SIEMENS

Ingenuity for life

Safety is a SIRIUS business

Safety relays for every application

siemens.com/safety-relays

Everything for your safety

Machines can be dangerous, and employees need to be protected from the associated hazards. At the same time, high system availability should allow the machines to remain cost-efficient. For these reasons, safety in automation technology is always a serious issue. That's why machine builders need simple solutions for safety technology that functions reliably. Siemens offers these solutions with its SIRIUS Safety products.
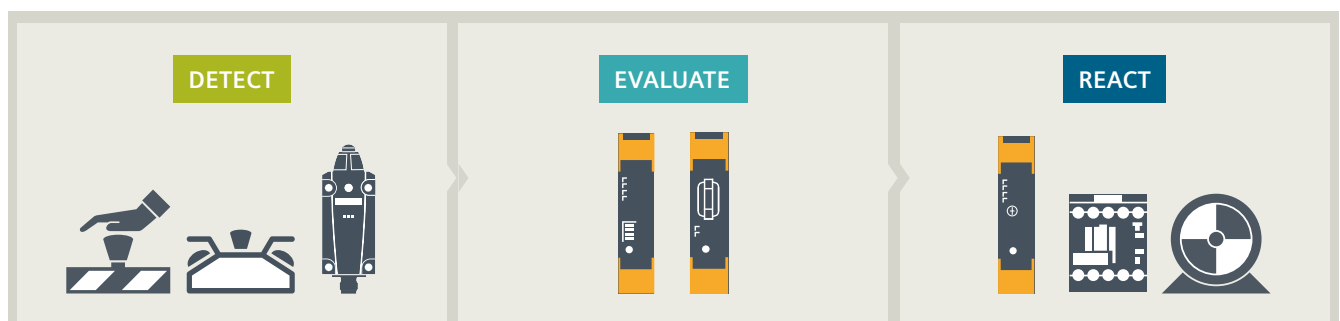
Detecting, evaluating and reacting – all from a single source

SIRIUS is the industrial switching technology from Siemens – and includes everything you need for efficient implementation of a standardized and economical safety chain for common safety functions: from detecting to evaluating through to reacting.

