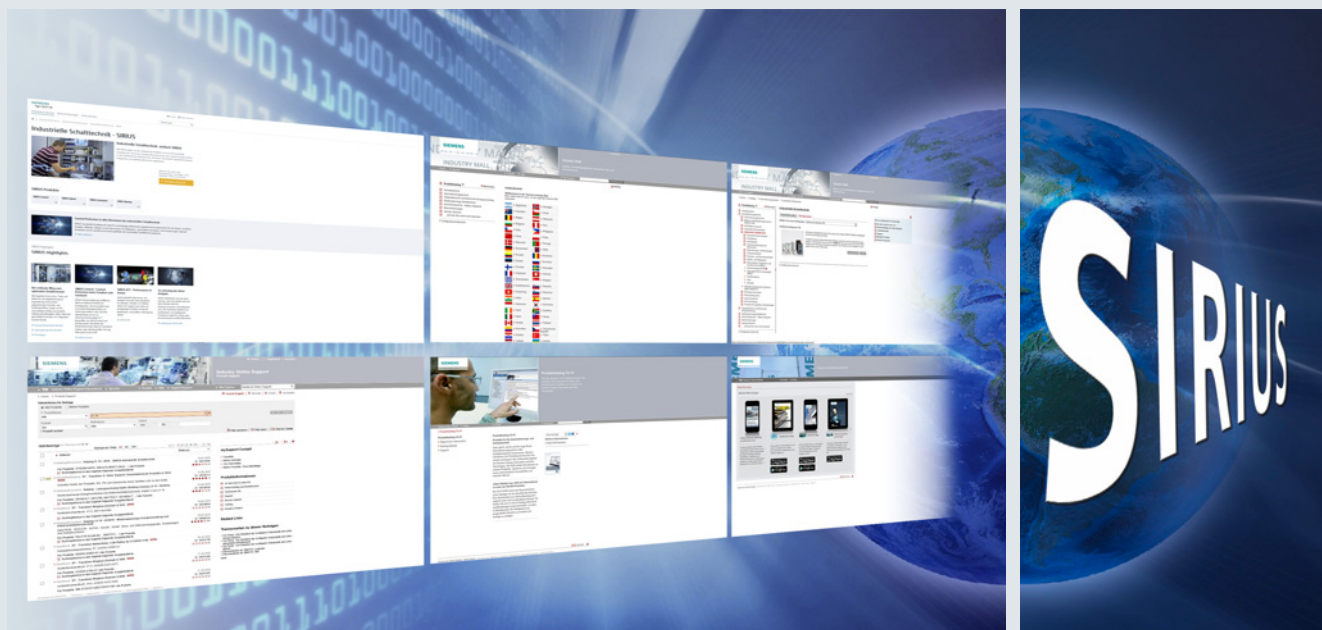
[www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators)



## Device selection and configuration

TIA Selection Tool

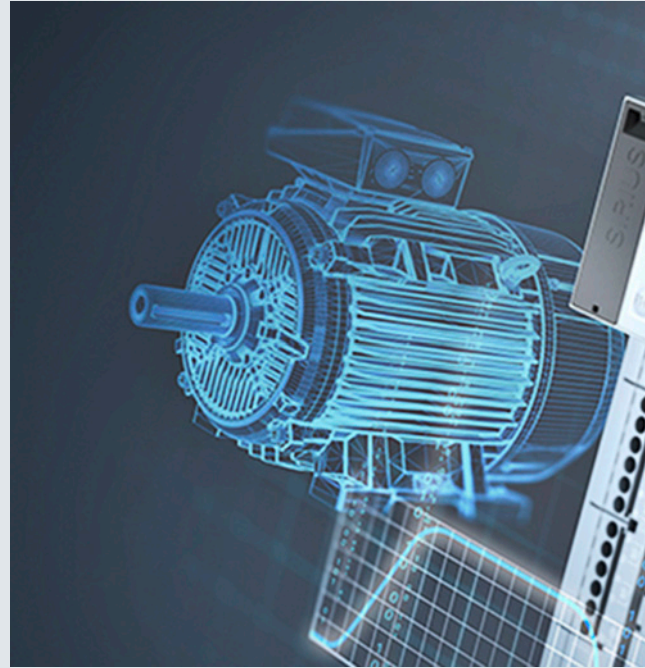
[www.siemens.com/tst](http://www.siemens.com/tst)



# SIRIUS 3RW soft starters

## As diverse as your tasks

The strong, harmonized portfolio of soft starters is suited to a wide range of standard – and also Failsafe and ATEX – applications thanks to comprehensive and specific functions. Benefit from intelligent functions such as condition monitoring, automatic parameterization, pump cleaning and integrated braking functions, regardless of the industry you are in.



### Strong portfolio

Comprehensive, coordinated soft starter portfolio for simple to demanding starting: Basic, General, High Performance

### Efficient switching

Energy-efficient switching and mechanical protection of the drive train thanks to soft starter with hybrid switching technology

### Intelligent use

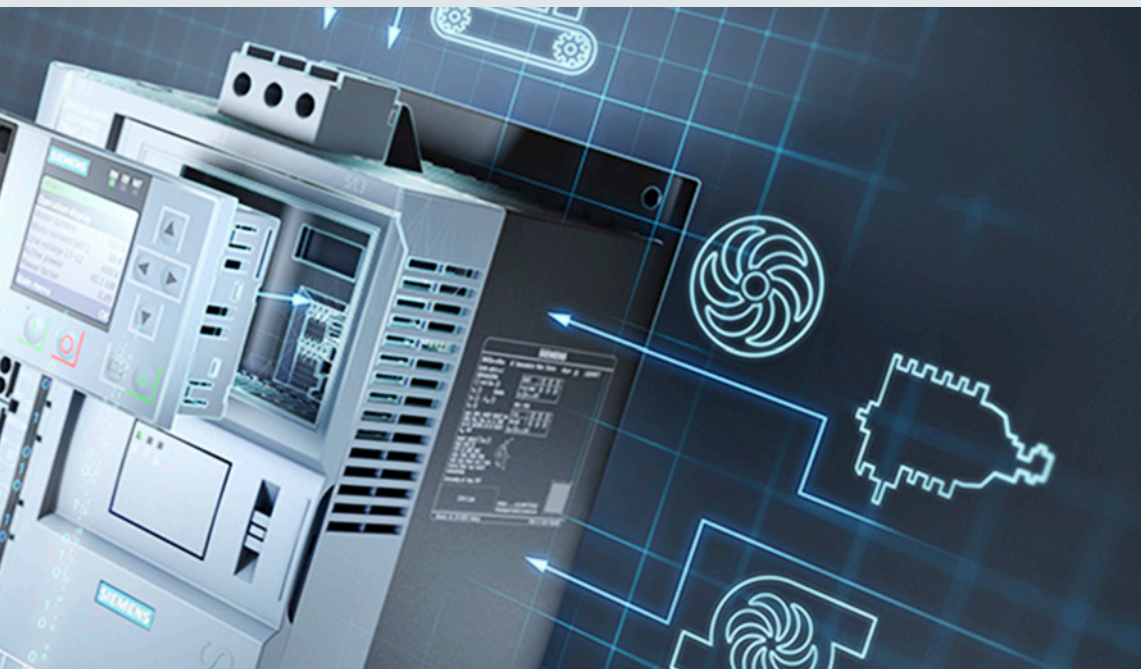
Concentrated, application-specific functionality thanks to intelligent features such as automatic parameterization, pump cleaning and condition monitoring

### Ready for the digital future

Support for digital engineering processes with tools and data. Data provision for local visualization or cloud-based analysis







### SIRIUS 3RW

Strong, comprehensive portfolio with a wide range of possibilities thanks to a flexible design.

