

Safety Technology

**NEW**

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Article-No.

3RA1943-2C
3RA1943-2B
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Price groups

PG 41B, 41H, 41L, 42B, 42C, 42J

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Notes:

More 3TK28 safety relays can be found

- in the Catalog Add-On IC 10 AO · 2016 at the Information and Download Center
- in the interactive Catalog CA 01
- in the Industry Mall

Conversion tool

e.g. from 3TK28 to 3SK, see
www.siemens.com/sirius/conversion-tool

Safety Technology

Introduction

Overview

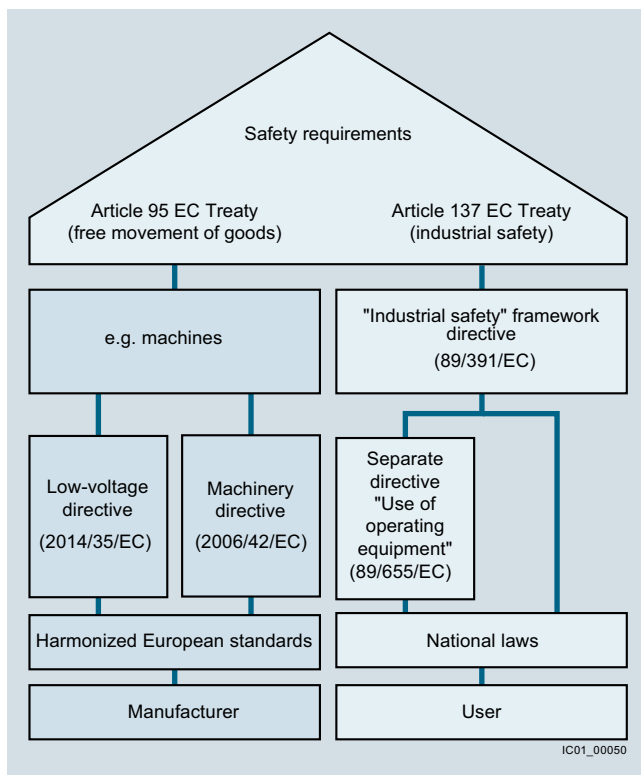
Functional safety of machines and plants – Basic safety requirements in the manufacturing industry

In order to protect people and the environment in many industrial applications in the manufacturing and process industries, machines and plants must meet the fundamental safety requirements of the EU Directives, particularly the Machinery Directive. In addition to design solutions, automation systems and components are also expected to perform safety-related tasks. This means that the life and health of people and the physical integrity of capital goods and the environment depend on the proper operation of these systems and components, on "functional safety".

With the introduction of the uniform European Single Market, national standards and regulations affecting the technical realization of machines were consistently harmonized. This involved defining basic safety requirements which address, on the one hand, machine manufacturers in terms of the free movement of goods (Article 95) and, on the other hand, machine operators in terms of industrial safety (Article 137).

The EU directives:

- Define requirements which must be met by plants and their operating companies in order to protect the health of people and the quality of the environment
- Include standards for health & safety at work (minimum requirements)
- Define product requirements (e.g. for machines) to protect the health and safety of consumers
- Differentiate between the requirements which must be met by the implementation of products in order to ensure the free movement of goods and the requirements which must be met for the use of products



Safety requirements imposed on machines and plants

Objective of the standards

It is the objective of safety technology to minimize as far as possible the hazards from technical facilities for people and the environment while restricting no more than absolutely necessary the scope of industrial production, the use of machines or the production of chemical products.

Production automation is governed in particular by the following standards:

- IEC 61508 or IEC 62061 and
- EN ISO 13849-1

The IEC 62061 standard

The IEC 62061 standard "Safety of machines – Functional safety of electrical, electronic and programmable electronic control systems" defines comprehensive requirements. It includes recommendations for the development, integration and validation of safety-related electrical, electronic and programmable electronic control systems (SRECS) for machines. With the implementation of EN 62061, for the first time, one standard covers the entire safety chain, from the sensor to the actuator. The Safety Integrity Level, or SIL for short, is defined as the application parameter for this standard.

Requirements placed on the capacity of non-electrical – e.g. hydraulic, pneumatic, or electromechanical – safety-related control elements for machines are not specified by the standard.



Safety of machines

Standard EN ISO 13849-1

EN ISO 13849-1 "Safety of machines – Safety-related components of controls – Part 1: General principles" replaced EN 954-1 at the end of 2011. It considers the complete range of safety functions with all the devices which are involved in their performance. EN ISO 13849-1 also makes a quantitative analysis of the safety functions. The standard describes how to determine the performance level (PL) for safety-relevant parts of control systems on the basis of architectures specified for the intended service life.

When several safety-relevant parts are combined to form a single complete system, the standard explains how to determine the resulting PL. It can be applied to safety-related parts of control systems (SRP/CS) and all types of machines, regardless of the technology and energy used, e.g. electrical, hydraulic, pneumatic or mechanical.

Safety Integrated – Integrated safety technology from a single source



Safety Integrated

The following applies equally for machine manufacturers and the companies which operate their machines: Maximum possible safety for personnel and machines. The solution: our Safety Integrated concept based on Totally Integrated Automation. Whether for simple safety functions or highly complex tasks – our portfolio offers you maximum safety.

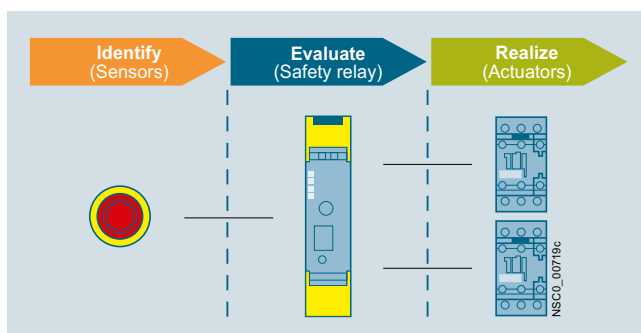
Safety Integrated is a unique, complete and consistent range of safety products covering all safety-related tasks – from identifying and evaluating to realizing, from switches and control systems to operating mechanisms (see graphic on page 11/4). Our products meet the safety requirements in force in industry, including IEC, ISO, NFPA and UL, and are certified in accordance with the latest safety standards.

All Safety Integrated products or systems can be seamlessly integrated in the standard automation environment. They are therefore particularly flexible and economical, reduce engineering time, increase plant availability and enable practice-related machine operation.

Design of a safety function

A safety chain normally comprises the following functions: identify, evaluate and realize. In detail this means:

- Identify = the detection of a safety requirement, e.g. when an EMERGENCY-STOP is actuated or someone enters a hazardous area which is protected by sensors such as light arrays or laser scanners.
- Evaluate = the detection of a safety requirement and the reliable initiation of a reaction, e.g. shutting down the enabling circuits.
- Realize = responding to a hazard, e.g. shutting down a power supply via the downstream contactors.



Design of a safety function

Our offering

As a partner for all safety requirements, we not only support you with the respective safety-related products and systems, but also consistently provide you with the most current know-how on international standards and regulations. Machine manufacturers and plant managers are offered a comprehensive training portfolio as well as services for the entire lifecycle of safety-related systems and machines.

- A uniform, certified product range
- Courses on CE marking, risk assessment and standards, see www.siemens.com/sitrain-safetyintegrated
- Worldwide service and support, see <http://support.automation.siemens.com>
- More information, see www.siemens.com/safety-integrated

Safety Evaluation Tool



Safety Evaluation Tool

The Safety Evaluation Tool for the standards IEC 62061 and EN ISO 13849-1 guides you quickly and safely through all the calculation steps in implementing safety functions on a machine, from definition of the safety system structure through to selection of the components all the way to determination of the achieved safety integrity level (SIL/PL). You receive the results as a standards-compliant report that can be integrated in the documentation as proof of safety.

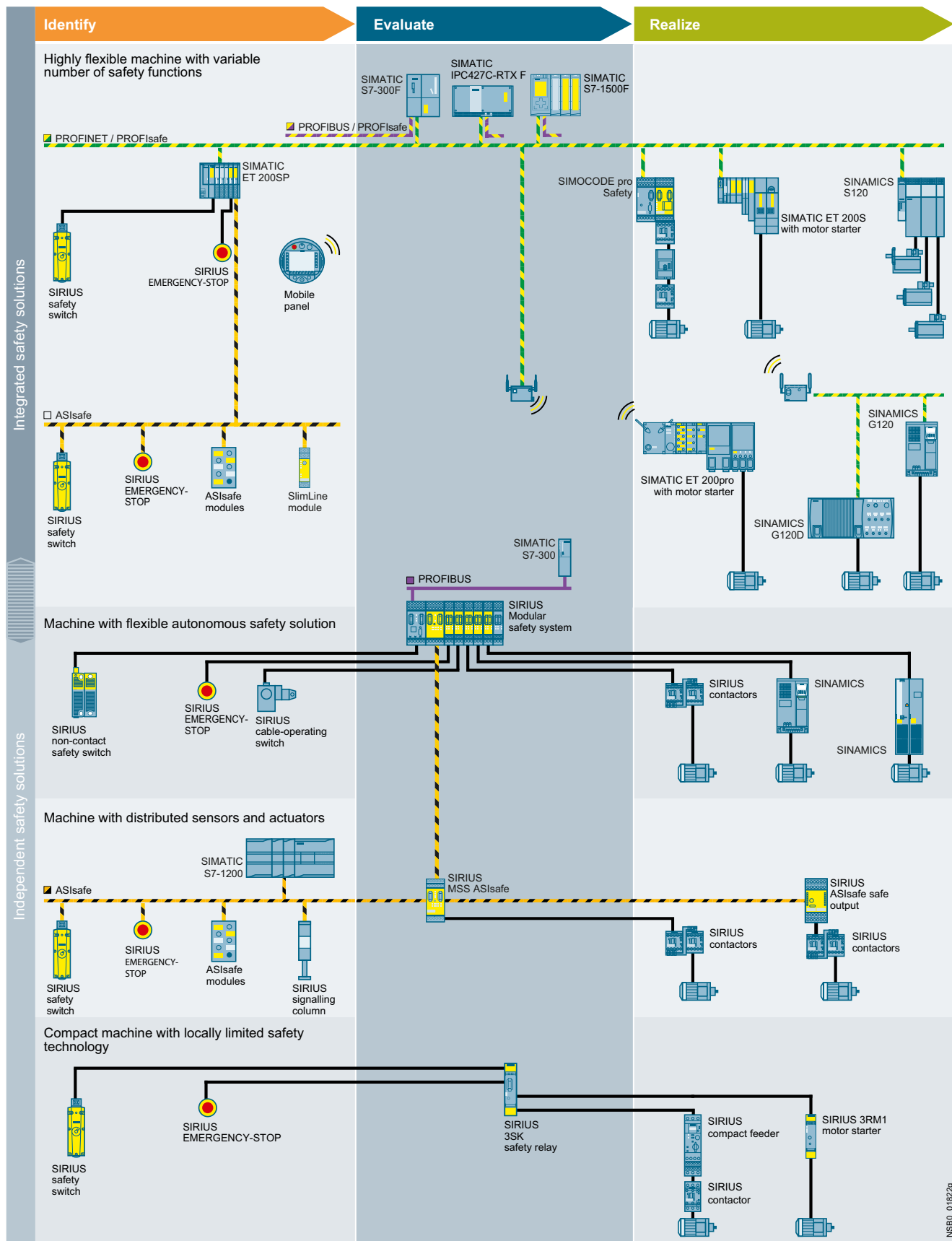
Benefits of the Safety Evaluation Tool to you:

- Less time needed to evaluate the safety functions
- Calculation in accordance with current standards
- User-friendly archiving: Projects can be saved and called up again as required
- Fast and easy handling: comprehensive, predefined libraries of examples
- Fast access to product data
- Import function for the safety parameters of products from other manufacturers in XML format according to VDMA Specification 66413
- Selection aids for determining variables and specifying the system design
- Helpful documents which can be downloaded as PDFs
- The online tool can be used free of charge – you pay only the usual costs for accessing the Internet.

For more information, see www.siemens.com/safety-evaluation-tool.

Safety Technology

Introduction



Safety Integrated

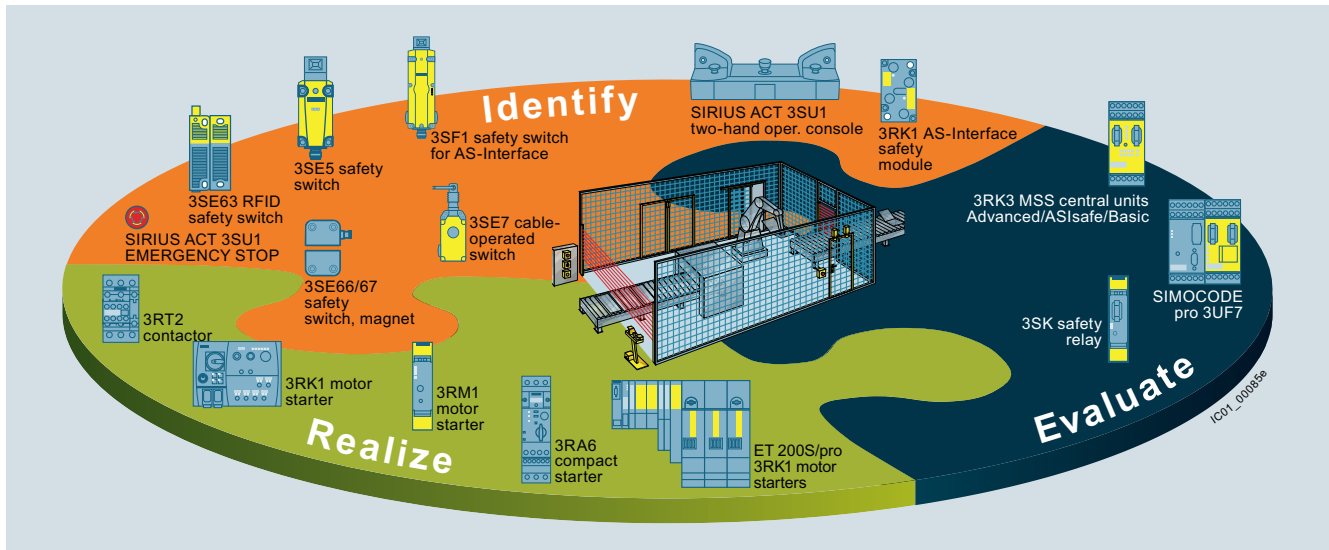
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SIRIUS Safety Integrated

Our SIRIUS Safety Integrated controls are a central element of the Siemens Safety Integrated concept. Whether for fail-safe identifying, commanding and signaling, monitoring and evaluating or starting and reliable shutting down – our SIRIUS Safety Integrated controls are experts at performing safety tasks in your plant.

SIRIUS Safety Integrated uses fail-safe communication using standard fieldbus systems, e.g. ASIsafe via AS-Interface and PROFIsafe via PROFIBUS and PROFINET, to solve even networked safety tasks of greater complexity. This opens the door for flexible safety solutions for compact machines or large-scale plants.



SIRIUS Safety Integrated

Monitoring with fail-safe evaluation units from the 3SK, 3TK28 and 3RK3 series

Safe protective door tumbler with safety switches and separate actuator, in accordance with EN ISO 14119:

Position monitoring with non-contact safety switches:

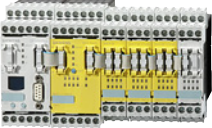


Safe evaluation units	Maximum achievable safety level according to type of switch	
	Safety switches with tumbler	
3SE53	SIL 2/PL d	SIL 3/PL e
	SIL 2/PL d	SIL 3/PL e
3SK2	SIL 2/PL d	SIL 3/PL e
	SIL 2/PL d	SIL 3/PL e
3TK2845	SIL 2/PL d	SIL 3/PL e

Safe evaluation units	Maximum achievable safety level according to type of switch	
	Magnetically operated switches	RFID safety switches
2 NC/2 NC + 1 NC (signaling contact) 3SE66/3SE67	3SE63	
	SIL 3/PL e	
3SK1, 3SK2	SIL 3/PL e	
	SIL 3/PL e	
3RK3	SIL 3/PL e	

Notes:

For more information, see <http://support.automation.siemens.com/WWW/view/en/35443942>.
Information on safety switches, see page 12/1.