SIRIUS 3SK plays a key role in this context. Local safety functions can be implemented very easily with the new family of safety relays. The way that they perfectly interact with sensors and actuators makes it possible to set up complete safety chains not only
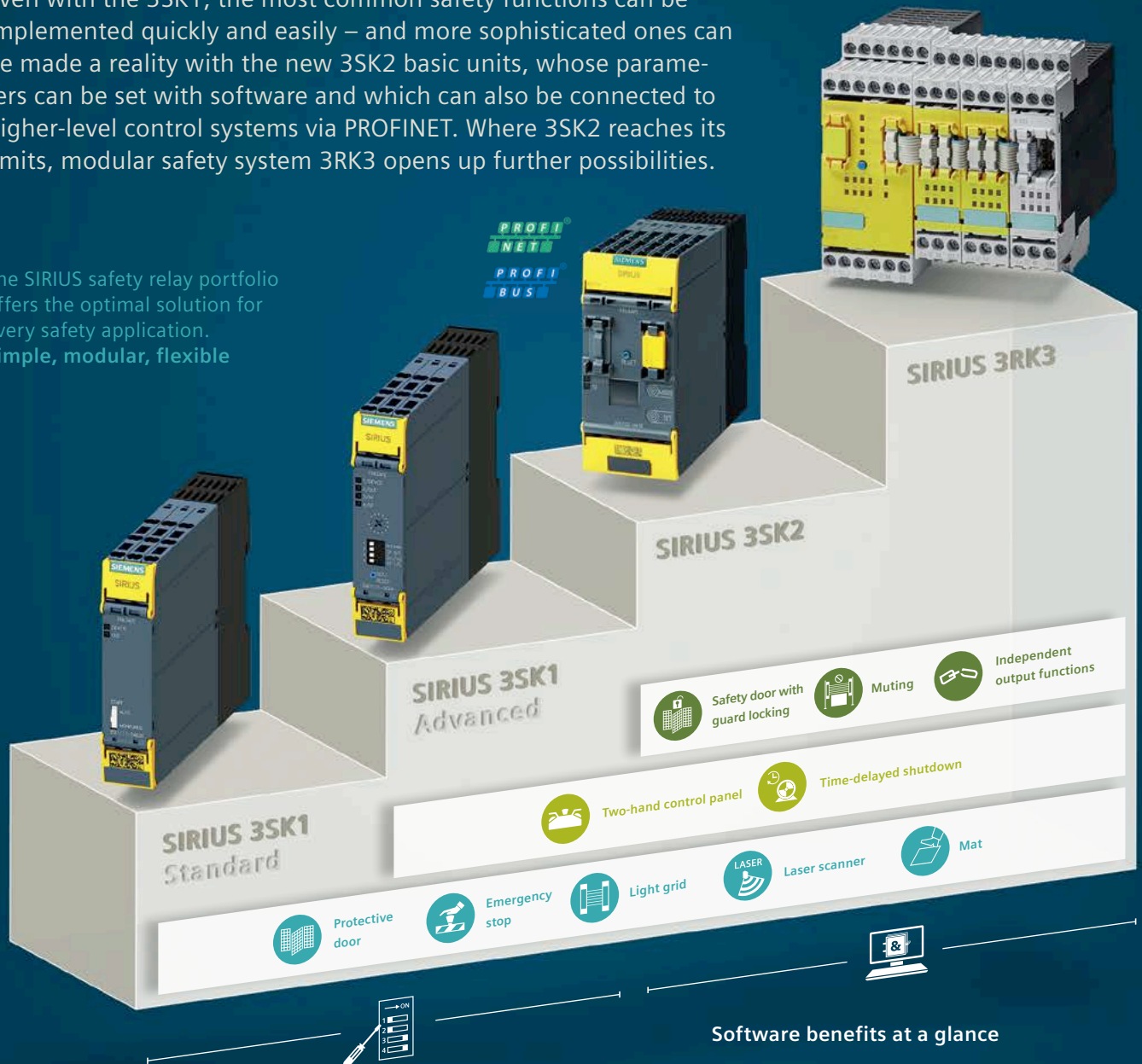
reliably but also in a manner that is significantly faster, simpler, and more cost-efficient. SIRIUS 3SK safety relays are of course certified according to IEC 62061 (SIL 3) and EN ISO 13849-1 (PLe). All this speaks in favor of switching to the new SIRIUS 3SK safety relays.

DETECT	EVALUATE	REACT

Machine safety has many facets – and is always a case for SIRIUS safety relays.

The slimline SIRIUS 3SK portfolio makes it possible to implement a wide range of safety applications with just a few device variants. Even with the 3SK1, the most common safety functions can be implemented quickly and easily – and more sophisticated ones can be made a reality with the new 3SK2 basic units, whose parameters can be set with software and which can also be connected to higher-level control systems via PROFINET. Where 3SK2 reaches its limits, modular safety system 3RK3 opens up further possibilities.

The SIRIUS safety relay portfolio offers the optimal solution for every safety application.
Simple, modular, flexible

PROFI NET®
PROFI BUS

SIRIUS 3RK3

SIRIUS 3SK2

SIRIUS 3SK1
Advanced

Safety door with guard locking   Muting   Independent output functions

Two-hand control panel   Time-delayed shutdown

SIRIUS 3SK1
Standard

Protective door   Emergency stop   Light grid   LASER Laser scanner   Mat

Hardware advantages at a glance

With SIRIUS 3SK1 safety relays, DIP switches can be used to easily set the parameters for safety functions.

Software benefits at a glance

SIRIUS 3SK2 and 3RK3 safety relays can be used to create sophisticated safety applications using drag and drop. They also simplify commissioning and documentation.

SIRIUS 3SK1: flexible and cost-efficient

The SIRIUS 3SK1 safety relays are easy to use and feature variable functionality. They are particularly suitable for safety functions that require only a few sensors and a low number of outputs of the safety relay.

Simply safe: SIRIUS 3SK1

Flexibility and ease of use in the field: These are the features that set the SIRIUS 3SK1 apart. With the modular product range, each safety application can be implemented quickly, easily, and cost-effectively.