More information, see [www.siemens.com/softstarters](http://www.siemens.com/softstarters)

### Digitalization

The 3RW soft starters help you to realize the full potential of digitalization. This is particularly beneficial when it comes to economic efficiency.

## Your application in focus



### Pump cleaning and pump stopping mode

The pump cleaning function prevents pumps from blocking and therefore increases your productivity and system availability. The pump stopping mode avoids mechanical loading in the piping system and extends the service life of the equipment.



### Electrical ruggedness

Due to the wide control voltage range from 110 to 250 V AC, soft starters have a high degree of electrical ruggedness. This guarantees reliable operation even in the event of falling voltages.



### Condition monitoring

The condition monitoring function supports optimal planning of maintenance work on bearings or seals, thereby maximizing availability.



### Automatic parameterization

Automatic parameterization simplifies the commissioning and operation of critical applications considerably, even in the case of highly dynamic load characteristics.



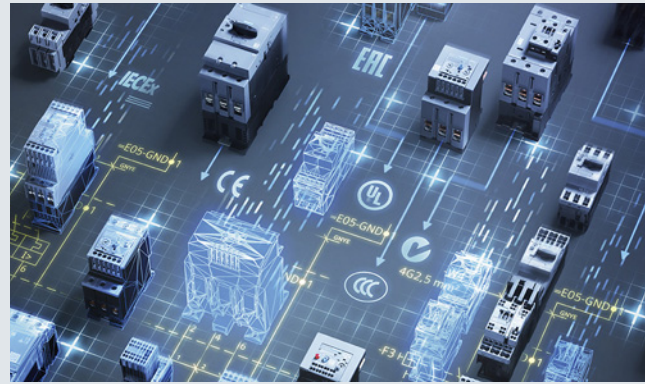
### Integrated braking functions

Intelligent functions such as soft starter braking ensure a fast and reliable stop without engineering and configuration work.

# SIRIUS

## modular system

Efficiently combined.



More information, see:  
[www.siemens.com/sirius-modular-system](http://www.siemens.com/sirius-modular-system)

### Modular design

Optimally matched and dimensioned products expandable with uniform accessories

### Save space

Highest performance on the market based on installation size

### Order pre-assembled

Ready-made and tested combinations with short-circuit strength up to 150 kA/400 V

### Quick wiring

Comprehensive portfolio for spring-type terminals, function blocks for contactor assemblies for reversing and star-delta (wye-delta) starting as well as connectors

### Efficient configuration

Configuration data and macros for integration into your CAE systems

### Worldwide use

Fulfills all relevant standards and approvals worldwide, also for extreme conditions (e.g. safety, rail and shipping) and is IE3/IE4 ready





# TIA Selection Tool

The right product in just a few clicks.

## Prime reasons for the TIA Selection Tool



### Quick, easy and secure

Components can be selected, configured and ordered quickly, easily and securely from the Siemens automation portfolio.



### Intelligent

Intelligent selection wizards check the compatibility of the configured components and enable error-free ordering.



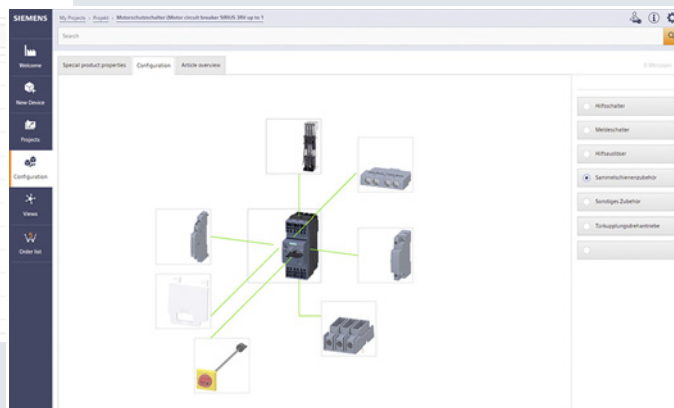
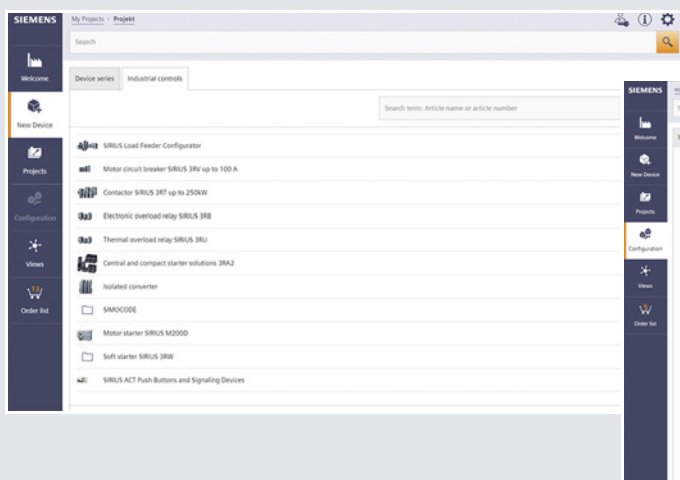
### Clear

Required modules, devices and networks are automatically generated and clearly compared to one another.



### Time-saving

Time savings of 80% in design – thanks to ease of use and intelligent support.



The TIA Selection Tool is a completely paperless solution.

Download it now:

[www.siemens.com/tst](http://www.siemens.com/tst)

For more information,  
scan the QR code



# Smart Control Panel Design

## The new standard in electrical engineering

With Control Panel Design, Siemens offers for the first time a function in the TIA Selection Tool that can be used to design and dimension the main electrical system of a machine in accordance with standards.

And this for the IEC standardization area and for the important North American market.

At the push of a button you receive the appropriate switching and protection devices for your motor, including standard-compliant cable cross-sections and short-circuit values for fuseless and fused load feeders.

Never before has the dimensioning of your load feeders been so quick and reliable!

Electrical engineering in ONE tool. This makes configuring more enjoyable!