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SIRIUS Safety Integrated			
	3SK safety relays		
3SK111.	<ul style="list-style-type: none"> • Key modules of a consistent and cost-effective safety chain • Can be used for all safety applications thanks to compliance with the highest safety requirements (PL e according to EN ISO 13849-1 or SIL 3 according to IEC 61508) • Suitable for use all over the world through compliance with all globally established certifications 		
	<u>SIRIUS 3SK1 Standard basic units</u>	3SK111	11/20
3SK112.	<ul style="list-style-type: none"> • Simple, compact devices for all important requirements for monitoring safety sensors and actuators 		
	<u>SIRIUS 3SK1 Advanced basic units</u>	3SK112	11/21
3SK2	<ul style="list-style-type: none"> • Multifunctional series of safety relays with safe relay outputs, semiconductor outputs or time-delayed outputs for: <ul style="list-style-type: none"> - EMERGENCY-STOP monitoring - Protective door monitoring - Monitoring of non-floating sensors such as light arrays, laser scanners, etc. - Monitoring of two-hand operation consoles - Monitoring of equivalent (NC/NC) and antivalent (NO/NC) sensors • Setting by means of DIP switch 		
	<u>SIRIUS 3SK2 basic units</u>	3SK2	11/22
3SK2	<ul style="list-style-type: none"> • Series of safety relays that can be parameterized by software, with semiconductor outputs and independent output functions for: <ul style="list-style-type: none"> - EMERGENCY-STOP monitoring - Protective door monitoring - Protective door monitoring with tumbler - Monitoring of non-floating sensors such as light arrays, laser scanners, etc. - Monitoring of two-hand operation consoles - Monitoring of equivalent (NC/NC) and antivalent (NO/NC) sensors - Muting 		
	<u>Expansion units</u>	3SK121, 3SK122, 3SK123	11/23, 11/25
3SK121.	<ul style="list-style-type: none"> • Output expansions 3RO and 4RO for SIRIUS 3SK1 Standard basic units, SIRIUS 3SK1 Advanced basic units and SIRIUS 3SK2 basic units • Input expansion for SIRIUS 3SK1 Advanced basic units • Power supply for SIRIUS 3SK1 Advanced basic units • Integration of 3RM1 motor starters possible and simple integration of a main circuit component in a system configuration of the safety relays. There is no need for complex wiring between the safety evaluation unit and the actuator. • Expansion of the Standard device series by means of wiring • Expansion of the SIRIUS 3SK1 and SIRIUS 3SK2 Advanced device series by means of wiring or without wiring outlay by means of 3ZY 12 device connectors 		
	3TK28 safety relays		
3TK2826-2BB40	<ul style="list-style-type: none"> • Key modules of a consistent and cost-effective safety chain • Can be used for all safety applications thanks to compliance with the highest safety requirements (PL e according to EN ISO 13849-1 or SIL 3 according to IEC 61508) • Suitable for use all over the world through compliance with all globally established certifications 		
	<u>Safety relays with relay enabling circuits</u>	3TK2826, 3TK2827, 3TK2828, 3TK283	11/30, IC 10 AO
3TK2845-1HB40	<ul style="list-style-type: none"> • Different voltages can be switched through the floating contacts • Inductive currents up to 5 A can be switched with relay contacts 		
	<u>Safety relays with electronic enabling circuits</u>	3TK2845, 3TK2840, 3TK2841, 3TK2842	11/33, IC 10 AO
3TK2810-1BA41	<ul style="list-style-type: none"> • Wear-free • Suitable for operation in fast switching applications • Insensitive to vibrations and dirt • Good electrical endurance 		
	<u>Safety relays with contactor relay enabling circuits</u>	3TK285	IC 10 AO
	<ul style="list-style-type: none"> • Different voltages can be switched through the floating contacts • Inductive currents up to 10 A can be switched with contactor relay enabling circuits • High mechanical and electrical endurance 		
	<u>Safety relays with special functions</u>	3TK2810	11/36
	Safe standstill monitoring with 3TK2810-0		
	<ul style="list-style-type: none"> • Monitoring without external sensors • Universal use in applications possible 		
	Safe speed monitoring with 3TK2810-1		
	<ul style="list-style-type: none"> • Monitoring of speed with encoders and proximity switches possible • Easy diagnostics options via display • Integrated monitoring of a spring-type locking protective door 		

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SIRIUS Safety Integrated (continued)		
 3RK3	3RK3 Modular Safety System (MSS) <ul style="list-style-type: none"> • Freely configurable modular safety relays • Safety-related applications up to PL e according to EN ISO 13849-1 or SIL 3 according to IEC 62061 can be implemented • High flexibility and planning reliability thanks to a modular design • More space in the control cabinet and lower costs thanks to highly modular project data • More functionality and time savings thanks to a software-configurable system • Comprehensive diagnostics on-site with the SIRIUS Safety ES software • Improved plant diagnostics and higher plant availability thanks to exchange of data using PROFIBUS • Automatic creation of plant documentation with regard to MSS and software parameterization • Up to 9 expansion modules can be plugged in for standard I/Os and fail-safe I/Os – optionally solid-state or relay-based fail-safe outputs • Graphic parameterization of the logic, online diagnostics, and automatic creation of documentation using SIRIUS Safety ES • Consistent further development of the safety monitors with the Advanced and ASIsafe central units of the SIRIUS 3RK3 Modular Safety System (MSS) Additionally with AS-Interface (ASIsafe): <ul style="list-style-type: none"> • Modularly expandable and freely configurable safety monitor • With MSS Advanced/ASIsafe up to 50 two-channel, fail-safe outputs (38 central outputs and 12 outputs via AS-i) • Safety-related and standard communication between multiple MSS devices and/or safety monitors • Distributed detection of sensors and disconnection of actuators through AS-Interface • Much more space is available without wiring outlay using AS-Interface • Ready-to-use function blocks (e.g. muting or protective door with tumbler) can also be used on AS-i 	11/39
 3RK3 MSS ASIsafe	AS-Interface safety modules <ul style="list-style-type: none"> • Complete portfolio of ASIsafe modules • For connection of safety switches with contacts (e.g. position switches) as well as solid-state safety sensors (ESPE) • Degree of protection IP65/IP67 or IP20 • Particularly compact dimensions, from 17.5 mm width • Up to four safe inputs per module • Up to one safe output per module • Standard outputs are available on the module in addition • Up to Category 4, PL e, SIL 3 Advantage: Easy integration of safe signals both in the control cabinet or in the field	2/27
 K45F SC17.5F	AS-i Master and AS-i Safety module for ET 200SP <p>The CM AS-i Master ST and F-CM AS-i Safety ST modules are plugged into an ET 200SP configuration, and they connect an AS-i network, including safety-related inputs and outputs, with the controller.</p> <ul style="list-style-type: none"> • Single, double and multiple masters possible • Up to 31 safe input signals (2-channel)/16 safe output channels possible per F-CM AS-i Safety ST module • Plant-wide safety programming of the F-CPU via SIMATIC Distributed Safety/ Safety Advanced • Together with an ET 200SP F-CPU 1510SP F / 1512SP F (firmware V1.8 and higher), pre-processing of safe AS-i signals directly in the ET 200SP station is possible, as well as the configuration of an autonomous AS-i Safety station without a higher-level CPU • Integrated diagnostics • No other programming tools required Advantage: Modular connection of fail-safe AS-i networks with system-wide programming in SIMATIC and SINUMERIK controllers	2/37
 CM AS-i Master ST and F-CM AS-i Safety ST	3RM1 motor starters <ul style="list-style-type: none"> • Motor starters for safety-related shutdown as 3RM11 direct-on-line starters or 3RM13 reversing starters • Compact devices with 22.5 mm width comprising combinations of relay contacts and power semiconductors (hybrid technology) and a electronic overload relay • For switching three-phase motors up to 3 kW (at 400 V) and resistive loads up to max. 10 A at AC voltages up to 500 V under normal operating conditions • Safety-related shutdown according to PL e or SIL 3 by shutting down the control supply voltage possible without additional devices in the main circuit • Combination with 3SK safety relay through conventional wiring or 3ZY12 device connectors • Simple wiring and collective shutdown with device connectors in assemblies; there is no further need for complex looping of the connecting cables 	8/87
 3RM1		

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SIRIUS Safety Integrated (continued)			
	<p>ET 200S Safety Motor Starter Solutions</p> <p>The ET 200S Safety Motor Starter Solutions comprise:</p> <ul style="list-style-type: none"> • Safety modules • Standard motor starters • High-Feature motor starters • Failsafe motor starters 	3RK1	8/93
ET 200S Safety	<p><u>ET 200S Safety Motor Starter Solutions local</u></p> <p>Safety Motor Starter Solutions local are preferred from the safety technology point of view for locally restricted safety applications. These motor starters are not dependent on a safe control system.</p> <p><u>ET 200S Safety Motor Starter Solutions PROFIsafe</u></p> <p>Safety Motor Starter Solutions PROFIsafe are often found by contrast in safety applications of the more complex type that are interlinked. In this case a safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile.</p>		
	<p>ET 200pro Safety Motor Starter Solutions</p> <p>The ET 200pro Safety Motor Starter Solutions comprise:</p> <ul style="list-style-type: none"> • PROFIsafe modules • Safety repair switch modules • Disconnecting modules • Standard motor starters • High-Feature motor starters 	3RK1	9/10
ET 200pro Safety	<p><u>ET 200pro Safety Motor Starter Solutions local</u></p> <p>Safety Motor Starter Solutions local are preferred from the safety technology point of view for locally restricted safety applications. These motor starters are not dependent on a safe control system.</p> <p><u>ET 200pro Safety Motor Starter Solutions PROFIsafe</u></p> <p>Safety Motor Starter Solutions PROFIsafe are often found by contrast in safety applications of the more complex type that are interlinked. In this case a safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile.</p>		
	<p>SIMOCODE pro motor management and control devices</p> <ul style="list-style-type: none"> • Flexible, modular motor management system for motors with constant speeds in the low-voltage range • Provides an intelligent interface between the higher-level automation system and the motor feeder • Multi-functional, electronic full motor protection which is independent of the automation system • Integrated control functions for the motor control • Detailed operating, service and diagnostics data • Open communication through PROFIBUS DP and PROFINET • Safety relay function for the fail-safe disconnection of motors up to SIL 3 (IEC 61508/IEC 62061) or PL e with Category 4 (EN ISO 13849-1) 	3UF7	10/5
SIMOCODE pro V	<p><u>Fail-safe digital modules</u></p> <ul style="list-style-type: none"> • DM-F Local for direct assignment between a fail-safe hardware shutdown signal and a motor feeder • DM-F PROFIsafe for when a fail-safe controller (F-CPU) creates the fail-safe signal for the disconnection 		
	<p>Mechanical position switches</p> <ul style="list-style-type: none"> • Easy assembly thanks to modular design • Solid, rugged design • Special versions are easily generated and quickly available, also in combination with standard modules • With a 3SE51/3SE52 position switch it is possible to achieve Category 2 according to EN ISO 13849-1 or SIL 1 according to IEC 61508 • Categories 3 and 4 can be achieved by using a second 3SE51/3SE53 position switch 	3SE51, 3SE52	12/5
SIMOCODE pro S	<p>Mechanical safety switches</p> <ul style="list-style-type: none"> • With separate actuator, hinge switch, or separate actuator and tumbler • With a position switch it is possible to achieve Category 3 according to EN ISO 13849-1 or SIL 2 according to IEC 61508 • Category 4 according to EN ISO 13849-1 or SIL 3 according to IEC 61508 can be achieved by using a second 3SE51 or 3SE52 position switch • Version in various sizes made of metal or plastic • Integrated ASIsafe electronics for all enclosure designs 	3SE51, 3SE52, 3SE53	12/51
			
3SE51			
			
3SE53			

SIRIUS Safety Integrated (continued)



3SE66, 3SE67



3SE63



3SU1400



3SU1001



3SE7

Non-contact magnetically operated safety switches

- Small, compact, safe
- Simple installation even in restricted spaces thanks to connector versions
- Two safety contacts and one signaling contact enable simple diagnostics at the maximum safety level

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3SE63	12/114
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3SE7	13/141

Non-contact RFID safety switches

- Long service life due to non-contact switching
- Only one switch required for the maximum safety level PL e or SIL 3 according to EN ISO 13849-1 and IEC 61508
- Tamper protection better than with mechanical safety switches thanks to switches and actuators with individual coding
- LED status indication including threshold indication for door displacement
- Degree of protection up to IP69 K and resistance to cleaning products
- Larger switching displacement than mechanical switches; offers better mounting tolerance and sagging tolerance of the protective door

Command devices

- Using a special F adapter, EMERGENCY-STOP devices according to ISO 13850 can be directly connected through the standard AS-Interface or PROFIsafe with safety-related communication. This F adapter is snapped from the rear onto the EMERGENCY-STOP device, enabling the achievement of maximum performance level "e" according to EN ISO 13849-1, or SIL 3 according to IEC 62061.
- EMERGENCY-STOP devices for disconnecting plants in an emergency situation
- With positive latching function according to EN ISO 13850 and performance level "e" according to EN ISO 13849-1 or SIL 3 according to IEC 62061
- Various mushroom diameters (also illuminated), with lock, in plastic/metal, as individual or complete units, and in combination with 3SU1 enclosure or two-hand operation console. The 3SU1 enclosures are also optionally available with ASIsafe interface

Cable-operated switches

- Control functions and EMERGENCY-STOP always within reach
- More safety over long distances of up to 2 x 75 m length
- Easy release
- Fail-safe applications with SIRIUS Safety Integrated
- Status display directly on the switch
- Signal display for long distances in innovative LED technology with visibility over 50 m
- Cable-operated switches with latching according to ISO 13850 (EN 418) and full EMERGENCY-STOP function with positive-opening contacts
- Quick and safe mounting using uniform mounting accessories
- Versions with 1 NO/2 NC with yellow lid

Connection methods

The safety relays and the Modular Safety System are available with screw or spring-type terminals.



Screw terminals



Spring-type terminals (push-in)

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Push-in connection method

Push-in connections are a form of spring-type terminals allowing fast wiring without tools for rigid conductors or conductors equipped with end sleeves.

As with other spring-type terminals, a screwdriver (with 3.0 x 0.5 mm blade) is required to disconnect the conductor. The same tool can also be used to wire fine-stranded or stranded conductors with no end finishing.

The advantages of the push-in terminals are found, as with all spring-type terminals, in speed of assembly and disassembly and vibration-proof connection. There is no need for the checking and tightening required with screw terminals.

Safety Relays

SIRIUS 3SK Safety Relays

General data

Overview



SIRIUS 3SK safety relays

SIRIUS 3SK safety relays are the key elements of a consistent, cost-effective safety chain. Whether you need EMERGENCY-STOP disconnection, protective door monitoring, light arrays, laser scanners or the protection of presses or punches – with SIRIUS safety relays, all safety applications can be implemented within a minimum width to optimum effect in terms of engineering and price.

The following safety-related functions are available:

- Monitoring the safety functions of sensors
- Monitoring the sensor leads
- Monitoring the correct device function of the safety relay
- Monitoring the actuators in the shutdown circuit
- Safety-related disconnection when dangers arise

SIRIUS 3SK safety relays are approved for applications up to SIL 3 (IEC 61508/IEC 62061) or PL e (EN ISO 13849-1).

Device series

SIRIUS 3SK safety relays stand out due to their flexibility for both parameterization and system designs with several evaluation units. Optimized solutions when selecting components are facilitated by a clearly structured component range:

- 3SK1 Standard basic units
- 3SK1 Advanced basic units
- 3SK2 basic units
- 3SK output expansions
- 3SK1 input expansions
- Accessories

3SK1 Standard basic units

The 3SK1 Standard basic units are characterized by the following features:

- Compact design
- Simple operation
- Relay and semiconductor outputs
- Economical solution

3SK1 Advanced basic units

The 3SK1 Advanced basic units also offer:

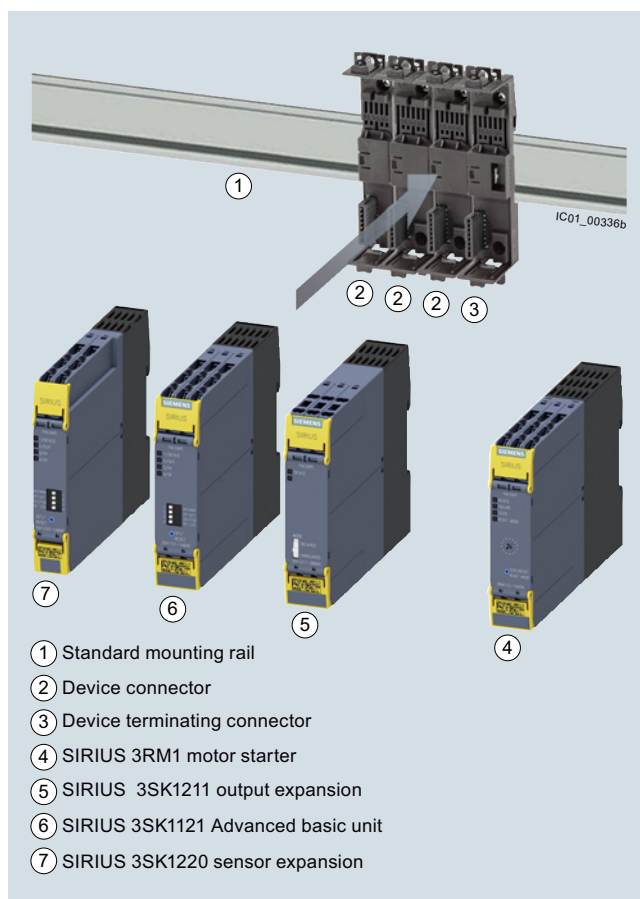
- Universal application possibilities thanks to multifunctionality
- Time-delayed outputs
- Expansion of inputs and outputs

3SK2 basic units

The 3SK2 basic units also offer:

- Up to six fail-safe shutdown functions
- Flexible in use thanks to software parameterization
- Powerful semiconductor outputs
- User-friendly diagnostics using diagnostics display and configuring software

In the case of 3SK1 Advanced basic units or 3SK2 basic units, the 3ZY12 device connector allows safety functions involving several sensors and actuators to be constructed very quickly.