Benefits at a glance
- A standardized unit: seamless integration of SIRIUS 3RM1 motor starters
- More free space: fewer basic units and main circuit components
- Very compact: narrow mounting width and multifunctionality
- Less wiring: device connectors and infeed system for SIRIUS 3RM1 Motor Starters
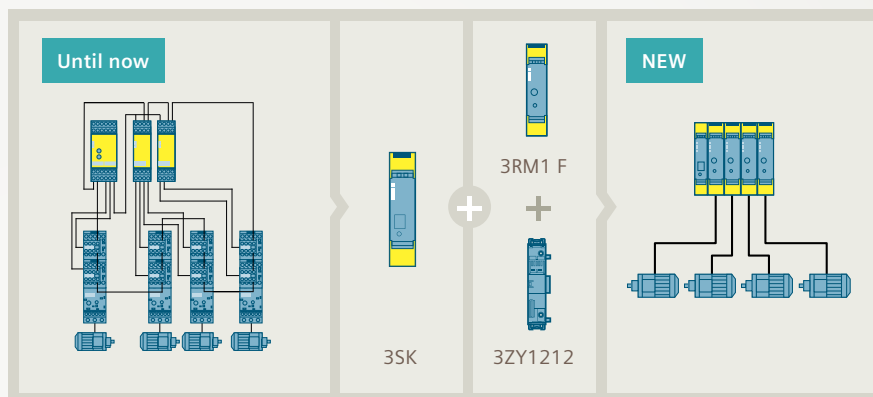
With the 3ZY12 device connectors, safety functions with several sensors and actuators can be quickly set up with the basic units 3SK1 Advanced or 3SK2. This reduces wiring requirements and prevents errors.

Expansions for SIRIUS 3SK1

Added value in the control cabinet: Classic switching technology meets innovative safety engineering

Previously, the devices from the main circuit and the control circuit had to be installed separately and wired together in a complex process. Within the framework of SIRIUS 3SK, they are merging for the first time. The fail-safe SIRIUS 3RM1 motor starters can be seamlessly integrated into the control circuit. This reduces the wiring requirements, thus minimizing the potential for error.

Until now | 3RM1 F | 3SK | 3ZY1212 | NEW

Output expansion

Simply safe: SIRIUS 3RM1 Failsafe

You want to safely switch small motors up to 3 kW in the 3SK1 system? Then extend the basic unit with the new fail-safe motor starter SIRIUS 3RM1 Failsafe. This allows safety engineering for the first time to meet classic switching technology with the safe motor starters in the 3SK1 system. The fail-safe SIRIUS 3RM1 is available as a direct and reversing starter. In combination with the safety relays, it not only safely switches off motors but also protects the motors against overload. It also uses low-wear and energy-efficient hybrid switching technology. For the first time, devices from the main and control circuits can be integrated into a standardized safety relay system using device connectors.

Simply more outputs: SIRIUS 3SK1 RO

You need more outputs on the basic unit? Then extend the basic unit with contact expansions 3RO and 4RO. These have 3 or 4 relay outputs for switching currents of up to 5 or 10 A.

Input expansion

Simply extended: SIRIUS 3SK1 2 DI

You need more than one sensor? Then simply do without the basic units of the device series 3SK1 Advanced. Instead of additional basic units, you only need an input expansion.

Simply supplied with power: SIRIUS 3SK1 power supply

The 24 V power supply supplies voltage for up to six components – whether basic units or input or output expansions. It covers all of the world's common control voltages from 110 to 240 V AC/DC. This means the safety relays can easily be used internationally.
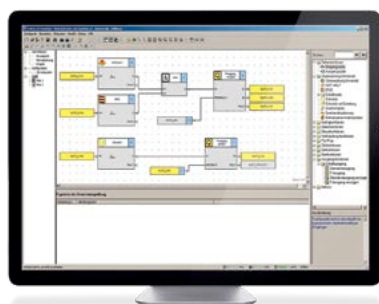
Benefits at a glance
- Reduces the number of devices required
- Reduces the amount of wiring – thus minimizing the potential for error
- Creates more space in the control cabinet

SIRIUS 3SK2: powerful and multifunctional

Despite their narrow mounting width, the 3SK2 safety relays feature a large number of inputs and outputs. They can thus be used to simply and efficiently implement demanding safety applications with several independent safety functions.