### 1.

Digital expertise on standards  
**Standard conformity  
with no worries**

### 2.

Easy dimensioning  
**A new dimension  
of dimensioning**

### 3.

Consistent workflow  
**Electrical engineering  
with unlimited creativity**

### 4.

Supported portfolio  
**Intelligent devices for  
versatile solutions**



### Highlights

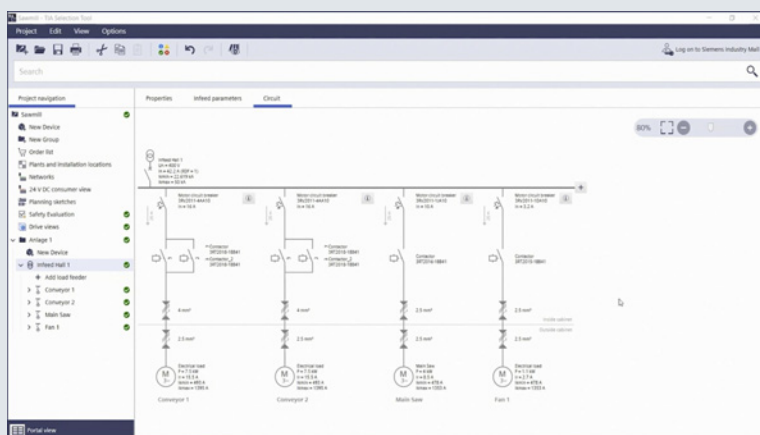
- Automatic short-circuit calculation and cable dimensioning for fuseless and fused load feeders according to IEC up to 250 kW as well as fuseless load feeders according to UL up to 250 hp
- Generation of complete EPLAN projects
- Selection of the appropriate switching and protection devices for the motor
- Visual planning of the main circuit in the single-line diagram
- Simple accessory selection
- Complete PDF documentation of technical specifications and calculation results (e.g. for the short-circuit verification)
- Main switch designed for use with IEC infeeds



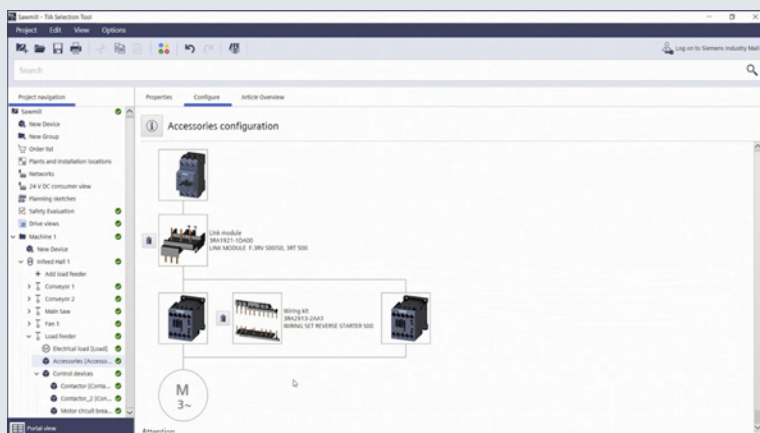


For more information, tool download and videos, see [www.siemens.com/cpd](http://www.siemens.com/cpd)

Are you looking for a clear and easy way to dimension your circuits?



Or do you need suitable accessories for your switching devices?



The main circuit view with single-line display and the automatic display of accessories are two of the many new functions in the TIA Selection Tool.

# Integrated Control Panels

## The easy way to build the optimum control panel.

We offer practical support in mastering the typical challenges of control panel engineering through a harmonized product portfolio, tools and data for digitalization in engineering, and expert know-how.



### Working together for simple and stress-free control panel design

Comprehensive support for all control panel applications

Want to save time and costs? With Integrated Control Panels, it's easy to optimize all aspects of control panel building for your industrial machines and plants. From preparation and dimensioning, design and construction, through to service and support – for greater competitiveness and long-term success.



### Expert know-how

The faster route to the ideal control panel with practice-oriented expertise

We support you with exactly the right know-how to give you a competitive edge – both now and in the future. This includes applying standards and guidelines in day-to-day operations (e.g. UL 508A, IEC 60204-1) as well as efficient engineering and configuration.

- Webinars, online trainings and individual consulting on product and application topics
- Literature with practical tips and tricks, including: guidelines, product manuals, white papers

[www.siemens.com/controlpanel/infocenter](http://www.siemens.com/controlpanel/infocenter)





More information,  
see  
[www.siemens.com/  
panelbuilding](http://www.siemens.com/panelbuilding)



### Tools & data for digitalization in engineering

Maximum efficiency for control panel design

With a range of tools and data-based services, we support you with the digitalization of your business and enable the leverage of all the advantages this offers for control panel design: greater efficiency, flexibility and quality – in every process phase!

- Intelligent selection, dimensioning and design  
[www.siemens.com/controlpanel/cpd](http://www.siemens.com/controlpanel/cpd)  
[www.siemens.com/controlpanel/tools](http://www.siemens.com/controlpanel/tools)
- Control panel engineering  
[www.siemens.com/controlpanel/engineering](http://www.siemens.com/controlpanel/engineering)



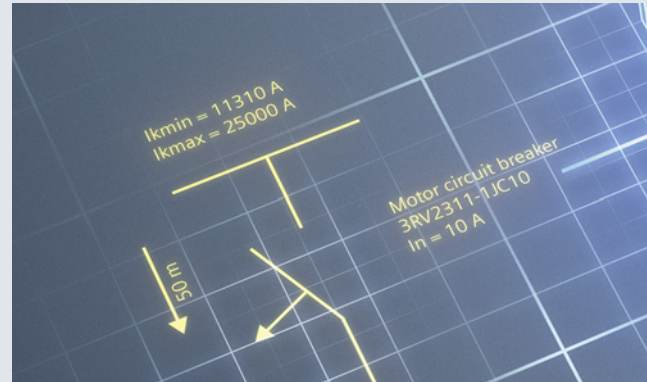
### Harmonized product and system portfolio

Effective savings in control cabinet design

Harmonized product and system portfolio saves construction time. With our coordinated, integrated portfolio of products that includes automation technology, drive train components, industrial controls and matching control panel enclosures, we can reduce your engineering overhead and ensure the harmonious interaction of all devices. These are extensively tested, and are all certified and available for use worldwide – enabling you to remain flexible within the global business environment. Benefit also from our expert tips concerning control panels.  
[www.siemens.com/controlpanel/tips](http://www.siemens.com/controlpanel/tips)



# Product highlights



**SIRIUS 3RW5 soft starters**  
Can be flexibly deployed  
in many applications

Type: 3RW5  
Pages 6/15, 6/39, 6/55 and 6/73 onwards



**3RW55 system redundancy S2**  
For PROFINET High Feature module

Type: 3RW5950-0CH00  
Pages 6/39, 6/55 onwards



**SIRIUS 3RT203 and 3RT204 contactors**  
With fail-safe control input for  
safety-related applications  
up to SIL 3, 3-pole, up to 55 kW

Type: 3RT203, 3RT204  
Page 3/72



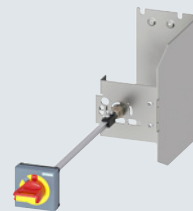
**SIRIUS 3RV2 motor starter  
protectors/circuit breakers**  
For special operating conditions  
up to -50°C

Type: 3RV2..1-...-0BA0  
Page 7/28 onwards



**SIRIUS 3RV2 motor starter  
protectors/circuit breakers**  
For system or transformer protection,  
without phase asymmetry detection

Type: 3RV20.1-...A10-0DA0,  
3RV24.1-...A20-0DA0  
Pages 7/41, 7/45 onwards



**SIRIUS 3RV2 motor starter  
protectors/circuit breakers**  
3RV29.6 door-coupling rotary operating  
mechanisms

Type: 3RV2926, 3RV2936, 3RV2946  
Page 7/55 onwards



**SIRIUS 3RQ1 force-guided coupling  
relays, fail-safe up to SIL 3 / PL e**

Type: 3RQ1  
Page 5/24 onwards



**SIRIUS 3RP25 timing relays**  
With coated printed circuit board

Type: 3RP2505-2.W30-0AX0  
Page 10/38



**SIRIUS 3UG5 DC load monitoring relays**  
for PROFINET, low DC voltages up to 60 V

Type: 3UG546.-1AA41  
Page 10/66 onwards



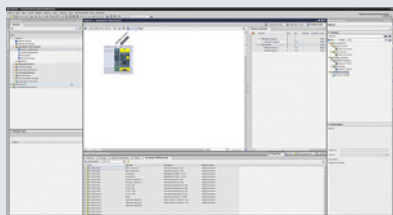
More information,  
see  
[www.siemens.com/  
sirius](http://www.siemens.com/sirius)



### SIRIUS 3UG458 insulation monitoring relays

Type: 3UG458-..AW31, 3UG4583-.CW31,  
3UG4983

Page 10/89 onwards



### Software for TIA Portal Soft Starter ES, SIMOCODE ES, SIRIUS Safety ES

Type: 3ZS13.0-...