System configuration example

The 3SK1 and 3SK2 Standard and Advanced series are a high-quality replacement for the 3TK28 safety relays. In their narrower design, and equipped with greater functionality, they can replace every 3TK28 device. The only exception to this are the 3TK2810 devices.

Note:

Conversions from 3TK28 to 3SK, see www.siemens.com/sirius/conversion-tool.

Overview of functions of the 3SK series

Type	3SK1 Standard basic units		3SK1 Advanced basic units		3SK2 basic units	
	Safe relay outputs	Safe semiconductor outputs	Safe relay outputs	Safe semiconductor outputs	22.5 mm Safe semiconductor outputs	45 mm Safe semiconductor outputs
Sensors						
• Mechanical	✓	✓	✓	✓	✓	✓
• Single-ended	✓ ¹⁾	✓	✓	✓	✓	✓
• Antivalent	--	--	✓	✓	✓	✓
• Expandable	--	✓ by means of cascading	✓	✓	--	--
Inputs						
• Freely parameterizable	--	--	--	--	10 single-channel, 5 two-channel	20 single-channel, 10 two-channel
Parameters						
• Start (auto/monitored)	✓	✓	✓	✓	A variety of functions can be set for each input/output by means of software parameterization.	
• Sensor connection, 2 x 1-channel/ 1 x 2-channel	✓ by means of wiring	✓	✓	✓		
• Cross-circuit detection	✓ by means of wiring	✓	✓	✓		
• Start test ON/OFF	--	✓	✓	✓		
• Monitoring of two-hand operator controls according to EN 574	--	--	✓	✓		
• Pressure-sensitive mat	--	--	✓	✓		
Safe outputs						
• Instantaneous	✓	✓	✓	✓	Parameterizable	Parameterizable
• Time-delayed	--	--	✓	✓	Parameterizable	Parameterizable
• Expandable with safe relay outputs	✓ by means of wiring	✓ by means of wiring	✓	✓	✓	✓
• Independent	--	--	--	--	✓ ⁴⁾	✓ ⁵⁾
• Device connectors	--	--	✓	✓	✓	✓
Options						
• External memory module	--	--	--	--	--	✓
• Display on the device	--	--	--	--	--	✓
• External diagnostics module can be connected	--	--	--	--	✓	✓
Rated control supply voltage						
• 24 V DC	✓ ²⁾	✓	✓	✓	✓	✓
• 115 ... 240 V AC/DC	✓	--	✓ ³⁾	✓ ³⁾	--	--

✓ Available

-- Not available

1) 24 V basic units only.

2) 24 V AC/DC.

3) Possible using 3SK1230 power supply via device connector.

4) Up to 4 independent safe outputs, two of which via device connectors.

5) Up to 6 independent safe outputs, two of which via device connectors.

Safety Relays

SIRIUS 3SK Safety Relays

General data

Parameterization

3SK112 and 3SK1112 with DIP switch

The 3SK112 and 3SK1112 safety relays are configurable safety relays. They are used as evaluation units for typical safety chains (identify, evaluate, realize). A number of functions can be set using the DIP switches on the front. 3SK112 and 3SK1112 are therefore universally applicable.

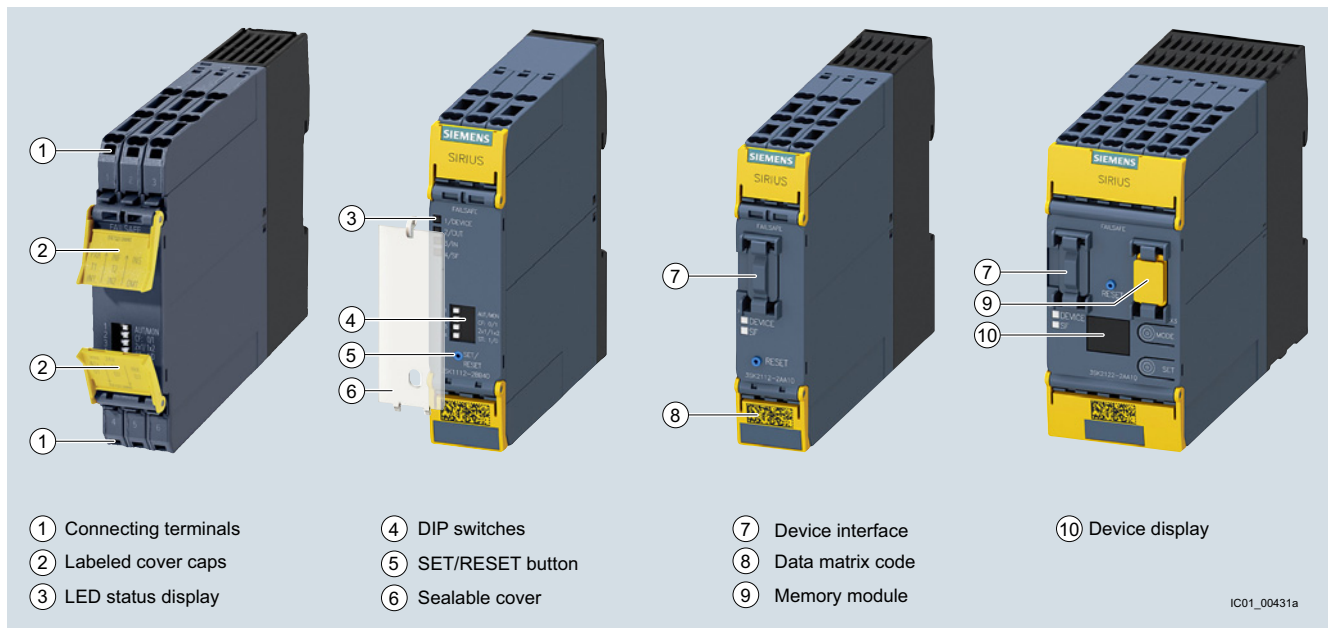
DIP switch No.	OFF	ON	Schematic
1	Sensor input Autostart	Sensor input Monitored start	
2	Without crossover monitoring	With crossover monitoring	
3	2 x single-channel sensor connection	1 x 2-channel sensor connection	
4	With start test	Without start test	

3SK2 with software

The 3SK2 safety relays are configured with the SIRIUS Safety ES software. The behavior of a 3SK2 device as well as the functioning of the individual safe outputs can thus be parameterized simply and conveniently in the logic diagram. In addition, the configuration can be printed out for documentation purposes. The software also supports users in commissioning and troubleshooting by means of online diagnostics and the option of "forcing" signals in the logic diagram. The 3SK2 safety relays thus offer maximum flexibility and universal application options.

Note:

For SIRIUS Safety ES, see page 14/33.

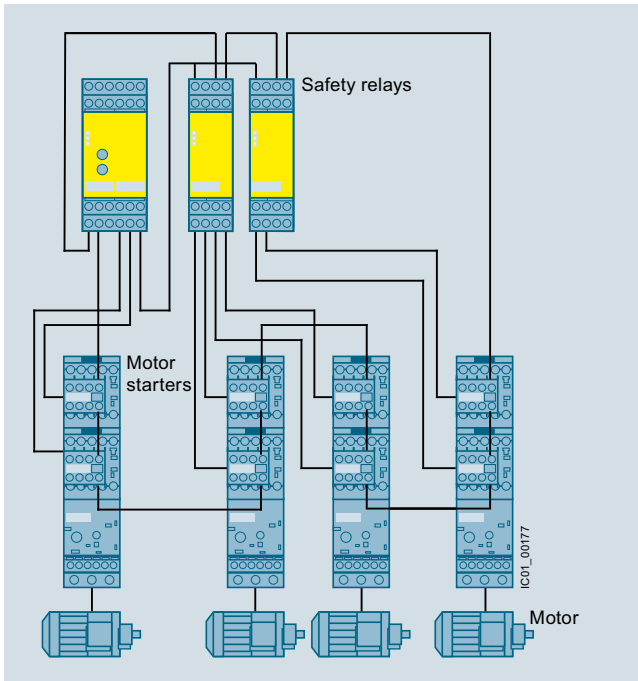


Innovative enclosure concept for SIRIUS 3SK safety relays

IC01_00431a

Expansion option by adding the 3RM1 motor starter

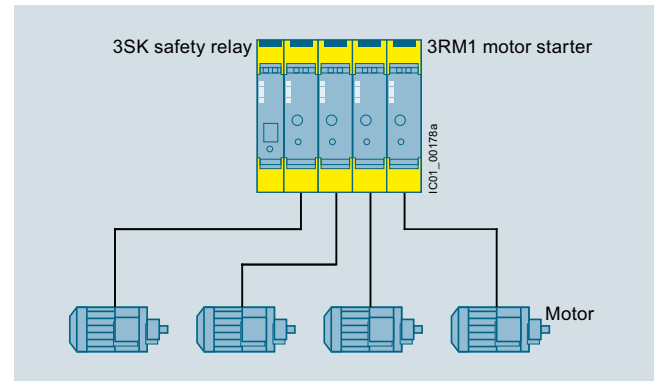
With previous safety relay and motor feeder configurations, a huge amount of wiring was required to monitor the motor feeders in safety applications.



Conventional system configuration

With the integration of the SIRIUS 3RM1 motor starter into the SIRIUS 3SK safety relay system family, this wiring has been minimized for the first time.

Motor starters up to 3 kW can easily be integrated into the safety relay system using SIRIUS 3ZY12 device connectors, without additional wiring between the evaluation unit and the motor starter.



System design using 3SK and 3RM1

Article No. scheme

3SK1

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Safety relays	3SK									
Generation		<input type="checkbox"/>								
Device version			<input type="checkbox"/>							
Device series				<input type="checkbox"/>						
Type of outputs					<input type="checkbox"/>					
Connection type						<input type="checkbox"/>				
Rated control supply voltage								<input type="checkbox"/>		
Type of rated control supply voltage									<input type="checkbox"/>	
Time delay										<input type="checkbox"/>
Example	3SK	1	1	2	1	-	1	A	B	4 0

3SK2

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Safety relays	3SK									
Generation		<input type="checkbox"/>								
Device version			<input type="checkbox"/>							
Device version, alternative volume of project data				<input type="checkbox"/>						
Type of outputs					<input type="checkbox"/>					
Connection type						<input type="checkbox"/>				
Example	3SK	2	1	1	2	-	1	A	A	1 0

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Safety Relays

SIRIUS 3SK Safety Relays

General data

Benefits

General

- Approved for all safety applications because of its compliance with the highest safety requirements (SIL 3 and PL e)
- Universally usable thanks to adjustable parameters
- Usable worldwide thanks to globally valid certificates
- Compact SIRIUS design
- Device connectors with standard rail mounting for flexible connectability and expandability
- Removable terminals for greater plant availability
- Yellow terminal covers clearly identify the device as a safety component.
- Sensor cable up to 2 000 m long allows it to be used in extensive plants.

Relay outputs

- Different voltages can be switched through the floating contacts.
- The power relay contacts allow currents of up to 5 A at AC-15/DC-13 to be connected.

Semiconductor outputs

- Wear-free
- Suitable for operation in fast switching applications
- Insensitive to vibrations and dirt
- Good electrical endurance

Power outputs (3SK1213 output expansion)

- Different voltages can be switched through the floating contacts.
- The power relay contacts allow currents of up to 10 A AC-15/6 A DC-13 to be connected.
- High mechanical and electrical endurance
- Protective separation between safe outputs and electronics

Expansion option by adding the 3RM1 motor starter

SIRIUS 3SK safety relays are ideal for combining with the SIRIUS 3RM1 motor starters.

Combinations are made by means of

- SIRIUS 3ZY12 device connectors (in combination with 3SK1 Advanced/3SK2) or
- Conventional wiring (for all 3SK1 and 3SK2 basic units).

This makes collective shutdown very easy in assemblies. The wiring, and ultimately the shutting down of the control supply voltage for the expansion components in EMERGENCY-STOP situations, is performed via the device connector. There is no further need for complex looping of the connecting cables between the safety relay and the motor starters.

The 3RM1 motor starter combines the benefits of semiconductor technology and relay technology. This combination is also known as hybrid technology.

The hybrid technology in the motor starter is characterized by the following features:

- The inrush current in the case of motorized loads is conducted briefly via the semiconductors. Advantages include protection of the relay contacts and a long service life due to low wear.
- The uninterrupted current is conducted via relay contacts. Advantages include lower heat losses compared with the semiconductor.
- Shutdown is implemented again via the semiconductor. The contacts are only slightly exposed to arcs, and this results in a longer service life.
- Integrated overload protection

Note:

For SIRIUS 3RM1 motor starters, [see from page 8/87](#).

3ZY12 device connectors

Using 3ZY12 device connectors to combine devices reduces the time required to configure and wire the components. At the same time errors are avoided during wiring, and this considerably reduces the testing required for the fully-assembled application.

Configuration and stock keeping

Variable setting options by means of DIP switches or software, a wide voltage range (3SK1111) and a special power supply unit (3SK1 only) reduce the cost of keeping stocks and the considerations involved in configuration where the evaluation units to be selected are concerned.

Application

3SK1 safety relays

SIRIUS 3SK1 safety relays are used mainly in autonomous safety applications which are not connected to a safety-related bus system. Their function here is to evaluate the sensors and the safety-related shutdown of hazards. Also they check and monitor the sensors, actuators and safety-related functions of the safety relay.

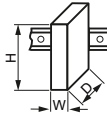
3SK2 safety relays

SIRIUS 3SK2 safety relays are used primarily in autonomous, more complex safety applications for which the functional scope of the 3SK1 devices is no longer sufficient, such as in the implementation of independent shutdown functions. Their function here is to evaluate the sensors and the safety-related shutdown of hazards. Also they check and monitor the sensors, actuators and safety-related functions of the safety relay.

Technical specifications

SIRIUS 3SK1 safety relays

Type		3SK1111- .AB30, 3SK1211- .BB00, 3SK1211- .BB40	3SK1111- .AW20, 3SK1121, 3SK1211- .BW20	3SK1112	3SK1120	3SK1122	3SK1213	3SK1220
Dimensions								
• Width	mm	22.5	22.5	22.5	17.5	22.5	90	17.5
• Height	mm	100	100	100	100	100	100	100
• Depth	mm	121.6	121.6	91.6	121.6	121.6	121.6	121.6



General data

Ambient temperature									
• During operation	°C	-25 ... +60							
• During storage	°C	-40 ... +80							
Installation altitude at height above sea level maximum	m	2 000							
Air pressure According to SN 31205	kPa	90 ... 106							
Shock resistance		10 g / 11 ms					5 g / 10 ms	10 g / 11 ms	
Vibration resistance Acc. to IEC 60068-2-6		5 ... 500 Hz: 0.75 mm							
IP degree of protection of the enclosure		IP20							
Touch protection against electric shock		Finger-safe							
Insulation voltage, rated value	V	300		50			300	50	
Rated impulse withstand voltage	V	4 000		500			4 000	800	
Safety integrity level (SIL) According to IEC 61508		SIL 3							
Performance level (PL) According to ISO 13849-1		e							
T1 value for proof test interval or service duration According to IEC 61508	a	20							
EMC emitted interference		IEC 60947-5-1, class B				IEC 60947-5-1, class A		IEC 60947-5-1, class A	
Certificate of suitability									
• UL certification		Yes							
• TÜV approval		Yes							

Type		3SK1111, 3SK1121-.AB40, 3SK1211	3SK1112, 3SK1122	3SK1120	3SK1121-.CB4.	3SK1213
------	--	---------------------------------------	---------------------	---------	---------------	---------

Switching capacity						
Switching capacity current of the NO contacts of the relay outputs						
• At AC-15 at 230 V	A	5	--		3	10
• At DC-13 at 24 V	A	5	--		3	6
Switching capacity current of the semiconductor outputs						
• At DC-13 at 24 V	A	--	2	0.5	--	

Type		3SK1111- .AB30, 3SK1211	3SK1111- .AW20	3SK1112, 3SK1220	3SK1120, 3SK1122- .AB40	3SK1121- .AB40	3SK1121- .CB4.	3SK1122- .CB4.	3SK1213
------	--	-------------------------------	-------------------	---------------------	-------------------------------	-------------------	-------------------	-------------------	---------

PFHd and PFDavg values									
PFHD with high demand rate according to EN 62061	1/h	1.7×10^{-9}	1.5×10^{-9}	1.0×10^{-9}	1.3×10^{-9}	2.5×10^{-9}	3.7×10^{-9}	1.5×10^{-9}	1.0×10^{-9}
Average probability of failure of the safety function upon demand (PFDavg) at a low demand rate acc. to IEC 61508		1.0×10^{-6}		7.0×10^{-6}					1.0×10^{-6}

Note:

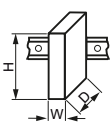
For the 3SK1230 technical specifications, see Manual "3SK1 Safety Relays", <https://support.industry.siemens.com/cs/ww/en/view/67585885>.