Simply advanced: SIRIUS 3SK2

SIRIUS 3SK2 safety relays are the logical further development of 3SK1 – and the first choice for more demanding safety applications.

- Maximum functionality in minimum space
- Wide range of inputs and outputs with narrow mounting widths
- Selective tripping by independent outputs
- Highly flexible: parameters can be set with simple software
- Greater cost-effectiveness and modularity: expandable with 3SK1 output expansions via device connectors (reduced wiring requirements)
- Individually selectable time functions
- Standardized unit: seamless integration of SIRIUS 3RM1 motor starters using device connectors
- Connection to PROFINET and PROFIBUS for easy setting of parameters, connection to the control level and for diagnostics.

Simple and convenient: SIRIUS Safety ES

You want to set parameters for demanding safety functions without programming knowledge? With the SIRIUS Safety ES engineering software, parameterization is carried out simply using drag and drop, with prefabricated and certified modules. This includes safety door with guard locking. In addition, it is possible to easily implement logic and safety applications. This reduces wiring requirements compared to cascading solutions with conventional safety relays.
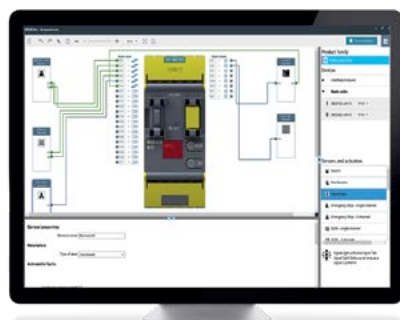
At the same time, a parameterization created once can be duplicated and transferred to other 3SK2 devices as often as required.

> Download the trial version of SIRIUS Safety ES free of charge from: **support.industry.siemens.com/cs/ww/de/ps/21192**

Benefits at a glance
- Parameters easily set using drag and drop
- Comprehensive user support for configuration, commissioning, and documentation through consistency checks, online diagnostics, forcing, and configuration documentation

Simply clever: simulate applications offline

With the free 3SK2 Simulator, you can get to know the full scope of functions of 3SK2 with ready-made applications and create and test configurations in advance, allowing you to easily find the right device for your application. This results in significant time and cost savings in engineering, since no actual components are required and the applications can be adapted quickly and easily.

> Download 3SK2 Simulator here:
> **support.industry.siemens.com/cs/ww/de/ view/109763750**