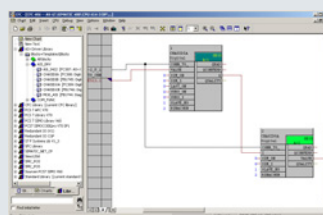
Pages 14/5, 14/12, 14/22 onwards



### SIRIUS 3RS2 temperature monitoring relays

Type: 3RS25, 3RS26, 3RS28, 3RS29

Page 10/123 onwards



### PCS 7 V 9.1 block libraries Soft starters, SIMOCODE, AS-Interface

Type: 3ZS1632, 3ZS1633, 3ZS1635

Pages 14/8, 14/16, 14/20 onwards



### IO-Link digital modules IO-Link I/O modules

Type: 6ES714-..5..00-0BL0

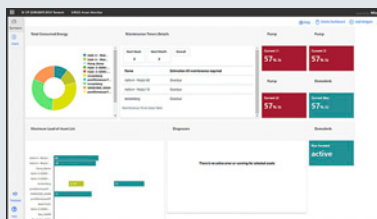
Page 2/102 onwards



### SIRIUS Sim For 3SK2, 3RW55 and 3RW55 Failsafe

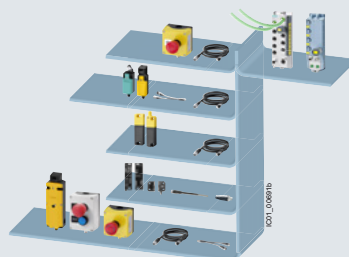
Free download

Page 14/25



### SIRIUS Asset Monitor For 3UF7, 3RR24 and 3UG48 with IO-Link, 3RW55, 3RW55 Failsafe

App available in MindSphere Store  
Page 14/26



### Safety cabling in the field with IP67 The system comprising SIRIUS sensors and SIMATIC ET 200 provides a safe M12 connection method for industry.

Type: 3SE, 3SU  
Pages 12/85 and 13/103 onwards



### SIRIUS ACT pushbuttons and indicator lights Holders with and without module, universal for plastic and metal

Type: 3SU155  
Pages 13/75, 13/77

# Technical Support

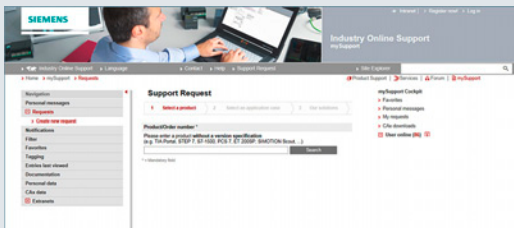
One click – and you have  
all the information you need.



## Industry Online Support – get fast and up-to-date information online

[www.siemens.com/online-support](http://www.siemens.com/online-support)

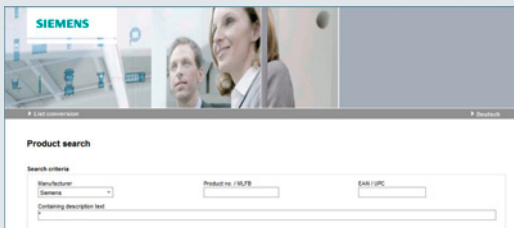
In Industry Online Support you will find FAQs,  
manuals, certificates, applications & tools, and much more



## Support Request – the fast track to the experts

[www.siemens.com/support-request](http://www.siemens.com/support-request)

Using the Support Request form in Online Support you can  
send your query directly to Technical Support.

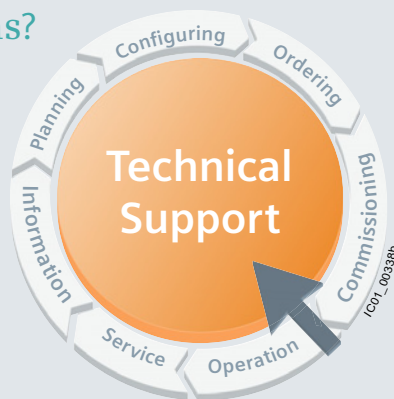


## Conversion tool – the easy and efficient way to find successor products

[www.siemens.com/conversion-tool](http://www.siemens.com/conversion-tool)

## Any more questions?

Our experts are there to  
help you with competent  
technical advice.



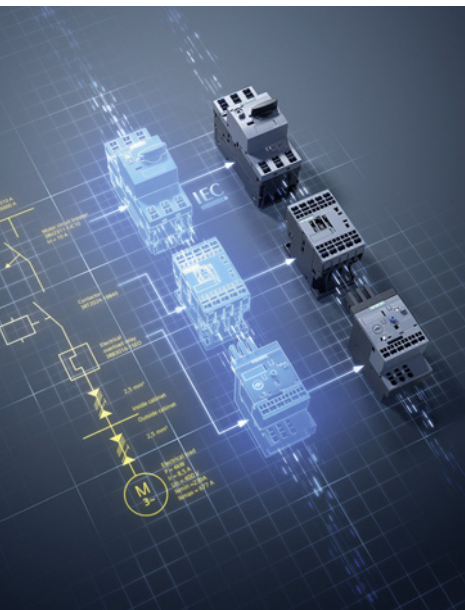
## Competent and fast technical advice regarding:

- Product selection
- Conversion from old to new
- Competitor conversion
- Special versions
- Particular requirements
- Commissioning
- Maintenance

Support Request:  
[www.siemens.com/support-request](http://www.siemens.com/support-request)



## Introduction



|     |  |
|-----|--|
| 1/2 | <b>Energy-efficient controls</b><br>SIRIUS brings down energy costs                                    |
| 1/3 | <b>Energy management with SIRIUS</b><br>Integration into energy management software                    |
| 1/4 | <b>Systematic industrial safety technology</b><br>SIRIUS Safety Integrated                             |
| 1/8 | <b>IE3/IE4 ready</b><br>SIRIUS controls for reliable switching and protection of IE3/IE4 motors        |
| 1/9 | <b>Innovative technology for saving energy</b><br>Electronic starting with hybrid switching technology |