Safety Relays

SIRIUS 3SK Safety Relays

General data

SIRIUS 3SK2 safety relays

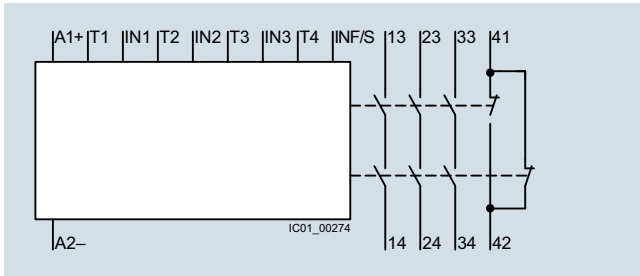
Type	3SK2112-AA10		3SK2122-AA10	
Dimensions:				
• Width	mm	22.5		45
• Height	mm	100		100
• Depth	mm	124.5		124.5
General data				
Ambient temperature				
• During operation	°C	-25 ... +60		
• During storage	°C	-40 ... +80		
Installation altitude at height above sea level maximum	m	2 000		
Air pressure	kPa	90 ... 106		
According to SN 31205				
Shock resistance		15 g / 11 ms		
Vibration resistance acc. to IEC 60068-2-6		5 ... 500 Hz: 0.75 mm		
IP degree of protection of the enclosure		IP20		
Touch protection against electric shock		Finger-safe		
Insulation voltage, rated value	V	50		
Rated impulse withstand voltage	V	800		
Safety integrity level (SIL)		SIL 3		
According to IEC 61508				
Performance level (PL)		e		
According to EN ISO 13849-1				
T1 value for proof test interval or service duration	y	20		
According to IEC 61508				
EMC emitted interference		Class A		
According to IEC 60947-1				
Certificate of suitability				
• UL certification		Yes		
• TÜV approval		Yes		
Switching capacity				
Switching capacity current of the semiconductor outputs				
• At DC-13 at 24 V	A	4		
PFHd and PFDavg values				
PFHd with high demand rate	1/h	1×10^{-8}		1.2×10^{-8}
according to EN 62061				
PFDavg at low demand rate		1.5×10^{-5}		1.8×10^{-5}
according to IEC 61508				

Note:

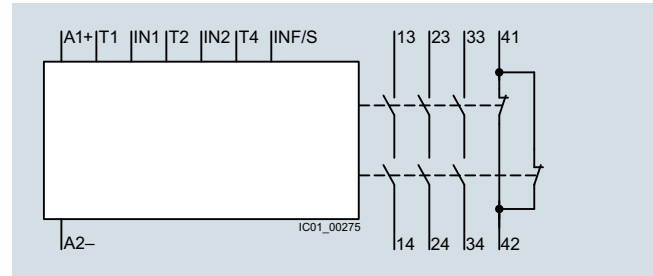
Manual "3SK2 Safety Relays", see <https://support.industry.siemens.com/cs/ww/en/view/109444336>.

Circuit diagrams

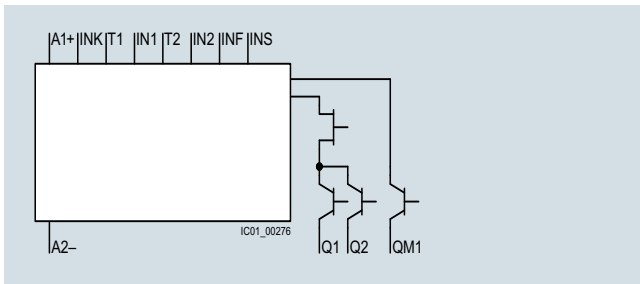
3SK1 basic units



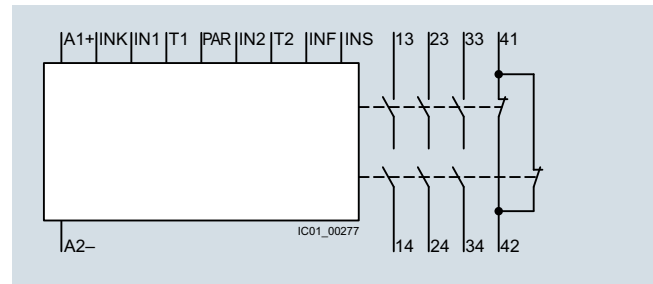
Basic unit 3SK1111-.AB30, Standard relay instantaneous (24 V AC/DC)



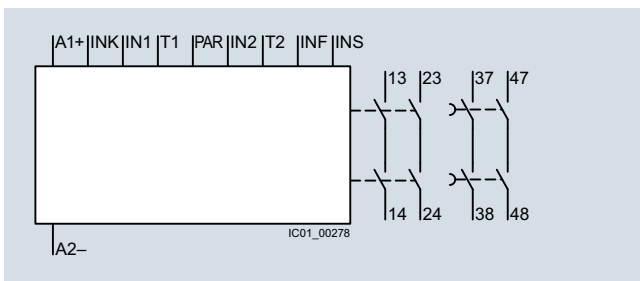
Basic unit 3SK1111-.AW20, Standard relay instantaneous (110 ... 240 V AC/DC)



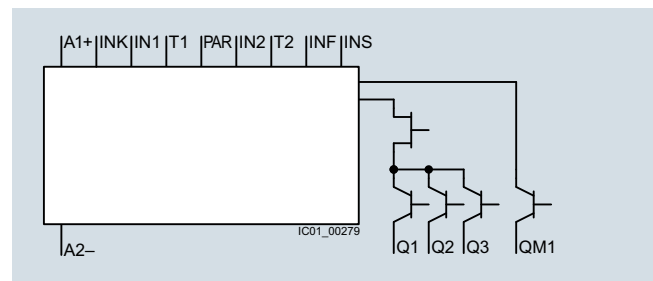
Basic unit 3SK1112-.BB40, Standard solid-state (24 V DC)



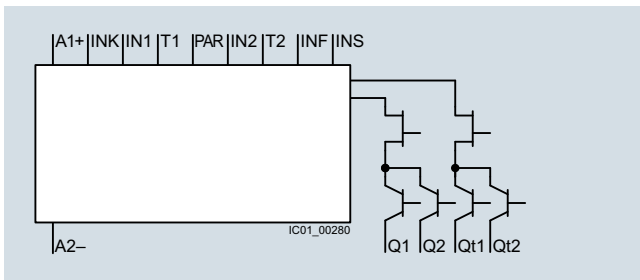
3SK1121-.AB40, Advanced relay instantaneous basic unit



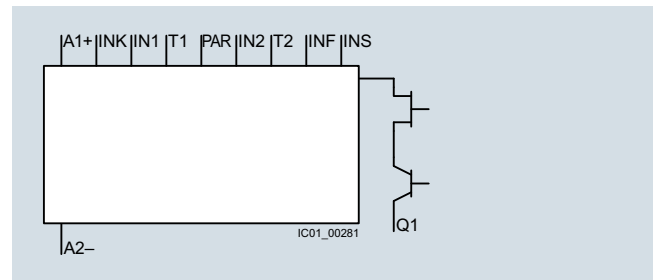
3SK1121-.CB4, Advanced relay instantaneous basic unit



3SK1122-.AB40, Advanced solid-state instantaneous basic unit



3SK1122-.CB4, Advanced solid-state instantaneous basic unit



3SK1120-.AB40, Advanced 17.5 mm solid-state instantaneous basic unit

Legend:

A1, A2 = Power supply of the device
 13/14 to 33/34 = Instantaneous safe outputs, relays
 41/42 = Feedback contact
 T1, T2 = Test signal
 IN1, IN2 = Sensor input
 INF = Feedback circuit

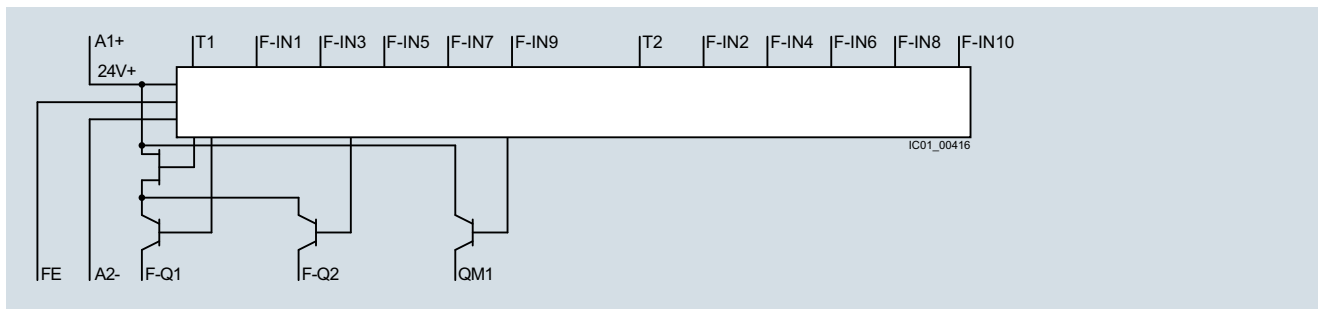
INS = Start circuit
 INK = Cascading input
 PAR = Parameterizing input (NO/NC monitoring)
 Q1, Q2, Q3 = Instantaneous enabling circuit, solid-state
 QM1 = Signaling output, solid-state

Safety Relays

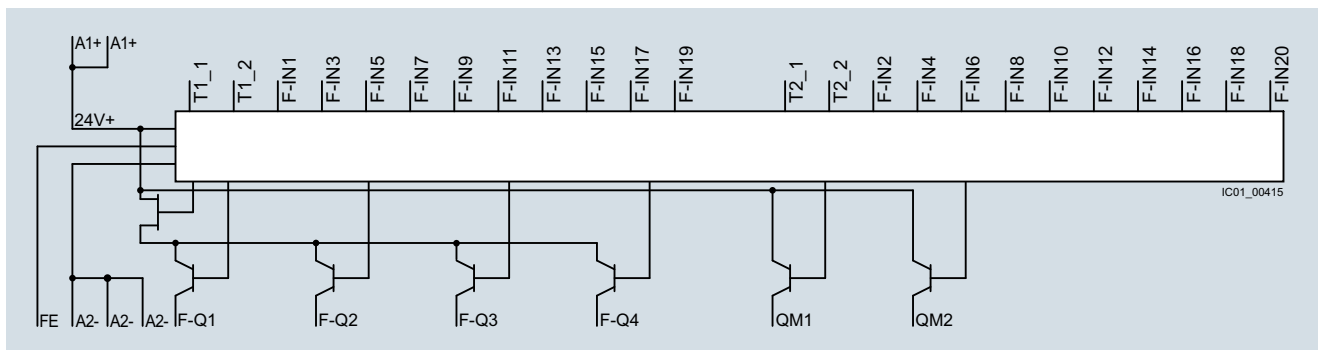
SIRIUS 3SK Safety Relays

General data

3SK2 basic units



3SK2112 basic unit



3SK2122 basic unit

Legend:

A1, A2 = Power supply of the device

FE = Functional ground

T1, T2 = Test signal

T1_1, T2_1 = First pair of test signals

T2_1, T2_2 = Second pair of test signals

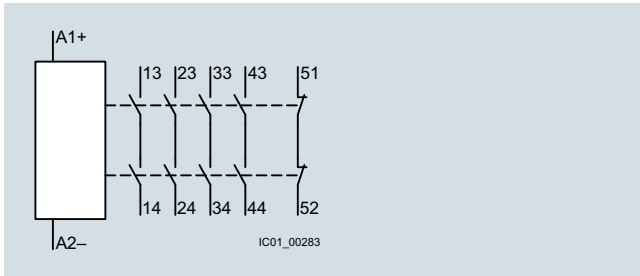
F-IN1 to F-IN20 = Fail-safe sensor inputs 1 to 20

F-Q1 to F-Q4 = Fail-safe outputs, solid-state

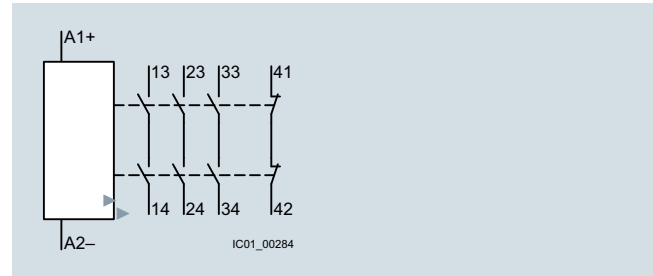
QM1, QM2 = Signaling outputs, solid-state

Circuit diagrams

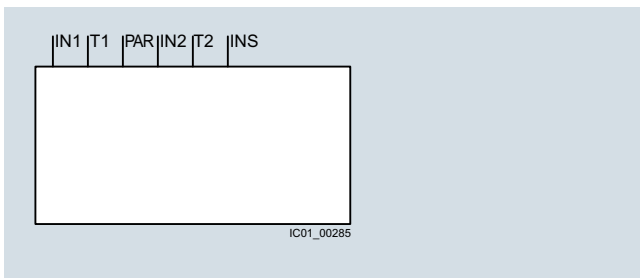
Expansion units



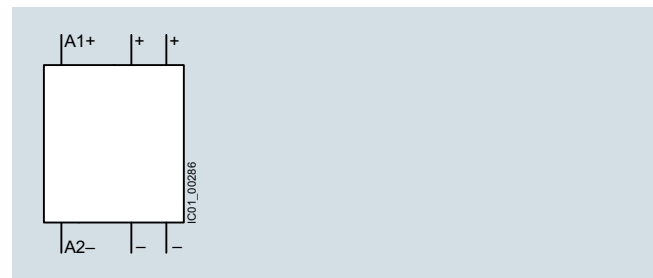
4RO 3SK1211 output expansion



3RO 3SK1213 output expansion



3SK1220 input expansion



3SK1230 power supply

Legend:

A1, A2 = Power supply of the device
 13/14 to 43/44 = Safe outputs, relays
 41/42 to 51/52 = Feedback contact
 T1, T2 = Test signal

IN1, IN2 = Sensor input
 INS = Start circuit
 PAR = Parameterizing input (NO/NC monitoring)

More information

For the manual "3SK1 Safety Relays", see <https://support.industry.siemens.com/cs/ww/en/view/67585885>.

For the manual "3SK2 Safety Relays", see <https://support.industry.siemens.com/cs/ww/en/view/109444336>.

Safety Relays

SIRIUS 3SK Safety Relays

Basic Units

SIRIUS 3SK1 Standard basic units

Overview



3SK111 Standard basic units

The 3SK111 Standard basic units are characterized by simple, variable functionality. These devices are recommended for safety functions requiring only a few sensors and a small number of outputs on the safety relay.

Number of safe outputs

	Type and number of safe outputs				Signal- circuits	Device connec- tors
	Relays		Semiconductors			
	Instanta- neous	Time- delayed	Instanta- neous	Time- delayed		
3SK1 Standard basic units						
3SK1111-.A..0	3	--	--	--	1	--
3SK1112-.BB40	--	--	2	--	1	--
-- Not available						

Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41L





3SK1111-1AB30



3SK1111-1AW20



3SK1112-1BB40

Rated control supply voltage U_s		DT	Screw terminals 	DT	Spring-type terminals (push-in) 	
At 50 Hz At AC	At DC		Article No.	Price per PU	Article No.	Price per PU
Standard basic units with 3 safe relay outputs						
24	24	▶	3SK1111-1AB30	▶	3SK1111-2AB30	
110 ... 240	110 ... 240	A	3SK1111-1AW20	▶	3SK1111-2AW20	
Standard basic units with 2 safe semiconductor outputs						
--	24	A	3SK1112-1BB40	A	3SK1112-2BB40	

Overview



3SK112 Advanced basic units

The 3SK112 Advanced basic units form an innovative system landscape that allows even complex safety functions with large numbers of sensors and outputs to be built up using the device connectors. It is possible to increase both the number of inputs for sensors and the number of safe outputs of the basic unit without the need for wiring outlay between the devices.