Fast on-site diagnostics and more

With the 3SK2 diagnostic display, you can quickly and easily determine the causes of faults and system states without any programming. Moreover, configuration information can be displayed for validation purposes. In addition, the 3SK2 diagnostic display offers the option of storing up to two complete configurations – when devices are being replaced or for easy replication and setting of parameters.
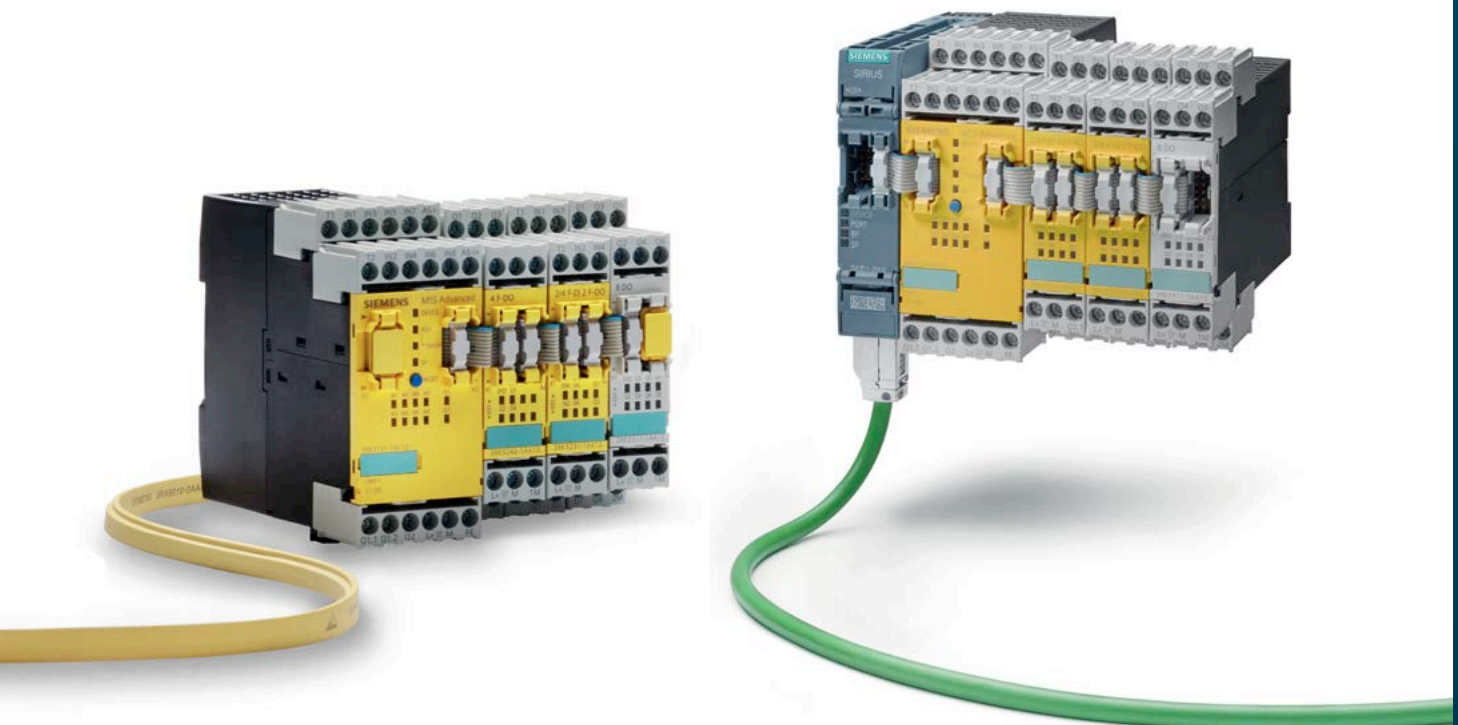
SIRIUS 3RK3:
self-sufficient and flexible

If you are looking for a bit more, modular safety system 3RK3 is the best choice. The modularity makes it easy to add further input and output modules, which also creates opportunities for implementing extensive safety applications that are distributed through AS-i connections.

From individual applications to complex, interconnected safety applications

With SIRIUS 3RK3 (MSS), you can rely on an integrated safety solution that enables you to align machines and systems in a highly flexible and cost-efficient manner – for new designs as well as retrofits. The modular structure of the MSS with the central modules Basic, Advanced, and ASIsafe offers real added value: You benefit from maximum flexibility within your applications and save costs, because it is not necessary for you to use more modules than you actually need.

The MSS central module is the core of a functioning safety chain, whose number of inputs and outputs can be flexibly adapted using expansion modules or the AS interface. In addition, an interface module enables transmission of diagnostic and status data to a higher-level PROFINET or PROFIBUS network. The Safety ES parameterization software is a central component of the system, offering fast and easy parameterization of the safety functions as well as extensive diagnostic options. Our Modular Safety System is certified according to IEC 62061 and EN ISO 13849-1.

Safety is a SIRIUS business: More than just evaluation

The products of the SIRIUS Safety portfolio are part of Safety Integrated. The resulting advantage for users is enormous, because everything fits together here.

Products

ET 200SP motor starter:
Switching motors – safety integrated

The SIMATIC ET 200SP decentralized I/O system stands for innovative and highly flexible switchgear control. With the Safety variant of the ET 200SP motor starter up to 5.5 kW, safety is always integrated. Whether controlling or switching, starting or monitoring, you can rely on ET 200SP. Thanks to its high-performance and compact design, you save even more space in the control cabinet and benefit from versatile functionality in the control of your system.

Find out more

3SE position and safety switches
Detecting hazards – absolutely reliably

SIRIUS sensing devices precisely detect motion sequences around machines and systems in almost any application. Whether for position detection, motion limitation of certain machine parts, or in safety circuits: Our sensing devices have command over the large variety of information in the field, even under the harshest conditions. For seamless monitoring, we also offer a comprehensive range of non-contact sensors.