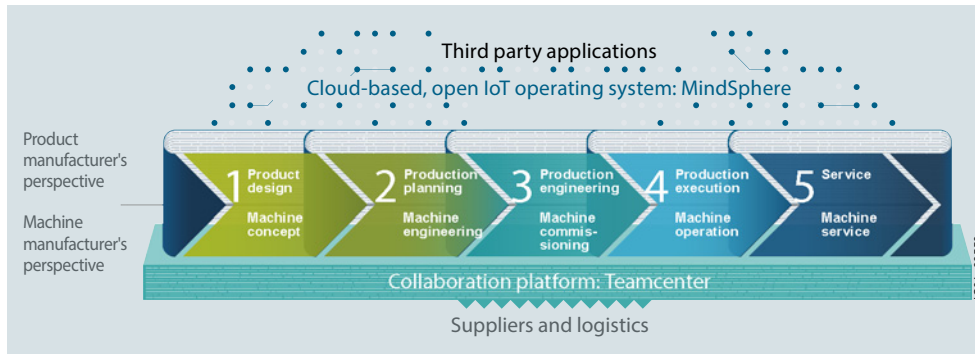
## Introduction

### Energy-efficient controls

#### SIRIUS brings down energy costs

#### Overview

##### Energy management in industry



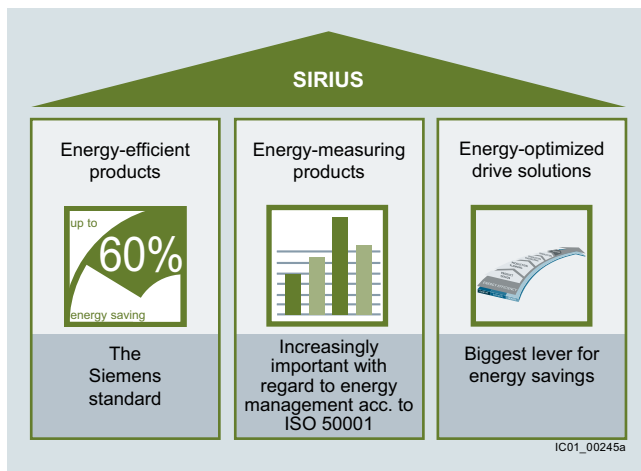
Overview of the energy management process

##### 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 products from the SIRIUS modular system

##### Energy-efficient products – SIRIUS reduces power loss

SIRIUS controls (3RM motor starter, 3RR2 monitoring relay, 3RB3 overload relay, 3RT2 contactor, 3RW soft starter and 3RV2 motor starter protector/circuit breaker) as well as the ET 200SP motor starters 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 then translates to a higher packing density and a reduction in the required cooling performance.

##### Energy-measuring products

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.

Energy data acquisition represents an important component of the overall energy data management process here. Through transparency right down to the loads, it is possible to identify and utilize potential energy savings.

With communication-capable SIRIUS switching devices you can acquire energy data from the drive train without any additional effort.

SIRIUS controls help you make energy flows visible.

##### 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.

##### SinaSave energy efficiency tool



Amortization calculator for energy-efficient drive systems

The SinaSave energy efficiency tool determines energy saving potential and amortization times based on your individual conditions of use and therefore offers practical assistance in making decisions about investments in energy-efficient technologies.

From SinaSave version 6 and higher, the drive systems to be compared and the relevant drive component parameters are displayed graphically. An additional expansion are the numerous comparison possibilities for different control types and comprehensive product combinations for drive solutions for pump and fan applications.

The product portfolio comprises not just SIRIUS controls, but also SIMOTICS motors and SINAMICS converters, thus offering a comprehensive range of comparison possibilities – according to your individual requirements.

SinaSave, the free amortization calculator for energy-efficient drives, see [www.siemens.com/sinasave](http://www.siemens.com/sinasave).

### Overview

#### SIMATIC Energy Suite

High energy consumption and automated production processes are typical for many industries.

If you want to keep your energy costs under control in the long term and you are already focusing on the digital future, it's a good idea to equip your plant with integrated energy measuring technology, thus anchoring energy management into the automation of your production processes – which is where most energy is consumed.

SIMATIC Energy Suite as an integrated option for the TIA Portal efficiently links energy management with automation, thus creating energy transparency in the production system. The considerably simplified configuration of energy measuring components from the product families<sup>1)</sup> SIMATIC, SENTRON, SINAMICS, SIRIUS and SIMOCODE significantly reduces the configuration costs. Thanks to the end-to-end connection to SIMATIC Energy Manager PRO<sup>2)</sup> or cloud-based Service Energy Analytics, you can seamlessly expand the recorded energy data to create a cross-site energy management system.

This also enables companies to fulfill all economic and energy management requirements – from purchasing of energy through planning to energy management.

The advantages at a glance:

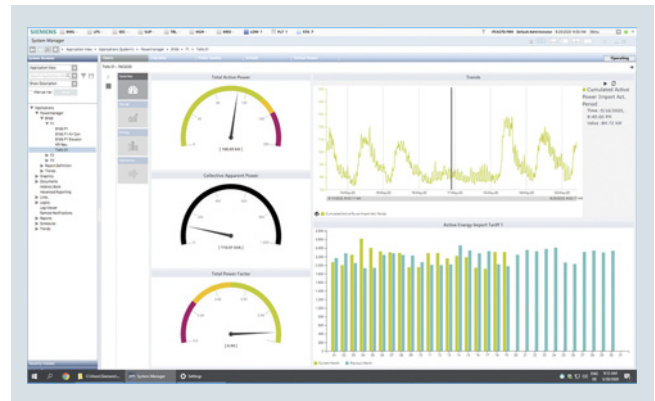
- Simple and intuitive configuration instead of programming
- Automatic generation of the PLC energy program
- Convenient integration of measuring components from the Siemens portfolio and from the portfolios of other manufacturers
- Integrated in the TIA Portal and automation
- Archiving on WinCC Professional or PLC
- Seamless connection to Energy Manager PRO and Energy Analytics

For more information on SIMATIC Energy Suite, see [www.siemens.com/energysuite](http://www.siemens.com/energysuite).

<sup>1)</sup> Products from the SIMATIC, SENTRON, SINAMICS, SIRIUS and SIMOCODE product families. For details on the currently supported devices, see [www.siemens.com/energysuite-hardware](http://www.siemens.com/energysuite-hardware).

<sup>2)</sup> SIMATIC Energy Manager PRO is the innovative successor to SIMATIC B.Data.

#### SENTRON powermanager



SENTRON powermanager

The SENTRON powermanager energy monitoring software displays important characteristic quantities for individual devices and the entire system on a clearly organized dashboard and thus analyzes the energy consumption.

The advantages at a glance:

- Analyzing energy flows: Cost-saving measures can be derived directly and faults can be localized rapidly – for greater awareness regarding energy consumption and lower costs.
- Easy to get started: Can be added to existing hardware and available infrastructure.
- Fast savings: Analyzes power curve and detects load peaks.
- High plant availability: Continuous monitoring of power distribution ensures that critical system states are detected at an early stage.

The SIRIUS 3RW55 soft starter is integrated into SENTRON powermanager by simple installation of an XML file: <https://support.industry.siemens.com/cs/ww/en/view/109798105>

For more information on SENTRON powermanager, see [www.siemens.com/powermanager](http://www.siemens.com/powermanager).