Number of safe outputs

	Type and number of safe outputs				Signal- ing circuits	Device connec- tors
	Relays		Semiconductors			
	Instanta- neous	Time- delayed	Instanta- neous	Time- delayed		
3SK1 Advanced basic units						
3SK1120-.AB40	--	--	1	--	--	✓
3SK1121-.AB40	3	--	--	--	1	✓
3SK1121-.CB4.	2	2	--	--	--	✓
3SK1122-.AB40	--	--	3	--	1	✓
3SK1122-.CB4.	--	--	2	2	--	✓

✓ Available

-- Not available

Selection and ordering data

PU (UNIT, SET, M) = 1

PS* = 1 unit

PG = 41L



3SK1121-1AB40



3SK1120-1AB40



3SK1122-1AB40



3SK1122-1CB41

Rated control supply voltage U_s at DC	Adjustable OFF-delay time	Number of outputs				DT	Screw terminals		DT	Spring-type terminals (push-in)	
		as contacting contact block		as contactless semiconductor contact block			Article No.	Price per PU		Article No.	Price per PU
V	s	Instantaneous switching	Delayed switching	Instantaneous switching	Delayed switching						
Advanced basic units with safe relay outputs											
24	--	3	--	--	--	▶	3SK1121-1AB40	▶	3SK1121-2AB40		
24	0.05 ... 3	2	2	--	--	A	3SK1121-1CB41	B	3SK1121-2CB41		
24	0.5 ... 30	2	2	--	--	▶	3SK1121-1CB42	A	3SK1121-2CB42		
24	5 ... 300	2	2	--	--	B	3SK1121-1CB44	B	3SK1121-2CB44		
Advanced basic units with safe semiconductor outputs											
24	--	--	--	1	--	A	3SK1120-1AB40	A	3SK1120-2AB40		
24	--	--	--	3	--	A	3SK1122-1AB40	A	3SK1122-2AB40		
24	0.05 ... 3	--	--	2	2	B	3SK1122-1CB41	B	3SK1122-2CB41		
24	0.5 ... 30	--	--	2	2	A	3SK1122-1CB42	A	3SK1122-2CB42		
24	5 ... 300	--	--	2	2	B	3SK1122-1CB44	B	3SK1122-2CB44		

Safety Relays

SIRIUS 3SK Safety Relays

Basic Units

SIRIUS 3SK2 basic units

NEW**Overview**

3SK2 basic units

The 3SK2 basic units have a large number of inputs and outputs within a narrow width. In addition, demanding safety applications can be implemented simply with several independent safety functions. Flexible application options are enabled by powerful semiconductor outputs, as well as by expandability with additional 3SK output expansions and 3RM1 Failsafe motor starters. Flexible time functions and diagnostics options are also available.

Number of safe outputs

	Type and number of safe outputs Semiconductors	Signaling circuits Semi-conductors	Fail-safe outputs by means of device connectors
3SK2 basic units			
3SK2112-AA10	2	1	2
3SK2122-AA10	4	2	2

Selection and ordering data



PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41L



3SK2112



3SK2122

Rated control supply voltage U_s At DC V	Number of outputs, safety-related 2-channel	Width mm	DT	Screw terminals 		Spring-type terminals (push-in) 	
				Article No.	Price per PU	Article No.	Price per PU
3SK2 basic units							
24	2	22.5	A	3SK2112-1AA10	A	3SK2112-2AA10	
24	4	45	A	3SK2122-1AA10	A	3SK2122-2AA10	

Overview



3SK121 output expansion

The 3SK121 output expansions can be used to expand all 3SK basic units.

3SK1211 output expansion

The 3SK1211 output expansion is used to expand the safe outputs of a basic unit by adding another four safe outputs. These outputs have a switching capacity of AC-15 5 A at a switching voltage of 230 V. The devices can be connected to any 3SK basic unit by means of wiring. In addition, the devices with a 24 V DC control supply voltage can also be connected to 3SK1 Advanced and 3SK2 basic units by means of the 3ZY12 device connectors.

3SK1213 output expansion

The 3SK1213 output expansion is used to expand the safe outputs of a basic unit by adding three safe outputs with high switching capacity. These outputs have a switching capacity of AC-15 10 A at a switching voltage of 230 V. The devices can be connected to any 3SK basic unit by means of wiring. As with the 3SK1211, the devices with a 24 V DC control supply voltage can also be connected to 3SK1 Advanced and 3SK2 basic units by means of the 3ZY12 device connectors.

Note:

It is only possible to expand the Standard basic units by means of wiring. Advanced basic units and 3SK2 basic units can be expanded using the 3ZY12 device connector.

Number of safe outputs

	Type and number of safe outputs		Signaling circuits	Device connectors
	Relays			
	Instantaneous	Time-delayed		

3SK output expansions

• 4RO				
3SK1211	4	--	1 ¹⁾	✓ ²⁾
• 3RO				
3SK1213	3	--	1 ¹⁾	✓ ²⁾

✓ Available

-- Not available

1) Feedback circuit.

2) For 24 V DC.

Benefits

- Perfect adaptation of the number of inputs
- Simple expansion of instantaneous and time-delayed safe outputs of the Advanced basic units by means of backplane connection
- When using the device connector the outputs on the terminals can still be used
- Another two freely parameterizable shutdown functions on 3SK2 basic modules when using the device connectors
- Expansion with power contacts for high AC-15/DC-13 currents in the control circuit
- Wiring of the feedback circuit to the basic units not required when using the device connectors
- Shorter installation times
- Less configuring and testing required

Safety Relays

SIRIUS 3SK Safety Relays

Expansion Units

Output expansions

Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41L



3SK1211-1BB00



3SK1213-1AB40

Rated control supply voltage U_s		DT	Screw terminals	\oplus	DT	Spring-type terminals (push-in)	\odot
At 50 Hz At AC	At DC		Article No.	Price per PU		Article No.	Price per PU
V	V						
3SK1211 output expansions with 4RO							
24	--	B	3SK1211-1BB00	B	3SK1211-2BB00		
--	24	▶	3SK1211-1BB40	A	3SK1211-2BB40		
110 ... 240	110 ... 240	A	3SK1211-1BW20	B	3SK1211-2BW20		
3SK1213 output expansions with 3RO							
--	24	B	3SK1213-1AB40	B	3SK1213-2AB40		
115	--	B	3SK1213-1AJ20	B	3SK1213-2AJ20		
230	--	B	3SK1213-1AL20	B	3SK1213-2AL20		

Overview



3SK1220 sensor expansion

With the input expansions

- 3SK1220 sensor expansion
- 3SK1230 power supply

the 3SK1 Advanced basic units can be made more flexible.

3SK1220 input expansion

The 3SK1220 input expansion allows additional sensors to be integrated easily and flexibly. The device monitors two 1-channel sensors or one 2-channel sensor, whatever their output technology (floating/single-ended).

Note:

The 3SK1220 sensor expansion can only be connected to the 3SK1 Advanced basic units by means of the 3ZY12 device connector.

3SK1230 power supply

The 3SK1230 power supply makes the 3SK1 devices universally usable, whatever control supply voltage is to be used.

Both devices can be combined with the 3SK112 basic units in the Advanced series without the need for wiring.

Note:

Alongside the 3ZY12 device connector, the 3SK1230 power supply can also be wired to act as a power supply for 3SK1 devices.

Benefits

- A wide voltage range of 110 ... 240 V AC/DC allows the devices to be used worldwide
- Low stock keeping due to little variance
- Flexible expansion of the number of sensors without the need for additional wiring between the devices
- Perfect adaptation of the number of inputs to suit the application
- Universal use thanks to the wide range of adjustable parameters for sensor expansion (parameters as for 3SK1 Advanced basic units)

Selection and ordering data



PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41L



3SK1220-1AB40



3SK1230-1AW20

Version	DT	Screw terminals 	DT	Spring-type terminals (push-in) 	
		Article No.	Price per PU	Article No.	Price per PU
3SK1220 sensor expansions					
Sensor expansions for safety-related expansion of the 3SK1 Advanced basic A units by adding a further 2-channel sensor or two 1-channel sensors					
<u>Note:</u> Can only be used in conjunction with 3ZY12 device connectors, see page 11/26.					
		3SK1220-1AB40	A	3SK1220-2AB40	
3SK1230 power supplies					
Power supplies for supplying 3SK1 Advanced basic units via 3ZY12 device A connectors at voltages of 110 ... 240 V AC/DC					
		3SK1230-1AW20	A	3SK1230-2AW20	

Safety Relays

SIRIUS 3SK Safety Relays

Accessories

Overview

The following accessories are available for SIRIUS 3SK safety relays:

- Device connectors
- Terminals
- Sealing covers
- Push-in lugs
- Coding pins
- Inscription labels
- Tools

And additionally for 3SK2:

- Connection cables (essential accessory)
- USB PC cables and adapters
- Diagnostics modules
- Memory modules
- Interface covers
- Door adapters

Device connectors for 3SK112., 3SK12.. and 3SK2

The device connector can be used to connect devices of the 3SK/3RM1 system together, with the last device in a system configuration being placed on a device terminating connector.

Device connectors are available in various versions specifically for the 3SK safety relays:

For type	Device connectors				Device terminating connectors	
	3ZY1212-1BA00 (for 3SK1, width 17.5 mm)	3ZY1212-2BA00 (for 3SK1, width 22.5 mm)	3ZY1212-2GA00 (for 3SK2, width 22.5 mm)	3ZY1212-4GA01 (for 3SK2, width 45 mm)	3ZY1212-2DA00 (for 3SK1, width 22.5 mm)	3ZY1212-0FA01 (for 3SK1, set for enclosures \geq 45 mm)
3SK1 Advanced basic units						
3SK1120	✓	--	--	--	--	--
3SK1121	--	✓	--	--	✓	--
3SK1122	--	✓	--	--	✓	--
3SK2 basic units						
3SK2112	--	--	✓	--	--	--
3SK2122	--	--	--	✓	--	--
Output expansions						
3SK1211	--	✓	✓	✓	✓	--
3SK1213	--	--	✓	✓	--	✓
Input expansions						
3SK1220	✓	--	--	--	--	--
3SK1230	--	✓	--	--	--	--

✓ Available

-- Not available

Removable terminals for 3SK

The following removable terminals are available for the 3SK safety relays for pre-wiring of the terminals in the control cabinet, or for replacing terminals:



For type	Removable terminals			
	Screw terminals		Spring-type terminals (push-in)	
	2-pole 3ZY1121-1BA00	3-pole 3ZY1131-1BA00	2-pole 3ZY1121-2BA00	3-pole 3ZY1131-2BA00
3SK1 basic units				
3SK1111	--	✓	--	✓
3SK1112	✓	--	✓	--
3SK1120	--	✓	--	✓
3SK1121	--	✓	--	✓
3SK1122	✓ bottom	✓ top	✓ bottom	✓ top
3SK2 basic units				
3SK2112	--	✓	--	✓
3SK2122	--	✓ ¹⁾	--	✓ ¹⁾
Output expansions				
3SK1211	✓	--	✓	--
3SK1213	--	--	--	--
Input expansions				
3SK1220	--	✓ top	--	✓ top
3SK1230	✓ bottom	--	✓ bottom	--

✓ Available

-- Not available

¹⁾ Two sets of terminals are required for 3SK2122.

Selection and ordering data








Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Device connectors for the electrical connection of SIRIUS devices in the industrial standard mounting rail enclosure						
 3ZY1212-1BA00	Device connectors for 3SK1					
	• Width 17.5 mm	A	3ZY1212-1BA00	1	1 unit	41L
	• Width 22.5 mm	A	3ZY1212-2BA00	1	1 unit	41L
 3ZY1212-4GA01	Device connectors for 3SK2					
	• Width 22.5 mm	NEW A	3ZY1212-2GA00	1	1 unit	41L
	• Width 45 mm	NEW A	3ZY1212-4GA01	1	1 unit	41L
 3ZY1212-2DA00	Device terminating connectors		A	3ZY1212-2DA00	1	1 unit 41L
	For 3SK1, width 22.5 mm Note: Observe positions of the slide switch, see Manual "3SK1 Safety Relays" , https://support.industry.siemens.com/cs/ww/en/view/67585885					
	Device terminating connector set		A	3ZY1212-0FA01	1	1 unit 41L
	For 3SK1213, width > 45 mm, comprising 3ZY1212-2FA00 and 3ZY1210-2AA00					
Terminals for SIRIUS devices in the industrial standard mounting rail enclosure						
 3ZY1121-1BA00	Removable terminals			Screw terminals 		
	• 2-pole, screw terminals up to 2 x 1.5 mm ² or 1 x 2.5 mm ²	A	3ZY1121-1BA00	1	6 units	41L
	• 3-pole, screw terminals up to max. 2 x 1.5 mm ² or 1 x 2.5 mm ² ¹⁾	A	3ZY1131-1BA00	1	6 units	41L
			Spring-type terminals (push-in) 			
	• 2-pole, push-in terminals up to max. 2 x 1.5 mm ²	A	3ZY1121-2BA00	1	6 units	41L
	• 3-pole, push-in terminals up to max. 2 x 1.5 mm ² ¹⁾	A	3ZY1131-2BA00	1	6 units	41L
Connection cables for 3SK2 (essential accessory)						
 3UF7932-0AA00-0	Connection cables					
	For connecting diagnostics module to 3SK2 basic unit					
	• Length 0.1 m (flat)	▶	3UF7931-0AA00-0	1	1 unit	42J
	• Length 0.3 m (flat)	▶	3UF7935-0AA00-0	1	1 unit	42J
	• Length 0.5 m (flat)	▶	3UF7932-0AA00-0	1	1 unit	42J
	• Length 0.5 m (round)	▶	3UF7932-0BA00-0	1	1 unit	42J
• Length 1.0 m (round)	▶	3UF7937-0BA00-0	1	1 unit	42J	
• Length 2.5 m (round)	▶	3UF7933-0BA00-0	1	1 unit	42J	
PC cables and adapters for 3SK2						
 3UF7941-0AA00-0	USB PC cables		▶	3UF7941-0AA00-0	1	1 unit 42J
	For connecting to the USB interface of a PC/PG, for communication with 3SK2 through the system interface, recommended for use in connection with 3SK2					
	USB/serial adapters		B	3UF7946-0AA00-0	1	1 unit 42J
	For connecting an RS 232 PC cable to the USB interface of a PC					

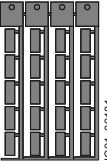



¹⁾ Two sets of terminals are required for 3SK2122.

Safety Relays

SIRIUS 3SK Safety Relays

Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating and monitoring modules for 3SK2						
 3RK3611-3AA00		Diagnostics modules From product version E04 or higher, for direct display of errors, e.g. of cross-circuits	A	3RK3611-3AA00	1	1 unit 42B
Door adapters for 3SK2						
 3UF7920-0AA00-0		Door adapters For external connection of the system interface, e.g. outside a control cabinet	▶	3UF7920-0AA00-0	1	1 unit 42J
Interface covers for 3SK2						
 3UF7950-0AA00-0		Interface covers For system interface	▶	3UF7950-0AA00-0	1	5 units 42J
Memory modules for 3SK2						
 3RK3931-0AA00		Memory modules For backing up the complete parameterization of the 3SK2 safety system without a PC/PG through the system interface	A	3RK3931-0AA00	1	1 unit 42C
Accessories for enclosures						
 3ZY1321-2AA00		Sealing covers				
		<ul style="list-style-type: none"> • 17.5 mm (for 3SK1120 and 3SK1220) • 22.5 mm (for all 3SK1 devices except 3SK1120 and 3SK1220) 	A	3ZY1321-1AA00	1	5 units 41L
			A	3ZY1321-2AA00	1	5 units 41L
 3ZY1311-0AA00		Push-in lugs For wall mounting	A	3ZY1311-0AA00	1	10 units 41L
 3ZY1440-0AA00		Coding pins For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure. They enable the mechanical coding of terminals, see Manual "3SK1 Safety Relays", https://support.industry.siemens.com/cs/ww/en/view/67585885	A	3ZY1440-1AA00	1	12 units 41L

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels						
 3RT2900-1SB20	D	3RT2900-1SB20		100	340 units	41B
Tools for opening spring-type terminals						
 3RA2908-1A	A	Spring-type terminals  3RA2908-1A		1	1 unit	41B
Software for 3SK2						
 3ZS1316-C.10-0Y.5		SIRIUS Safety ES For software for configuring, commissioning, operating and diagnosing of 3SK2 and 3RK3, see page 14/33 . NEW				

¹⁾ PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH, see [page 16/20](#).

Safety Relays

SIRIUS 3TK28 Safety Relays

With relay enabling circuits

Overview



SIRIUS 3TK282. safety relay

Safety relays with relay enabling circuits – Safety with floating contacts

SIRIUS safety relays with relay enabling circuits are not only extremely space-saving thanks to their compact design, they also offer extra safety with positively driven NO and feedback contacts in pairs. If one of the contact welds, the other assumes the disconnection of the circuit. A positively driven feedback contact (NC) then performs the fault detection of the faulty NO contact.