Find out more

SIRIUS ACT with PROFINET
Connecting an emergency stop to the control system – more efficient than ever before

When it comes to communication, SIRIUS ACT performs exceptionally: In addition to the standard wiring, you can also connect the command and signaling devices (e.g., the emergency stop control device) directly to the control system – in the field or control cabinet, via PROFINET or PROFIsafe. This reduces your wiring effort, thus minimizing sources of error. In addition, you gain more flexibility when it comes to changes.

Find out more

3TK2810 speed and standstill monitors
Monitoring motors

SIRIUS 3TK2810 carries out continuous standstill and speed monitoring in machines and systems. Using simple parameterization and constant diagnostics, troubleshooting can be carried out quickly at any time – often before any associated system standstill has occurred.

Find out more

Services & Support

Safety Evaluation Tool
Checking safety engineering – online

The Safety Evaluation Tool for standards IEC 62061 and ISO 13849-1 takes you directly to your goal. This TÜV-approved online tool helps you to quickly and reliably evaluate the safety functions of your machine.

Find out more

Training
Continuing education – from trainers with first-hand knowledge

Siemens offers you a comprehensive range of training courses – from basic knowledge to expert know-how in functional safety.

Find out more

Safety application manual S.I.A.M.
Know-how for building applications

Using simple wiring examples, S.I.A.M. provides you with insight into the fundamental safety requirements in the production industry.

Find out more

Selection and ordering data

Central modules

	MSS Basic	MSS Advanced	MSS ASIsafe	
	–	–	Version "basic"	Version "extended"
Item number	3RK3111- ☐AA10	3RK3131- ☐AC10	3RK3121- ☐AC00	3RK3122- ☐AC00
Inputs	4/8 F-DI	4/8 F-DI	1/2 F-DI and 6 DI	2/4 F-DI and 4 DI
Outputs	1 F-DO and 1 F-RO	1 F-DO and 1 F-RO	1 F-DO and 1 F-RO	1 F-DO and 1 F-RO
Expandable by up to	7 expansion modules	9 expansion modules	Non-expandable	2 expansion modules
PROFIBUS DP interface module	yes	yes	yes	yes
Connecting the diagnostic display	yes	yes	yes	yes
Connection option to AS-i	–	yes	yes	yes
No. of ASIsafe outputs	–	12	8	10
No. of ASIsafe inputs	–	31		

Expansion modules

	Inputs	Outputs	Voltage	Item no.	Connecting cable
Failsafe	4/8 F-DI	–	24 V DC	3RK3211- ☐AA10	3UF7930-0AA00-0
	2/4 F-DI	1/2 F-RO		3RK3221- ☐AA10	
	2/4 F-DI	2 F-DO		3RK3231- ☐AA10	
	–	4 F-DO		3RK3242- ☐AA10	
	–	4/8 F-RO		3RK3251- ☐AA10	
Standard	8 DI	–		3RK3321- ☐AA10	
	–	8 DO		3RK331 - ☐AA10	

Communication modules for 3SK2 and 3RK3

DP interface	–	3RK3511- ☐BA10
PROFINET interface	–	3SK2511-☐FA10
Connection cable	2.5 cm	3UF7930-0AA00-0
	10 cm	3UF7931-0AA00-0
	50 cm	3UF7932-0AA00-0

☐1 = screw terminal
☐2 = spring-loaded connection

4/8 F-DI —————— 4 two-channel or 8 one-channel fail-safe digital inputs
1 F-DO and 1 F-RO— 1 fail-safe digital output and 1 fail-safe relay output
EC ——————— Release circuit
AS-i ——————— Actuator-sensor interface