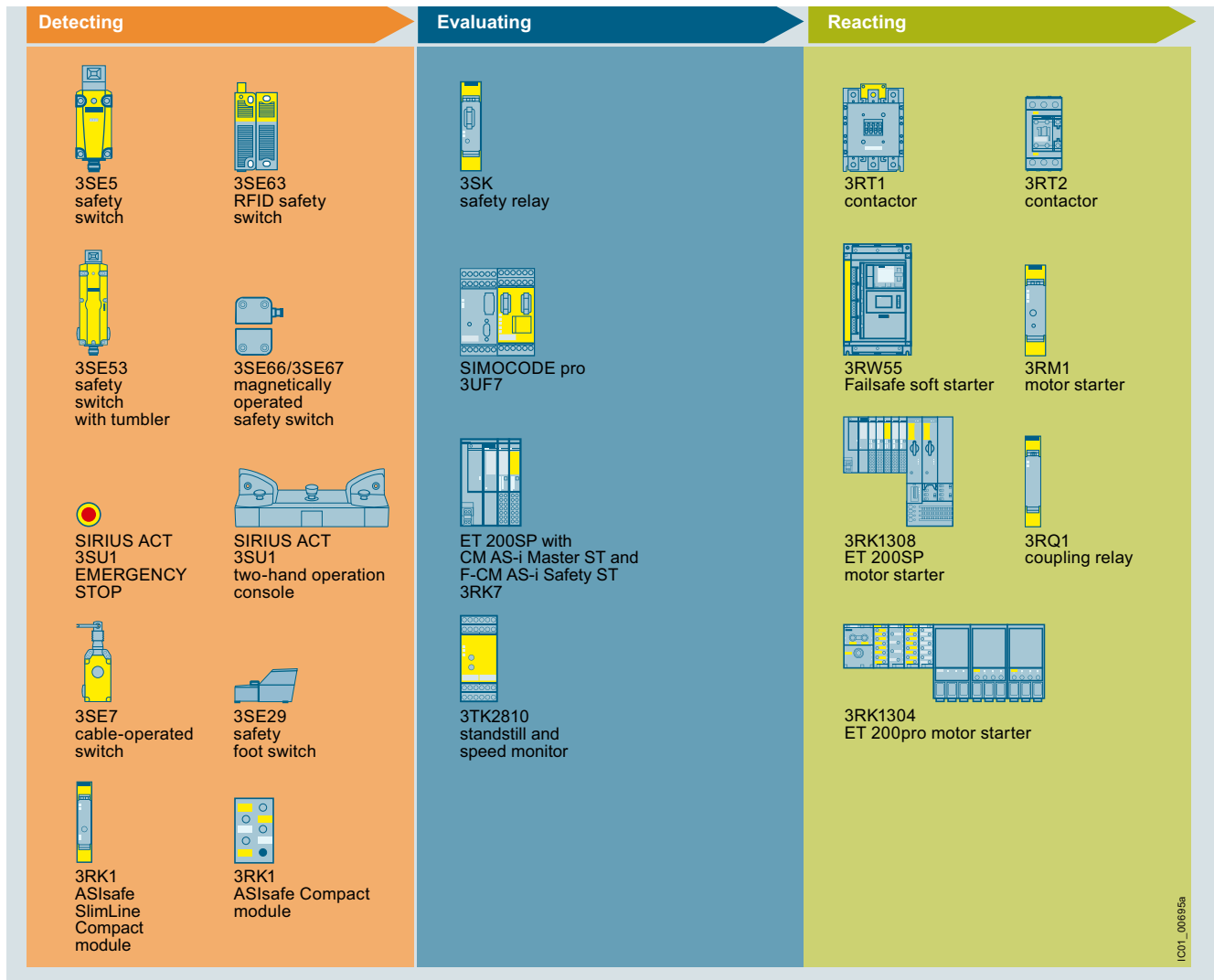


## Introduction

### Systematic industrial safety technology

#### SIRIUS Safety Integrated

#### Overview



#### SIRIUS Safety Integrated

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 plants can be supplied or operated, they must meet the fundamental safety requirements of the EU Directives. Similar requirements apply in many other countries and markets.

To guarantee conformity with these requirements, it is recommended that the correspondingly harmonized standards IEC 62061 or ISO 13849-1 are applied. This gives manufacturers and operators legal certainty regarding compliance with both national regulations and directives, which are confirmed by the manufacturer of a machine.

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 downtimes, 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 downtimes

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<sup>1)</sup> controls are a central element of the Siemens Safety Integrated concept, based on Totally Integrated Automation.

Whether for reliable detecting, evaluating and reacting, our SIRIUS Safety Integrated controls (page 1/6 onwards) provide cost-effective solutions for the safety of your machine or plant. Take the SIRIUS 3SK safety relays for example: They are modularly expandable, and can integrate compact motor starters such as the fail-safe SIRIUS 3RM1 very simply via the device connector (parameterization is performed easily with a screwdriver on the DIP switches or by drag and drop in the engineering software).

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.

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.

The 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.

Particular highlights are the contactors of sizes S2 to S12 with fail-safe control input, the SIRIUS ACT 3SU1 EMERGENCY STOP with PROFINET or PROFIsafe interface, and the fail-safe motor starters for ET 200SP (page 8/94 onwards) and the 3RW55 Failsafe soft starters (page 6/39 onwards). With these products, seamless integration into fail-safe control systems is possible.

### 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.

The Safety Selector ([www.siemens.com/safety-selector](http://www.siemens.com/safety-selector)) thus guides the user to the appropriate application example based on selection criteria to be assigned.

The free safety evaluation for evaluating safety functions in accordance with IEC 62061 and ISO 13849-1 is integrated in the TIA Selection Tool, see [www.siemens.com/safety-evaluation](http://www.siemens.com/safety-evaluation).

Thus, the selection of components and their safety-related assessment are implemented in a coherent workflow.

Requirements-based training on CE marking, functional safety, risk assessment, and on our Safety Integrated products rounds off our portfolio, see [www.siemens.com/sitrain](http://www.siemens.com/sitrain).

<sup>1)</sup> For more information, see [www.siemens.com/safety-integrated](http://www.siemens.com/safety-integrated).  
Application Manual SIRIUS Safety Integrated, see  
<https://support.industry.siemens.com/cs/ww/en/view/81366718>.

# Introduction

## Systematic industrial safety technology

### SIRIUS Safety Integrated

#### Devices with safety functions

##### Detecting

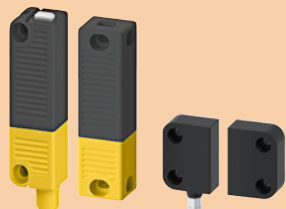
Product Page

##### 3SE position and safety switches 12/2



Flexible thanks to modular design, suitable for offshore applications

##### 3SE6 non-contact safety switches 12/4



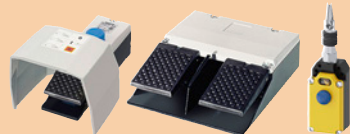
RFID and magnetically-operated switches, non-contact, vibration-resistant, wear-free, IP69 (IP69K)/IP67

##### 3SU11 EMERGENCY STOP mushroom pushbuttons, 3SU18 two-hand operation console 13/25, 13/49, 13/105



- SIRIUS ACT two-hand operation console with user-friendly capacitive sensor keys
- High level of flexibility due to direct integration of the SIRIUS ACT EMERGENCY STOP via standardized, fail-safe communication protocols (PROFIsafe, ASIsafe)

##### 3SE7 cable-operated switches, 3SE29, 3SE39 foot switches 13/155, 13/49, 13/160



- Foot switches with metal or plastic enclosure in degree of protection IP65
- Cable-operated switches with latching and positive-opening NC contacts, in degree of protection IP65 or IP67

##### Evaluating

Product Page

##### SIMOCODE pro 3UF7 10/5



Fail-safe expansion modules DM-F Local and DM-F PROFIsafe, safe shutdown of motors up to SIL 3/PL e