3SK121. expansion units are available to increase the number of enabling circuits, [see page 11/23](#).

3TK2826 safety relays

The 3TK2826 is a parameterizable safety relay. It is used as an evaluation unit for typical safety chains (identify, evaluate, realize). A number of functions can be set using the DIP switches on the front. The 3TK2826 is therefore universally applicable.

Safety sensors (e.g. an EMERGENCY-STOP device) are connected at the input side while contactors or valves for disconnecting the "hazardous function" are connected at the output side.

The 3TK2826 performs the monitoring of the sensor and actuator functions as well as the safe disconnection of the outputs (enabling circuits).

3TK2826 with DIP switch:

DIP switch No.	ON	OFF	Schematic
1	Switching mat operation	Without crossover monitoring	
2	NC/NC evaluation	NC/NO evaluation	
3	1 x 2-channel	2 x 1-channel	
4	Debounce time for sensor inputs ≈ 10 ms	Debounce time for sensor inputs ≈ 50 ms	
5	Sensor input Monitored start	Sensor input Autostart	
6	Cascading input Monitored start	Cascading input Autostart	
7	Without start test	With start test	
8	Without automatic start after mains failure	Automatic start after mains failure (not permitted in connection with a start test)	

Benefits

- Compact design
- Floating safe outputs
- Can be used up to an ambient temperature of max. 70 °C
- Connection for all common sensor types
- Many functions available in just one device
- Status displays
- Extended diagnostic capabilities
- Approvals (EN ISO 13849-1, IEC 61508, UL/CSA)
- Reporting of trip faults in the actuator circuit
- Floating outputs
- Wide-range device
- Sensor condition saved in the event of voltage failure

NSCO_0093.3a

Technical specifications

Type	Basic units			
	3TK2826	Wide voltage range	24 V DC t_V	Wide voltage range t_V
	24 V DC			
Sensors				
• Inputs	1	1	1	1
• Electronic	✓	--	✓	--
• With contacts	✓	✓	✓	✓
• Magnetically operated switch (Reed contacts)	✓	✓	✓	✓
Safety mats	✓	✓	✓	✓
Start				
• Auto	✓	✓	✓	✓
• Monitored	✓	✓	✓	✓
Cascading input				
24 V DC	✓	✓	✓	✓
Key-operated switch	--	--	--	--
Enabling circuit, floating				
• Stop category 0	4 NO	4 NO	2 NO	2 NO
• Stop category 1	--	--	2 NO	2 NO
Enabling circuit, electronic				
• Stop category 0	--	--	--	--
• Stop category 1	--	--	--	--
Signaling outputs				
• Floating	1 NC	1 NO + 1 NC	2 NC	1 NO + 2 NC
• Electronic	2	--	2	--
Standards	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508
Test certificates	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA
SIL level max. according to IEC 61508	3	3	3	3
Performance level PL according to ISO 13849-1	e	e	e	e
Probability of a dangerous failure per hour (PFH_d)	7.8×10^{-9} 1/h	7.8×10^{-9} 1/h	7.8×10^{-9} 1/h	7.8×10^{-9} 1/h
Rated control supply voltage				
• 24 V DC	✓	--	✓	--
• 24 ... 240 V AC/DC	--	✓	--	✓

✓ Available

-- Not available

Safety Relays

SIRIUS 3TK28 Safety Relays

With relay enabling circuits

Selection and ordering data



PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41L



3TK2826-1BB40



3TK2826-2BB40

Rated control supply voltage U_s	Start	OFF-delay t_v	DT	Screw terminals 	DT	Spring-type terminals 	
V		s		Article No.	Price per PU	Article No.	Price per PU

Basic units

With floating enabling circuits

3TK2826

• 24 DC	Auto/monitored	--	A	3TK2826-1BB40	A	3TK2826-2BB40
• 24 ... 240 AC/DC	Auto/monitored	--	A	3TK2826-1CW30	C	3TK2826-2CW30

With time-delayed enabling circuits

3TK2826 t_v

• 24 DC	Auto/monitored	0.05 ... 3	C	3TK2826-1BB41	C	3TK2826-2BB41
• 24 ... 240 AC/DC	Auto/monitored	0.05 ... 3	C	3TK2826-1CW31	C	3TK2826-2CW31
• 24 DC	Auto/monitored	0.5 ... 30	A	3TK2826-1BB42	C	3TK2826-2BB42
• 24 ... 240 AC/DC	Auto/monitored	0.5 ... 30	C	3TK2826-1CW32	C	3TK2826-2CW32
• 24 DC	Auto/monitored	5 ... 300	C	3TK2826-1BB44	C	3TK2826-2BB44
• 24 ... 240 AC/DC	Auto/monitored	5 ... 300	C	3TK2826-1CW34	C	3TK2826-2CW34

Note:

For additional 3TK28 safety relays, see [Catalog Add-On IC 10 AO · 2016](#).

Overview



SIRIUS 3TK284. safety relay

Fast, safe and wear-free switching

Evaluation units with electronic components are becoming increasingly established in safety applications, as a considerably higher number of starting operations and electrical life of the devices is achieved with permanent functional checks and consistently wear-free operation. The compact and light devices also permit series connection or normal operational switching, e.g. through a PLC.

If several enabling circuits or floating enabling circuits are required in one application, the devices can be expanded with expansion units from the 3SK121. series, [see page 11/23](#).

3TK2845 multi-function units

Up to now, standard combinations of safety applications such as EMERGENCY-STOP and protective door monitoring were possible only by using several individual safety relays. 3TK2845 combines several functions in a single unit. Two electronic and two relay enabling circuits ensure safe disconnection – in just a few actions, quickly and cheaply.

Benefits

- Permanent function checking
- No wear because switched electronically
- High switching frequency
- Long electrical endurance
- Evaluation of electronic sensors
- Sensor lead up to max. 2 000 m
- Cascading possible
- Insensitive to vibrations and dirt
- Compact design, low weight
- Approved for the world market
- Two sensor inputs (e.g. EMERGENCY-STOP, protective door)
- Also suitable for protective door tumblers and OK button
- Two electronic and two relay enabling circuits

Safety Relays

SIRIUS 3TK28 Safety Relays

With electronic enabling circuits

Technical specifications

Type	Multi-function units 3TK2845							
	"Automatic and monitored start"	"Automatic and monitored start" t_v	"Monitored start"	"Monitored start" t_v	OK button	OK button t_v	"Spring-actuated tumbler" t_v	"Solenoid tumbler" t_v
Sensors								
• Inputs	2	2	2	2	2	2	2	2
• Electronic	✓	✓	✓	✓	✓	✓	✓	✓
• With contacts	✓	✓	✓	✓	✓	✓	✓	✓
• Magnetically operated switch (Reed contacts)	✓	✓	✓	✓	✓	✓	✓	✓
Safety mats	✓	✓	✓	✓	--	--	--	--
Start								
• Auto	1	1	--	--	1	1	--	--
• Monitored	1	1	2	2	1	1	2	2
Cascading input 24 V DC	✓	✓	✓	✓	✓	✓	✓	✓
Key-operated switch	✓	✓	✓	✓	✓	✓	✓	✓
Enabling circuit, floating								
• Stop category 0	2 NO	1 NO	2 NO	1 NO	2 NO	1 NO	1 NO	1 NO
• Stop category 1	--	1 NO	--	1 NO	--	1 NO	1 NO	1 NO
Enabling circuit, electronic								
• Stop category 0	2	1	2	1	2	1	1	1
• Stop category 1	--	1	--	1	--	1	1	1
Signaling outputs								
• Floating	--	--	--	--	--	--	--	--
• Electronic	1	1	1	1	1	1	1	1
Standards	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508
Test certificates								
SIL level max. according to IEC 61508	3	3	3	3	3	3	3	3
Performance level PL according to EN ISO 13849-1	e	e	e	e	e	e	e	e
Probability of a dangerous failure per hour (PFH_d)	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h
Rated control supply voltage 24 V DC	✓	✓	✓	✓	✓	✓	✓	✓

✓ Available
-- Not available

Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41L





3TK2845-1HB40



3TK2845-1HB41



3TK2845-2DB40

Rated control supply voltage U_s	Start Automatic/monitored	OFF-delay t_v	DT	Screw terminals 	DT	Spring-type terminals 	
V		s		Article No.	Price per PU	Article No.	Price per PU
Multi-function units							
3TK2845 "Automatic and monitored start"							
• 24 DC	1/1	--	C	3TK2845-1HB40	C	3TK2845-2HB40	
3TK2845 t_v "Automatic and monitored start"							
• 24 DC	1/1	0.05 ... 3	C	3TK2845-1HB41	C	3TK2845-2HB41	
	1/1	0.5 ... 30	C	3TK2845-1HB42	C	3TK2845-2HB42	
	1/1	5 ... 300	C	3TK2845-1HB44	C	3TK2845-2HB44	
3TK2845 "Monitored start"							
• 24 DC	--/2	--	C	3TK2845-1DB40	C	3TK2845-2DB40	
3TK2845 t_v "Monitored start"							
• 24 DC	--/2	0.05 ... 3	C	3TK2845-1DB41	C	3TK2845-2DB41	
	--/2	0.5 ... 30	C	3TK2845-1DB42	C	3TK2845-2DB42	
	--/2	5 ... 300	C	3TK2845-1DB44	C	3TK2845-2DB44	
3TK2845 "OK button"							
• 24 DC	1/1	--	C	3TK2845-1EB40	C	3TK2845-2EB40	
3TK2845 t_v "OK button"							
• 24 DC	1/1	0.05 ... 3	C	3TK2845-1EB41	C	3TK2845-2EB41	
	1/1	0.5 ... 30	C	3TK2845-1EB42	C	3TK2845-2EB42	
	1/1	5 ... 300	C	3TK2845-1EB44	C	3TK2845-2EB44	
3TK2845 t_v "Spring-actuated tumbler"							
• 24 DC	--/2	0.05 ... 3	C	3TK2845-1FB41	C	3TK2845-2FB41	
	--/2	0.5 ... 30	C	3TK2845-1FB42	C	3TK2845-2FB42	
	--/2	5 ... 300	C	3TK2845-1FB44	C	3TK2845-2FB44	
3TK2845 t_v "Solenoid tumbler"							
• 24 DC	--/2	0.05 ... 3	C	3TK2845-1GB41	C	3TK2845-2GB41	
	--/2	0.5 ... 30	C	3TK2845-1GB42	C	3TK2845-2GB42	
	--/2	5 ... 300	C	3TK2845-1GB44	C	3TK2845-2GB44	

Note:

For additional 3TK28 safety relays,
 see [Catalog Add-On IC 10 AO · 2016](#).

Safety Relays

SIRIUS 3TK28 Safety Relays

With special functions

Overview



SIRIUS 3TK2810 safety relays

3TK2810-0 standstill monitors

The standstill monitor increases safety in hazardous areas. Without a sensor, it detects motor stoppage from the residual magnetization of the rotating motor. When an adjustable threshold value is undershot, it uses its outputs to allow access to hazardous areas, for example by unlocking a protective door.

3TK2810-1 speed monitors

The speed monitor combines two safety functions in one unit by continuously monitoring machines and plants for standstill and speed.

Through simple parameterization and permanent diagnosis on the display, faults can be quickly remedied at any time – often before they cause plant downtimes.

In addition to standstill and speed monitoring, the unit also features an integrated monitoring function of a protective door with spring-type interlocking. Therefore, an additional evaluation unit is not needed.

Benefits

3TK2810-0 standstill monitors

- No additional sensors required
- Signaling of faults with diagnostics display
- Standstill time can be set
- Unit can be used with frequency converters

3TK2810-1 speed monitors

- Menu-prompted, easy parameterization
- Direct diagnosis on the display means shorter downtimes thanks to early fault detection
- Integrated protective door monitoring means greater safety because access to the plant is allowed only in the safe state
- Suitable for all standard sensors, i.e. high flexibility

Technical specifications

Type	Standstill monitors 3TK2810-0	Speed monitors 3TK2810-1
Sensors		
• Inputs	3	4
• Electronic	--	3
• With contacts	--	1
• Without sensors (measuring inputs)	3	--
• Magnetically operated switch (Reed contacts)	--	--
Safety mats	--	--
Start		
• Auto	✓	✓
• Monitored	--	✓
Cascading input 24 V DC	--	--
Key-operated switch	--	--
Enabling circuit, floating		
• Stop category 0	3 NO + 1 NC	2
• Stop category 1	--	--
Enabling circuit, electronic		
• Stop category 0	--	--
• Stop category 1	--	--

✓ Available
-- Not available

Type	Standstill monitors 3TK2810-0	Speed monitors 3TK2810-1
Signaling outputs		
• Floating	1 CO	--
• Electronic	2	2
Standards	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60947-5-1, EN ISO 13849-1, IEC 60204-1, IEC 61508
Test certificates	TÜV, UL, CSA	TÜV, UL, CSA
SIL level max. according to IEC 61508	3	3
Performance level PL according to ISO 13849-1	e	e
Probability of a dangerous failure per hour (PFH_d)	1.5 x 10 ⁻⁸ 1/h	3.38 x 10 ⁻⁹ 1/h
Rated control supply voltage		
• 24 V DC	✓	✓
• 230 V AC	✓	--
• 400 V AC	✓	--
• 120 ... 240 V AC/DC	--	✓

Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41L





3TK2810-0BA01



3TK2810-0GA02



3TK2810-1BA41

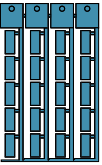




Rated control supply voltage U_s	Time	DT	Screw terminals 	DT	Spring-type terminals 	
V	s		Article No.	Price per PU	Article No.	Price per PU
Standstill monitors						
		Standstill time				
3TK2810-0						
• 24 DC		0.2 ... 6	B	3TK2810-0BA01	C	3TK2810-0BA02
• 230 AC		0.2 ... 6	C	3TK2810-0GA01	C	3TK2810-0GA02
• 400 AC		0.2 ... 6	C	3TK2810-0JA01	C	3TK2810-0JA02
Speed monitors						
		Release delay time				
3TK2810-1 for NPN/PNP proximity switches and encoders						
• 24 DC		0 ... 999	A	3TK2810-1BA41	A	3TK2810-1BA42
• 120 ... 240 AC/DC		0 ... 999	B	3TK2810-1KA41	B	3TK2810-1KA42
3TK2810-1 for NAMUR proximity switches and encoders						
• 24 DC		0 ... 999	B	3TK2810-1BA41-0AA0	B	3TK2810-1BA42-0AA0
• 120 ... 240 AC/DC		0 ... 999	B	3TK2810-1KA41-0AA0	B	3TK2810-1KA42-0AA0

Safety Relays

SIRIUS 3TK28 Safety Relays

Accessories

Selection and ordering data

Use	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels							
 3RT1900-1SB20	For 3TK28		Unit labeling plates For SIRIUS devices 20 mm x 7 mm, pastel turquoise ¹⁾	D	3RT1900-1SB20	100	340 units 41B
	For 3TK28		Adhesive labels For SIRIUS devices	C	3RT1900-1SB60	100	3 060 units 41B
			<ul style="list-style-type: none"> • 19 mm x 6 mm, pastel turquoise • 19 mm x 6 mm, zinc yellow 	C	3RT1900-1SD60	100	3 060 units 41B
Push-in lugs and covers							
 3RP1903	For 3TK28		Push-in lugs For screw fixing, 2 units are required for each device	B	3RP1903	1	10 units 41H
	For 3TK2826		Sealable covers For securing against unauthorized adjustment of setting knobs	A	3TK2826-0DA00-0HA0	1	5 units 41L
	For 3TK28		Sealing foil For securing against unauthorized adjustment of setting knobs	▶	3TK2820-0AA00	1	1 unit 41L
Adapters and connection cables for speed monitors							
 3TK2810-1A 3TK2810-1B 3TK2810-0A	For 3TK2810-1		Adapters for connecting encoders of type Siemens/Heidenhain	A	3TK2810-1A	1	1 unit 41L
			<ul style="list-style-type: none"> • 15-pole 	A	3TK2810-1B	1	1 unit 41L
			<ul style="list-style-type: none"> • 25-pole 	A	3TK2810-1B	1	1 unit 41L
	For 3TK2810-1		Connection cables For connecting the speed monitor to the 3TK2810-1A or 3TK2810-1B adapter	C	3TK2810-0A	1	1 unit 41L
Tools for opening spring-type terminals							
 3RA29 08-1A	For auxiliary circuit connections		Screwdrivers For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	Spring-type terminals 	1	1 unit 41B
					3RA2908-1A		

¹⁾ PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH, see page 16/20.

Overview



SIRIUS 3RK3 Modular Safety System

The 3RK3 Modular Safety System (MSS) is a freely parameterizable modular safety relay. Depending on the external circuit version, safety-related applications up to Performance Level e according to EN ISO 13849-1 or SIL 3 according to IEC 62061 can be realized.