SIRIUS 3SK1 Standard, Advanced and 3SK2 basic unit

	Inputs	Outputs	Delayed	Voltage	Item number	Optional device connector
SIRIUS 3SK1 Standard	2 F-DI	3 F-RQ	–	110 – 240 V AC/DC	3SK1111-☐AW20	–
	2 F-DI	3 F-RQ	–	24 V AC/DC	3SK1111-☐AB30	–
	3 F-DI	2 F-DQ	–	24 V DC	3SK1112-☐BB40	–
SIRIUS 3SK1 Advanced	3 F-DI	3 F-RQ	–	24 V DC	3SK1121-☐AB40	3ZY1212-2BA00 or 3ZY1212-2DA00
	3 F-DI	2 F-RQ	2 F-RQ		3SK1121-☐CB4☐	
	3 F-DI	1 F-DQ	–		3SK1120-☐AB40	3ZY1212-1BA00
	3 F-DI	3 F-DQ	–		3SK1122-☐AB40	3ZY1212-2BA00 or 3ZY1212-2DA00
	3 F-DI	2 F-DQ	2 F-DQ		3SK1122-☐CB4☐	
SIRIUS 3SK2 basic unit	10 F-DI	2 F-DQ	Individual time functions	24 V DC	3SK2112-☐AA10	3ZY1212-2GA00
	20 F-DI	4 F-DQ			3SK2122-☐AA10	3ZY1212-4GA01

Connection type:
Screw terminal ⎯ 1
Spring-loaded connection ⎯ 2

Adjustable off-delay:
1 — 0.05 – 3s
2 — 0.5 – 30s
4 — 5.0 – 300s

Accessories for SIRIUS 3SK series

SIRIUS 3SK	Inputs	Outputs	Voltage	Item number	Optional device connector	3SK1 Standard	3SK1 Advanced	3SK2
Sensor expansion	2 F-DI	–	–	3SK1220-☐AB40	3ZY1212-1BA00	–	yes	–
Output expansion	–	4 F-RQ with 5 A	24 V AC	3SK1211-☐BB00	–	yes	yes*	yes*
			24 V DC	3SK1211-☐BB40	3ZY1212-2BA00 or 3ZY1212-2DA00			
			110 – 240 V AC/DC	3SK1211-☐BW20	–			
	–	3 F-RQ with 10 A	24 V DC	3SK1213-☐AB40	3ZY1212-0FA01			
			115 V AC	3SK1213-☐AJ20	–			
			230 V AC	3SK1213-☐AL20				
Power supply	–	–	110 – 240 V AC/DC	3SK1230-☐AW20	3ZY1212-2BA00	hard-wired	yes	–

* Only 24 V DC devices

Connection type:
Screw terminal ⎯ 1
Spring-loaded connection ⎯ 2

Motorstarter SIRIUS 3RM1 Failsafe

Setting range for electronic overload release	Voltage	Direct starter	Reversing starter	Optional device connector
0.1 ... 0.5 A	24 V DC	3RM1101-☐AA04	3RM1301-☐AA04	3ZY1212-2EA00 or 3ZY1212-2FA00
0.4 ... 2.0 A		3RM1102-☐AA04	3RM1302-☐AA04	
1.6 ... 7.0 A		3RM1107-☐AA04	3RM1307-☐AA04	

Connection type:
Screw terminal ⎯ 1
Spring-loaded connection ⎯ 2
Screw terminal for main circuit and spring-loaded connection for control circuit ⎯ 3

Diagnostic display for 3SK2 and 3RK3

Diagnostics display		3SK2611-3AA00
Connection cable	1 m	3UF7937-0BA00-0
	2.5 m	3UF7933-0BA00-0

Software and accessories for 3SK2 and 3RK3

SIRIUS Safety ES	USB PC cable	Memory module
3ZS1316-*C*10-0Y*5	3UF7941-0AA00-0	3RK3931-0AA00

Starter kits

SIRIUS 3SK2 basic unit (10 F-DI/2 F-DQ) + SIRIUS Safety ES Standard software + USB cable for PC	3SK2941-2AA10
SIRIUS 3RK3 entry-level package for modular security system 3RK3. Contents: + Software Safety ES V1.0 Premium + USB PC cable	3RK3922-2AC10
MSS ASIsafe Basic central module + Software Safety ES V1.0 Premium + USB PC cable	3RK3923-2AC00

* Different product and license variants › www.siemens.com/sirius/support

Learn more:
siemens.com/safety-relays

Play it safe with SIRIUS safety relays:

Discover the flexible ways to use them. Find out for yourself how easy it is to set parameters. Easily implement efficient and economical safety chains throughout your installations.

**SIRIUS 3SK –
at a glance!**

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