##### 3SK safety relays 11/13



Key modules of a consistent and cost-effective safety chain. Flexible thanks to input and output expansion units

##### 3TK2810 safety relays 11/33



Further modules of a consistent and cost-effective safety chain for fail-safe detection of standstill or speed

##### Reacting

Product Page

##### 3RQ1 coupling relays 5/24



SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3/PL e

##### 3RW55 Failsafe soft starters 6/39



3RW55 Failsafe High Performance soft starters with STO

##### SIRIUS 3RM1 motor starters 8/84



Compact, narrow and fail-safe hybrid motor starters in IP20  
Easy configuration and low outlay for storage thanks to wide setting range of the overload release









##### ET 200SP fail-safe motor starters 8/94



Compact, fail-safe hybrid motor starters for the ET 200SP system



## Devices with safety functions for AS-Interface

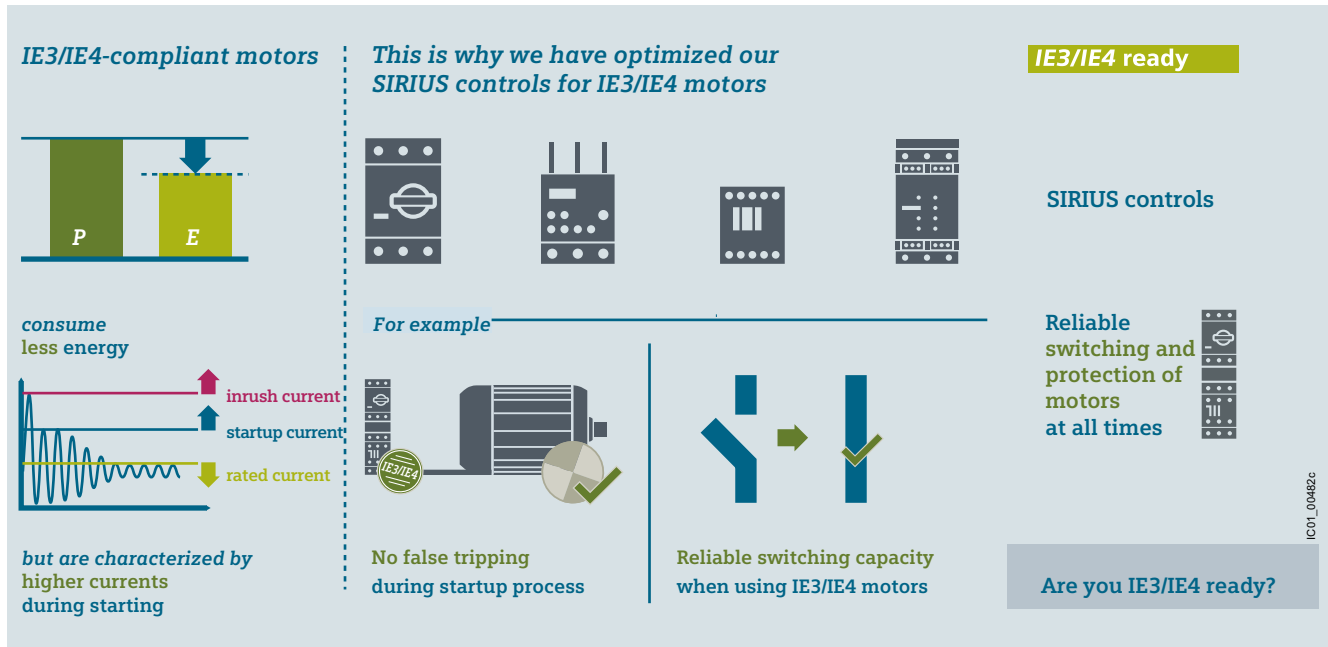
| Detecting   |       | Evaluating  |            | Reacting   |      |
|---|-------|---|------------|--|------|
| Product   | Page  | Product   | Page       | Product  | Page |
| <b>Safety modules/EMERGENCY STOP mushroom pushbuttons</b>   |       | <b>CM AS-i Master ST, F-CM AS-i Safety ST for SIMATIC ET 200SP</b>  |            | <b>ET 200pro Safety motor starters Solution PROFIsafe</b>  |      |
| <ul style="list-style-type: none"><li>K45F and K20F compact safety modules for use in the field</li></ul>    | 2/26  |  <p>Evaluation and processing of signals via a fail-safe SIMATIC or SINUMERIK control.</p> <p>Simple combination of the CM AS-i Master ST and F-CM AS-i Safety ST modules in one ET 200SP station results in a powerful, safety-oriented network transition between PROFINET (or PROFIBUS) and AS-Interface.</p> | 2/29, 2/34 |  <p>Communication-capable motor starters with high degree of protection IP65</p> <p>Special safety modules enable the highest safety levels</p>   | 9/3  |
| <ul style="list-style-type: none"><li>SC17.5F SlimLine Compact safety modules for use in the control cabinet</li></ul>                                       | 2/26  |   |            |  |      |
| <ul style="list-style-type: none"><li>3SU1 EMERGENCY STOP mushroom pushbuttons in the enclosure for AS-Interface</li></ul>                                  | 13/99 |   |            |  |      |
| <p>Detection of safety-related signals via safe input slaves on the AS-Interface bus (field modules in IP67, control cabinet modules in IP20, EMERGENCY STOP mushroom pushbuttons in the enclosure with integrated ASIsafe slave in IP69)</p> |       |   |            |  |      |
| <b>3SF1 mechanical safety switches</b>  |       | 12/89   |            | <b>3RT contactors from 18.5 kW (F-PLC input)</b>   |      |
|    |       |   |            |  <p>Optimum connection to the fail-safe controller as actuator in the safety chain</p> <p>Considerable simplification of the application in large power ranges thanks to F-PLC input on the following contactors:</p> <p>3RT203 and 3RT204, 3RT105 to 3RT107, 3RT145 to 3RT147</p> |      |
| <p>Flexible thanks to modular design, degree of protection up to IP69 (IP69K), suitable for offshore applications</p>   |       |   |            | <p>3/72, 3/75, 4/19</p>  |      |
|   |       |   |            | <b>S45F SlimLine safety modules with safety outputs for the safe distributed disconnection of actuators</b>  |      |
|   |       |   |            |  <p>Reaction by safe output modules on the AS-Interface bus or other SIMATIC F-DQ modules</p>   |      |
|   |       |   |            | 2/26   |      |

## Introduction

### IE3/IE4 ready

#### SIRIUS controls for reliable switching and protection of IE3/IE4 motors

#### Overview



IE3/IE4 ready with SIRIUS controls

#### We are IE3/IE4 ready

IE3 motors have been mandatory in Europe since July 1, 2021 in the power ranges from 0.75 to 1000 kW.

From an electrical viewpoint, IE3/IE4 motors behave differently than less energy-efficient models – they are characterized by higher startup currents and modified dynamic behavior. This entails certain challenges for our controls.

The latest generation of SIRIUS controls has been fully optimized for IE3/IE4.

They avoid false tripping due to higher inrush currents of IE3/IE4 motors, offer optimized setting ranges for rated currents, and ensure reliable switching and protection in any situation – the best requirements for use of modern IE3/IE4 motors.