The modular safety relay enables the interconnection of several safety applications.

The comprehensive error and status diagnostics provides the possibility of finding errors in the system and localizing signals from sensors. Plant downtimes can be reduced as the result.

The MSS comprises the following system components:

- Central units
- Expansion modules
- Interface modules
- Diagnostics modules
- Parameterization software
- Accessories

Central units

MSS Basic

The 3RK3 Basic central unit is used wherever several safety functions need to be evaluated and the wiring parameterization of safety relays would involve significant cost and effort. It reads in inputs, controls outputs and communicates through an interface module with higher-level control systems. An application's entire safety program is processed in the central unit.

The 3RK3 Basic central unit is the lowest expansion level and fully functional on its own, without the optional expansion modules.

MSS Advanced

The 3RK3 Advanced central unit is the consistent expansion of the Basic central unit with the functionality of an AS-i safety monitor. In addition to having a larger volume of project data and scope of functionality it can be integrated in AS-Interface and therefore make use of the many different possibilities offered by this bus system. The function can be optionally activated in the central unit.

The service-proven insulation piercing method of AS-Interface enables not only distributed expansion of the project data volume using safe AS-i outputs, safe AS-i sensors and other MSS Advanced or safety monitors (F cross traffic), but also highly flexible adaptation of the application, e.g. very fast connection of AS-i outputs such as EMERGENCY STOP devices, position switches with and without tumbler, or light curtains.

Safety-related disconnection using MSS or by distributed means using safe AS-i outputs and the formation of switch-off groups can be realized very easily. The same applies for any subsequent modifications. They are now easily possible by re-addressing, i.e. re-wiring is no longer necessary.

The AS-i bus is connected directly to the central unit.

MSS ASIsafe

The MSS ASIsafe basic and MSS ASIsafe extended central units are a logical development of the AS-i safety monitors based on the 3RK3 Modular Safety System.

Like MSS Advanced, MSS ASIsafe detects – in a comparable way to the safety monitors – safe sensor technology on the AS-i bus and switches actuators off in a safety-related manner via a configurable safety logic. It stands out by virtue of its greater project data volume, wider range of functions and the possibility of increasing the integrated I/O project data volume by means of expansion modules from the MSS system family. In this case the range of functions, such as the number and type of the logic elements that can be interconnected, is equivalent to that of MSS Advanced.

Expansion modules

With the optional expansion modules, both safety-related and standard, the system is flexibly adapted to the required safety applications.

Interface modules

The DP interface module is used for transferring diagnostics data and device status data to a higher-level PROFIBUS network, e.g. for purposes of visualization using HMI. When using the Basic central unit, 32-bit cyclic data can be exchanged with the control system. If an Advanced/ASIsafe central unit is used, the number is doubled to 64-bit cycle data. The acyclic calling of diagnostics data is possible with both central units.

Diagnostics modules

Actuated sensors or faults, such as a cross-circuit, are displayed directly on the diagnostic display. The fault is diagnosed directly in plain text by the detailed alarm message. The device is fully functional upon delivery. No programming is necessary.

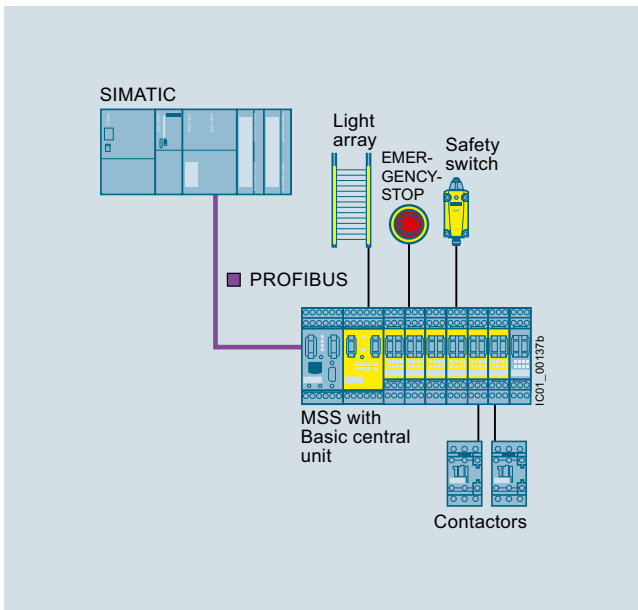
Parameterization software

Using the SIRIUS Safety ES graphical parameterization tool, it is very easy to create the safety functions as well as their logical links on the PC. You can define disconnection ranges, ON-delays, OFF-delays and other dependencies for example.

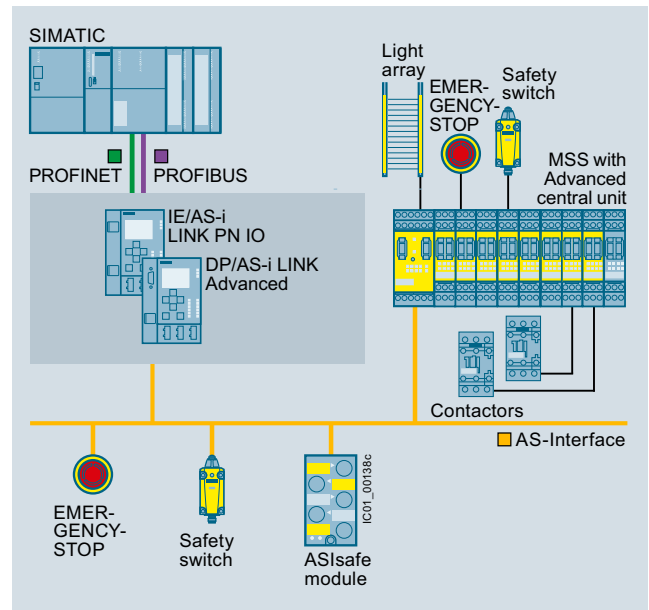
SIRIUS Safety ES also offers comprehensive functions for diagnostics and commissioning. Documentation of the MSS hardware configuration and the parameterized logic is created automatically.

SIRIUS 3RK3 Modular Safety System

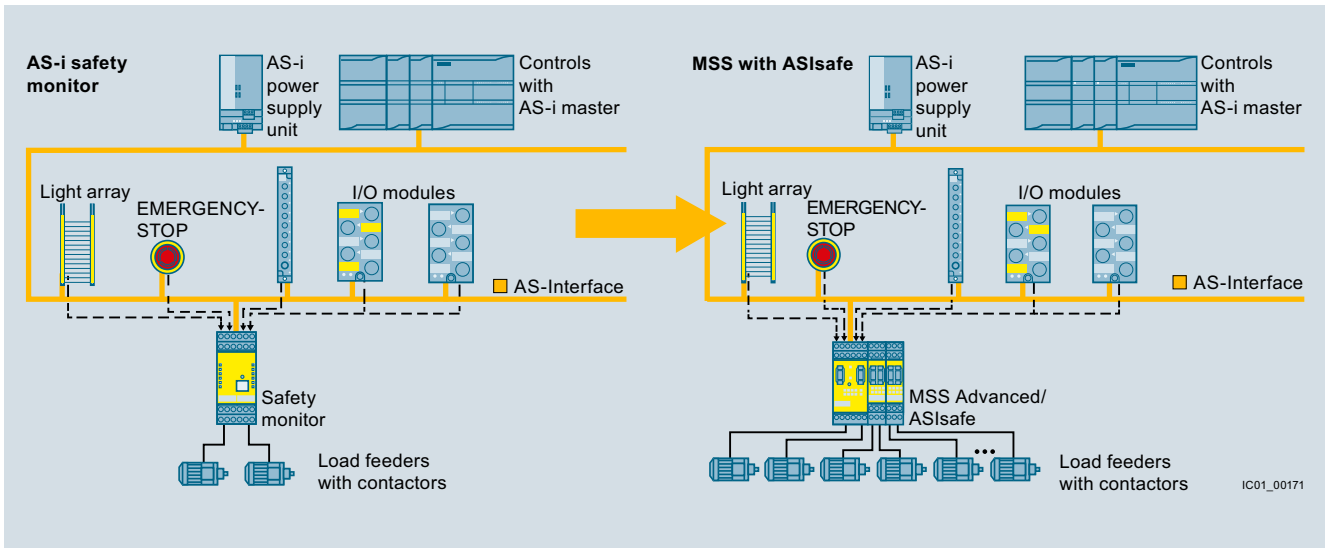
General data



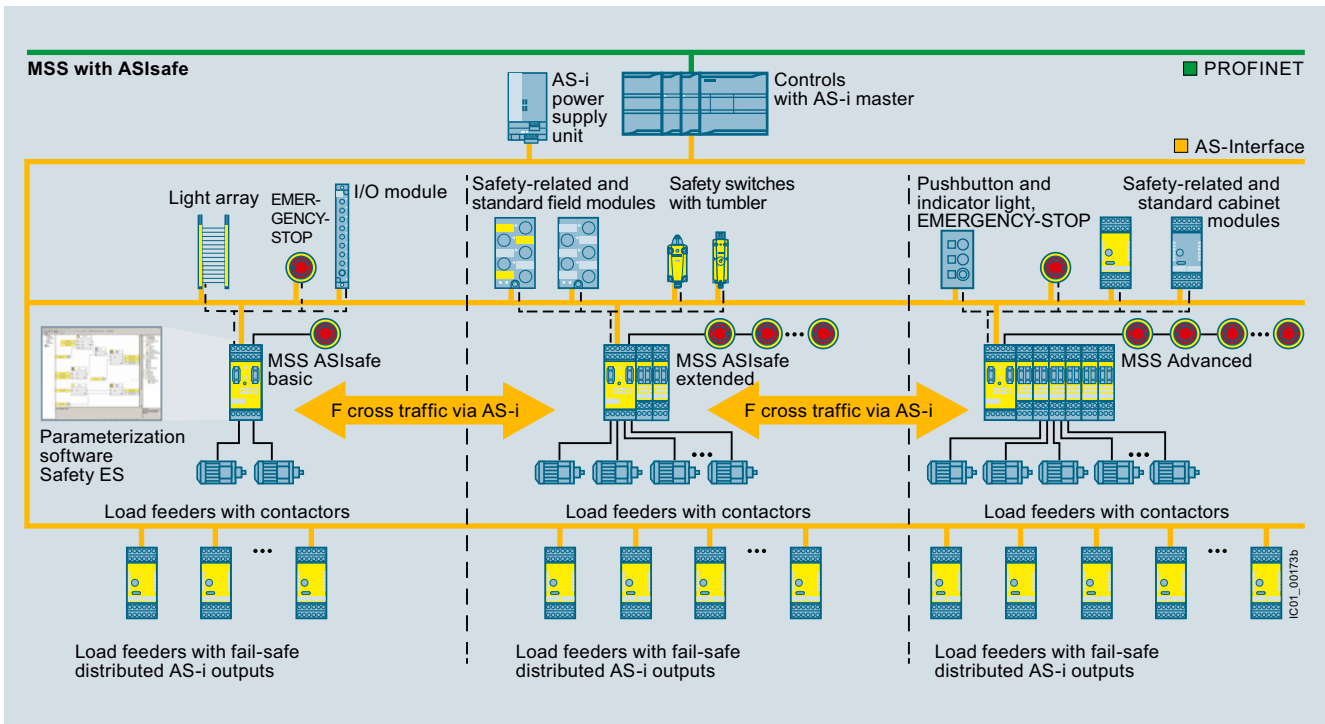
System configuration with the Basic central unit



System configuration with the Advanced central unit



Further development of the system design: From the safety monitor to MSS Advanced/MSS ASIsafe



MSS with ASIsafe

Article No. scheme

Digit of the Article No.	1st - 4th	5th	6th	7th	8th	9th	10th	11th	12th	
	□□□□	□	□	□	-	□	□	□	□	
Modular safety system	3 R K 3									
Device type	□									
Device type	□ □									
Connection type	□									
Communications	□ □ □									
Version	□									
Example	3 R K 3	1	1	1	-	1	A	A	1	0

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

SIRIUS 3RK3 Modular Safety System

General data

Benefits

- More functionality and flexibility through freely configurable safety logic
- Suitable for all safety applications thanks to compliance with the highest safety standards in production automation
- For use all over the world through compliance with all product-relevant, globally established certifications
- Modular hardware configuration
- Parameterization by means of software instead of wiring
- Removable terminals for greater plant availability
- Distributed detection of sensors and disconnection of actuators through AS-Interface
- All logic functions can also be used for AS-Interface, e.g. muting, protective door with tumbler
- Up to 12 independent safe switch-off groups on the AS-i bus
- Volume of project data can be greatly increased by means of AS-Interface
- Up to 50 two-channel enabling circuits per system

Communication through PROFIBUS

The 3RK3 Modular Safety System can be connected to PROFIBUS through the DP interface and exchange data with higher-level control systems.

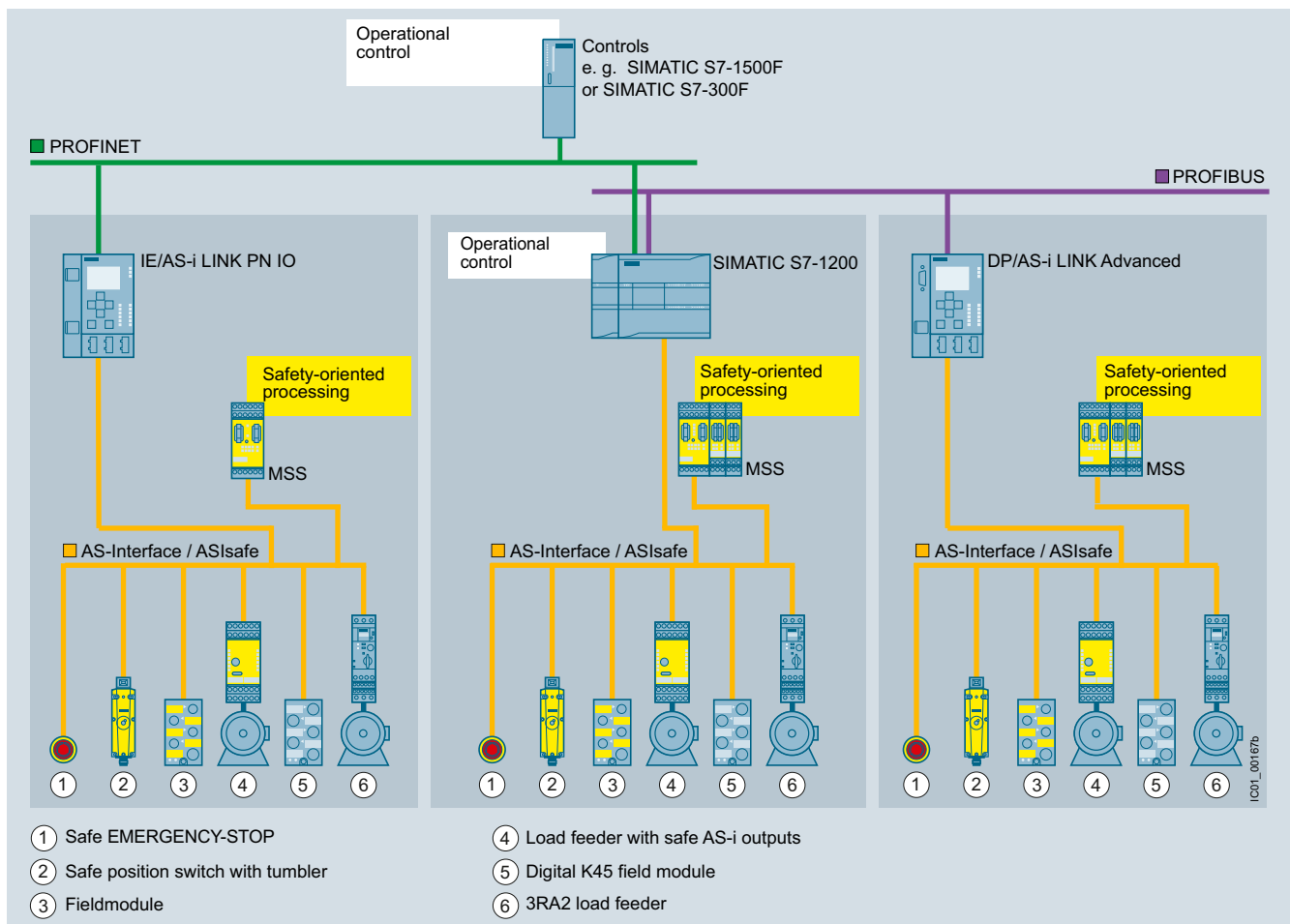
The MSS supports among other things:

- Baud rates up to 12 Mbit/s
- Automatic baud rate detection
- Cyclic services (DPV0) and acyclic services (DPV1)
- Exchange of 32-bit cyclic data with MSS Basic or 64-bit cyclic data with MSS Advanced/MSS ASIsafe
- Diagnostics using data record invocations

AS-Interface communication

Using the Advanced and ASIsafe central units, the 3RK3 Modular Safety System can be integrated in AS-Interface.

- MSS can read in up to 31 AS-i sensors
- Up to 12 preprocessed signals per MSS can be placed on the AS-i bus, e.g. for F cross traffic or for disconnecting safe AS-i outputs
- Safe cross traffic between MSS Advanced and MSS ASIsafe or between other AS-i safety monitors
- Standard signals, e.g. for acknowledgment, can also be applied to the bus



Integration of MSS into AS-Interface as ASIsafe Solution local

Notes:

For the MSS with communication function, see page 11/47 onwards.












For accessories, see page 11/49 onwards.

For SIRIUS Safety ES, see page 14/33.

For more information on AS-Interface with ASIsafe, see also page 2/20.





















Application

The 3RK3 Modular Safety System can be used for all safety-related requirements in the manufacturing industry and offers the following safety functions:

	Symbol	MSS Basic	MSS Advanced, MSS ASIsafe
Monitoring functions			
Universal monitoring Evaluation of any binary signals from single-channel and two-channel sensors		--	✓
EMERGENCY-STOP Evaluation of EMERGENCY-STOP devices with positive-opening contacts		✓	✓
Switching mats Evaluation of switching mats with NC contacts and/or crossover detection		✓	✓
Protective door monitoring Evaluation of protective door signals and/or protective flap signals		✓	✓
Protective door tumbler Evaluation of protective doors with tumbler and of the actuation/release of this tumbler		--	✓
OK buttons Evaluation of OK buttons with NO contact		✓	✓
Two-hand operator controls Evaluation of two-hand operator controls		✓	✓
ESPE monitoring Evaluation of non-contact protective devices, e.g. light curtains and laser scanners		✓	✓
Muting Temporary bridging of non-contact protective devices, 2/4 sensors in parallel, 4 sensors in sequence		--	✓
Operating mode selector switches Evaluation of operating mode selector switches with NO contacts		✓	✓
Monitoring AS-i (AS-i 2F-DI) Logic element for monitoring of AS-i input slaves		--	✓

✓ Available

-- Not available

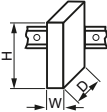
	Symbol	MSS Basic	MSS Advanced, MSS ASIsafe
Logic operation functions			
AND		✓	✓
OR		✓	✓
XOR		✓	✓
NAND		✓	✓
NOR		✓	✓
Negation		✓	✓
Flip-flop		✓	✓
Counting functions			
Counter 0 -> 1		✓	✓
Counter 1 -> 0		✓	✓
Counter 0 -> 1/1 -> 0		✓	✓
Timer functions			
With ON-delay		✓	✓
Passing make contact		✓	✓
With OFF-delay		✓	✓
Clock-pulsing		✓	✓
Start functions			
Monitored start		✓	✓
Manual start		✓	✓
Output functions			
Standard output		✓	✓
F output		✓	✓
AS-i output function		--	✓
Status functions			
Element status		--	✓

SIRIUS 3RK3 Modular Safety System

General data

Technical specifications

Central units and expansion modules

Type	Central units				Expansion modules							
	Basic	Advanced	ASIsafe basic	ASIsafe extended	4/8F-DI	2/4 F-DI 1/2 F-RO	2/4 F-DI 2F-DO	4/8 F-RO	4 F-DO	8 DI	8 DO	
Dimensions (W x H x D)												
												
• Screw terminals	mm	45 x 111 x 124			22.5 x 111 x 124			45 x 111 x 124	22.5 x 111 x 124			
• Spring-type terminals	mm	45 x 113 x 124			22.5 x 113 x 124			45 x 113 x 124	22.5 x 113 x 124			
Device data												
Shock resistance (sine pulse)	g/ms	15/11										
Touch protection Acc. to IEC 60529		IP20										
Permissible mounting position		Vertical mounting surface (+10°/-10°), deviating mounting positions are permitted for reduced ambient temperature										
Minimum distances		For heat dissipation through convection from the devices 25 mm to the ventilation openings (top and bottom)										
Permissible ambient temperature												
• During operation	°C	-20 ... +60										
• During storage and transport	°C	-40 ... +85										
Number of sensor inputs (1-channel)												
• Fail-safe		8	8	2	4	8	4	4	--	--	--	
• Not fail-safe		--	--	6	4	--	--	--	--	8	--	
Number of test outputs		2	2	2	2	2	2	--	--	--	--	
Number of outputs												
• Relay outputs												
- Single-channel		--	--	--	--	--	2	--	8	--	--	
- Two-channel		1	1	1	1	--	--	--	--	--	--	
• Electronic outputs												
- Single-channel		--	--	--	--	--	--	--	--	--	8	
- Two-channel		1	1	1	1	--	--	2	--	4	--	
Weight	g	300	300	300	300	160	160	160	400	135	125	160
Installation altitude above sea level	m	2 000										
Environmental data												
EMC interference immunity		IEC 60947-5-1										
Vibrations												
• Frequency	Hz	5 ... 500										
• Amplitude	mm	0.75										
Climatic withstand capability		IEC 60068-2-78										
Electrical specifications												
Rated control supply voltage U_s Acc. to IEC 61131-2	V	24 DC $\pm 15\%$ ¹⁾										
Operating range		0.85 ... 1.15 x U_s										
Rated insulation voltage U_i	V	300	300	300	300	50	300	50	300	50	50	50
Rated impulse voltage U_{imp}	kV	4	4	4	4	0.5	4	0.5	4	0.5	0.5	0.5
Total current input	mA	185	185	185	185	60	85	85	140	8	78	60
Rated power at U_s	W	4.5	4.5	4.5	4.5	1.5	2	2	3	4.8	1.9	1.5
Utilization category Acc. to IEC 60947-5-1 (relay outputs)												
• AC-15 at 230 V	A	2	2	2	2	--	2	--	2	--	--	--
• DC-13 at 24 V (semiconductor outputs)	A	1	1	1	1	--	1	--	1	--	--	--
• DC-13 at 24 V	A	1.5	1.5	1.5	1.5	--	--	1.2	--	2	--	0.5
Mechanical endurance During rated operation	Operating cycles (relay)	10×10^6	10×10^6	10×10^6	10×10^6	--	10×10^6	--	10×10^6	--	--	--

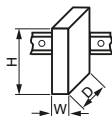
¹⁾ Device current supply through a power supply unit according to IEC 60536 protection class III (SELV or PELV).

Type		Central units				Expansion modules						
		Basic	Advanced	ASIsafe basic	ASIsafe extended	4/8F-DI	2/4 F-DI 1/2 F-RO	2/4 F-DI 2F-DO	4/8 F-RO	4 F-DO	8 DI	8 DO
Electrical specifications (cont.)												
Switching frequency z	1/h	1 000	1 000	1 000	1 000	--	1 000	1 000	360	1 000	--	1 000
At rated operational current												
Conventional thermal current I_{th}	A	2/1.5	2/1.5	2/1.5	2/1.5	--	1	1.2	3	2	--	0.5
Protection for output contacts												
Fuse links LV HRC Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE												
• Operational class gG	A	4	4	4	4	--	4	--	4	--	--	--
• Operational class quick	A	6	6	6	6	--	6	--	6	--	--	--
Safety specifications												
Probability of a dangerous failure												
• Per hour (PFH _d)	1/h	5.14 x 10 ⁻⁹	3.8 x 10 ⁻⁹ with AS-i 2.8 x 10 ⁻⁹ without AS-i	3.8 x 10 ⁻⁹ with AS-i 2.8 x 10 ⁻⁹ without AS-i	3.8 x 10 ⁻⁹ with AS-i 2.8 x 10 ⁻⁹ without AS-i	1.89 x 10 ⁻⁹	3.79 x 10 ⁻⁹	2.7 x 10 ⁻⁹	7.15 x 10 ⁻⁹	3.18 x 10 ⁻⁹	--	--
• On demand (PFD)		1.28 x 10 ⁻⁵	1.7 x 10 ⁻⁴	1.7 x 10 ⁻⁴	1.7 x 10 ⁻⁴	4.29 x 10 ⁻⁶	5.85 x 10 ⁻⁶	8.34 x 10 ⁻⁶	4.36 x 10 ⁻⁵	2.2 x 10 ⁻⁵	--	--
Parameters for cables												
Line resistance	Ω	100	100	100	100	100	100	100	--	--	100	--
Cable length from terminal to terminal With Cu 1.5 mm ² and 150 nF/km	m	1 000	1 000	1 000	1 000	1 000	1 000	1 000	--	--	1 000	--
Conductor capacity	nF	330	330	330	330	330	330	330	--	--	330	--

SIRIUS 3RK3 Modular Safety System

General data

Interface and diagnostics modules

Type		Interface modules	Diagnostics modules
Dimensions (W x H x D)			
			
• Screw terminals	mm	45 x 111 x 124	96 x 60 x 44
• Spring-type terminals	mm	45 x 113 x 124	--
Device data			
Shock resistance (sine pulse)	g/ms	15/11	
Degree of protection acc. to IEC 60529		IP20	
Permissible mounting position		Vertical mounting surface (+10°/-10°), deviating mounting positions are permitted for reduced ambient temperature	
Minimum distances		For heat dissipation through convection from the devices 25 mm to the ventilation openings (top and bottom)	
Permissible ambient temperature			
• During operation	°C	-20 ... +60	
• During storage and transport	°C	-40 ... +85	
Weight	g	270	90
Installation altitude above sea level	m	2 000	
Environmental data			
EMC interference immunity		IEC 60947-5-1	
Vibrations			
• Frequency	Hz	5 ... 500	
• Amplitude	mm	0.75	
Climatic withstand capability		IEC 60068-2-78	
Electrical specifications			
Rated control supply voltage U_s Acc. to IEC 61131-2	V	24 DC ±15 %	24 DC ±15 % via connecting cable to the central unit
Operating range		0.85 ... 1.15 x U_s	
Rated insulation voltage U_i	V	50	
Rated impulse voltage U_{imp}	kV	0.5	
Total current input	mA	--	24
Rated power at U_s	W	--	0.6

More information

For the system manual "3RK3 Modular Safety System", see <https://support.industry.siemens.com/cs/ww/en/view/26493228>.



Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 42B



3RK3111-1AA10


 3RK3121-1AC00
 3RK3122-1AC00
 3RK3131-1AC10

Version	DT	Screw terminals 	DT	Spring-type terminals 	
		Article No.	Price per PU	Article No.	Price per PU
3RK31 central units					
3RK3 Basic					
Central unit with safety-related inputs and outputs	A	3RK3111-1AA10		3RK3111-2AA10	
<ul style="list-style-type: none"> • 8 fail-safe inputs • 1 two-channel relay output • 1 two-channel electronic output Max. 7 expansion modules can be connected					
<u>Note:</u>					
Memory module 3RK3931-0AA00 is included in the scope of supply.					
3RK3 Advanced					
Central units for connecting to AS-Interface with safety-related inputs and outputs and extended scope of functions	A	3RK3131-1AC10		3RK3131-2AC10	
<ul style="list-style-type: none"> • 8 fail-safe inputs • 1 two-channel relay output • 1 two-channel electronic output Max. 9 expansion modules can be connected					
<u>Note:</u>					
Memory module 3RK3931-0AA00 is included in the scope of supply.					
3RK3 ASIsafe					
Central units for connecting to AS-Interface with safety-related inputs and outputs and extended scope of functions					
<ul style="list-style-type: none"> • 1 two-channel relay output • 1 two-channel electronic output 					
"Basic" version	A	3RK3121-1AC00		3RK3121-2AC00	
<ul style="list-style-type: none"> • 2 fail-safe inputs • 6 non-fail-safe inputs No expansion modules can be connected					
"Extended" version	A	3RK3122-1AC00		3RK3122-2AC00	
<ul style="list-style-type: none"> • 4 fail-safe inputs • 4 non-fail-safe inputs Max. 2 expansion modules can be connected					
<u>Note:</u>					
Memory module 3RK3931-0AA00 is included in the scope of supply.					

Notes:

For more information on MSS, see www.siemens.com/sirius-mss.

You will find additional information on AS-Interface as from [page 2/20](#).

SIRIUS 3RK3 Modular Safety System

3RK32, 3RK33 expansion modules, 3RK35 interface modules, 3RK36 operating and monitoring modules

Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 42B



3RK3211-1AA10
 3RK3221-1AA10
 3RK3231-1AA10
 3RK3242-1AA10



3RK3251-1AA10





3RK3311-1AA10
 3RK3321-1AA10



3RK3511-1BA10



3RK3611-3AA00

Version	DT	Screw terminals 	DT	Spring-type terminals 	
		Article No.	Price per PU	Article No.	Price per PU
3RK32, 3RK33 expansion modules					
4/8 F-DI Safety-related input modules • 8 inputs	A	3RK3211-1AA10	A	3RK3211-2AA10	
2/4 F-DI 1/2 F-RO Safety-related input/output modules • 4 inputs • 2 single-channel relay outputs	A	3RK3221-1AA10	A	3RK3221-2AA10	
2/4 F-DI 2F-DO Safety-related input/output modules • 4 inputs • 2 two-channel electronic outputs	A	3RK3231-1AA10	A	3RK3231-2AA10	
4/8 F-RO Safety-related output modules • 8 single-channel relay outputs	A	3RK3251-1AA10	A	3RK3251-2AA10	
4 F-DO Safety-related output modules • 4 two-channel electronic outputs	A	3RK3242-1AA10	A	3RK3242-2AA10	
8 DI Standard input module • 8 inputs	A	3RK3321-1AA10	A	3RK3321-2AA10	
8 DO Standard output module • 8 electronic outputs	A	3RK3311-1AA10	A	3RK3311-2AA10	
3RK35 interface modules					
DP interface PROFIBUS DP interface, 12 Mbit/s, RS 485, 32-bit cyclic data exchange with Basic central unit or 64-bit with Advanced and ASIsafe central unit, acyclic exchange of diagnostics data	A	3RK3511-1BA10	A	3RK3511-2BA10	
3RK36 operating and monitoring modules					
Diagnostics module	A	3RK3611-3AA00		--	








Notes:

For the required connection cable, [see page 11/49](#).

For more information on MSS, [see www.siemens.com/sirius-mss](http://www.siemens.com/sirius-mss).

You will find additional information on AS-Interface [as from page 2/20](#).

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connection cables (essential accessory)						
Connection cables						
For connection of						
	Central units with expansion modules or interface module	Diagnostics modules with central unit or interface module				
3UF7932-0AA00-0	✓	✓	• Length 0.025 m (flat) ▶	3UF7930-0AA00-0	1	1 unit 42J
--	--	✓	• Length 0.1 m (flat) ▶	3UF7931-0AA00-0	1	1 unit 42J
--	--	✓	• Length 0.3 m (flat) ▶	3UF7935-0AA00-0	1	1 unit 42J
--	--	✓	• Length 0.5 m (flat) ▶	3UF7932-0AA00-0	1	1 unit 42J
--	--	✓	• Length 0.5 m (round) ▶	3UF7932-0BA00-0	1	1 unit 42J
--	--	✓	• Length 1.0 m (round) ▶	3UF7937-0BA00-0	1	1 unit 42J
--	--	✓	• Length 2.5 m (round) ▶	3UF7933-0BA00-0	1	1 unit 42J
PC cables and adapters						
	USB PC cables			3UF7941-0AA00-0	1	1 unit 42J
3UF7941-0AA00-0	For connecting to the USB interface of a PC/PG, for communication with 3RK3 through the system interface, recommended for use in connection with 3RK3					
	USB/serial adapters			3UF7946-0AA00-0	1	1 unit 42J
	For connecting an RS 232 PC cable to the USB interface of a PC					
Door adapters						
	Door adapters			3UF7920-0AA00-0	1	1 unit 42J
3UF7920-0AA00-0	For external connection of the system interface, e.g. outside a control cabinet					
Interface covers						
	Interface covers			3UF7950-0AA00-0	1	5 units 42J
3UF7950-0AA00-0	For system interface					
Memory modules						
	Memory modules			3RK3931-0AA00	1	1 unit 42C
3RK3931-0AA00	For backing up the complete parameterization of the 3RK3 Modular Safety System without a PC/PG through the system interface					
Push-in lugs						
	Push-in lugs for screw fixing			3RP1903	1	10 units 41H
3RP1903	E.g. on mounting plate, 2 units required per device Can be used for 3RK3					
Software for 3RK3						
	SIRIUS Safety ES					
3ZS1316-C.10-0Y.5	Software for configuring, commissioning, operating and diagnosing of 3SK2 and 3RK3, see page 14/33.					
	NEW					

✓ Available

-- Not available

Note:

More accessories and components that can be combined with MSS, see page 2/29.

SIRIUS 3RK3 Modular Safety System

Notes