#### Highlights

- Comprehensive range of IE3/IE4 motors for every application
- Siemens offers expertise through extensive analysis of IE3/IE4 motors
- Optimized SIRIUS controls for use with IE3/IE4 motors

#### More information

Application Manual for controls with IE3/IE4 motors, see <https://support.industry.siemens.com/cs/ww/en/view/94770820>

All IE3/IE4 ready products are marked in the catalog with the symbol **IE3/IE4 ready**.

#### Overview

#### SIRIUS 3RV29 infeed system with 3RA2 load feeder and 3RM1 motor starter



##### Simple

Minimum wiring in the main and control circuits thanks to assembly option



##### Long service life

Hybrid switching technology uses benefits of relay and semiconductor technology

##### Compact



Only 22.5 mm wide, regardless of whether direct-on-line or reversing starter function

##### Economical

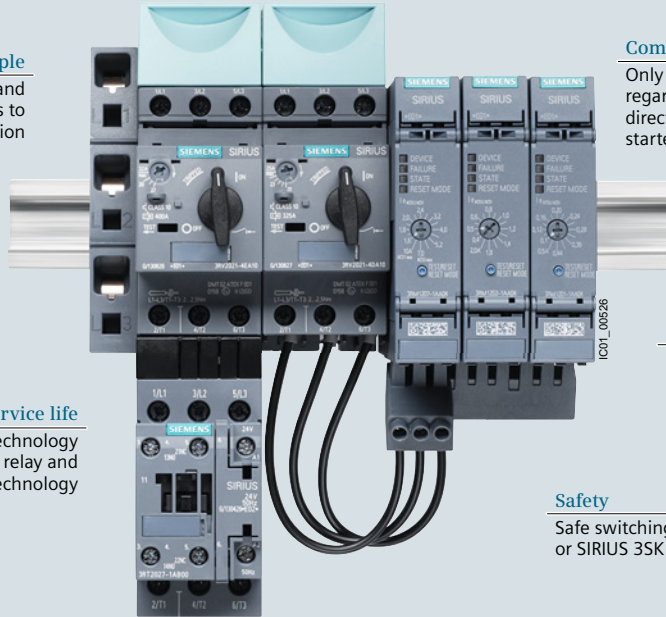


Thanks to low device variance due to wide setting range

##### Safety



Safe switching possible with F-CPU or SIRIUS 3SK safety relays



The hybrid switching technology uses low-wear semiconductor technology for switching the motor on and off, and in the operating phase it relies on energy-saving relay technology.

This ensures durability, especially with high switching frequency, and thus significantly reduces maintenance costs and extends the life of the motor starters.

In addition, due to the hybrid switching technology, motor starters have lower electromagnetic interference emissions, enabling you to increase your plant availability.

Further energy savings are provided by the integrated electronic overload protection.

This causes a lower intrinsic power loss than comparable motor feeders with thermal overload protection.

In this way, you benefit from reduced heat generation and therefore lower cooling power. And that saves energy.

#### SIRIUS soft starters 3RW30, 3RW40, 3RW50, 3RW52, 3RW55 and 3RW55 Failsafe



##### Long service life

Reduced mechanical and electrical load

##### Safe



SIL 1/STO without additional safety relay or contactor



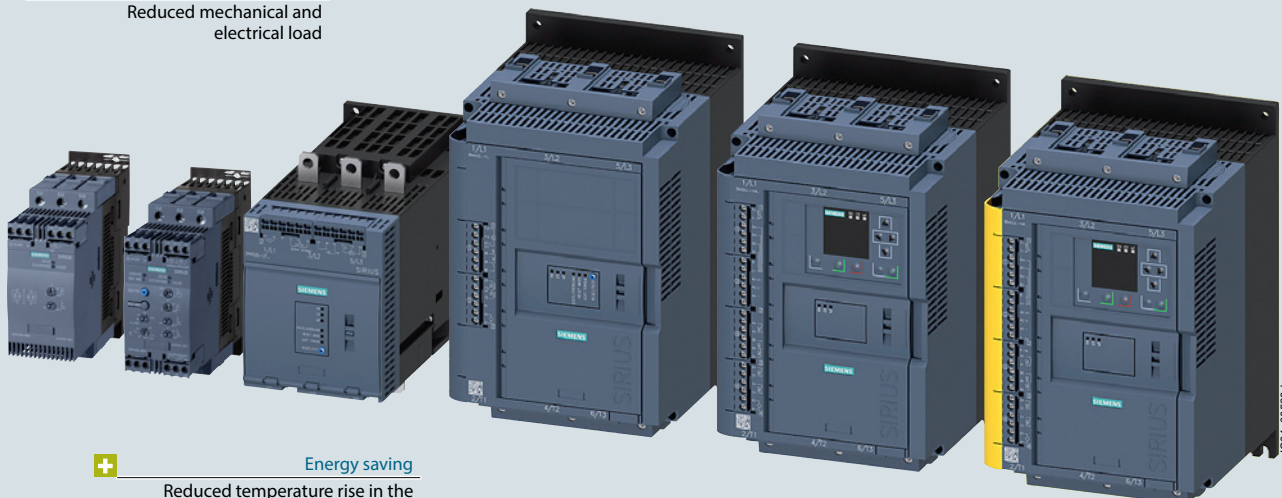
##### Energy saving

Reduced temperature rise in the control cabinet thanks to bypass contacts

##### Simple



Fast and easy commissioning

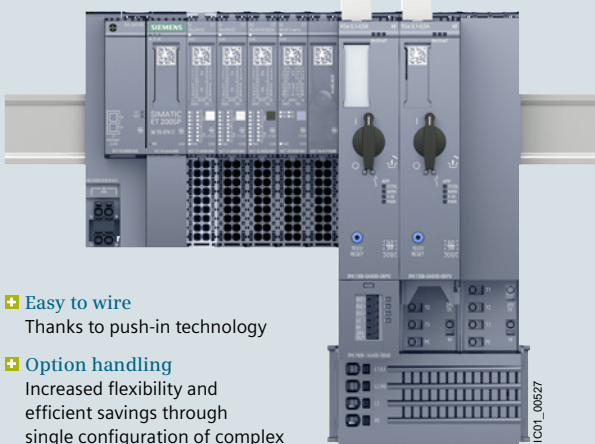




## Introduction

### Innovative technology for saving energy

#### Electronic starting with hybrid switching technology



#### + Easy to wire

Thanks to push-in technology

#### + Option handling

Increased flexibility and efficient savings through single configuration of complex automation projects

#### + Reduced space requirements

50% slimmer than other distributed I/O systems

#### + Hybrid switching technology

Durable and energy saving, since relay contacts are not subject to loading when switched

#### + Power bus

Supply with power only once, then automatic setup with side-by-side mounting of multiple modules

#### + Quick stop and end position disconnection

Load switch off even at high speed – independent of central controller

#### + Quick installation

Hook in, slide into place and engage

Once it is installed and wired, you simply connect the ET 200SP motor starter to the controller in the TIA Portal ready for parameterization.

### Highlights

Use of hybrid switching technology for:

- SIRIUS 3RM1 motor starters
- ET 200SP motor starters
- SIRIUS soft starters

Failsafe functionality for SIRIUS 3RW55 soft starters, SIRIUS 3RM1 motor starters and ET 200SP:

- Maximum safety:  
Safety function up to SIL 3/PL e

Additional benefits for SIRIUS 3RM1 motor starters:

- Using device connectors safety-related group shutdown with reduced wiring is possible
- Direct connection to the 3SK safety relay, without additional wiring

