SIEMENS

Flexibly meet any safety requirement

SIRIUS 3SK1 Safety Relays – modular with full depth of functions

siemens.com/safety-relays

iF product design award 2013

Answers for industry.

Flexibility and safety have a new name

System operators currently require their machinery to meet all functional safety requirements and be on the cutting edge of technology. They also expect that their machines are equipped to meet future requirements. The new SIRIUS 3SK1 Safety Relays comply with the latest safety standards and are certified for international use according to IEC 62061 and ISO 13849-1. They are a new component of industrial safety technology at Siemens: Safety Integrated. www.siemens.com/safety-integrated

They can be used easily and economically: For example, you can flexibly expand a basic unit with input and output modules – depending on the application. This keeps you flexible, keeps your stock uncluttered, and keeps your product selection simple – without compromising functionality. Moreover, the innovative housing concept of the safety relays received the internationally renowned iF product design award 2013. The perfect solution for quickly and easily achieving a safe and productive system – while giving yourself a competitive edge.
The decision for SIRIUS 3SK1 Safety Relays means modularity with full depth of functions.

SIRIUS 3SK1 Safety Relays

With these safety relays, you can meet a wide variety of safety requirements – from EMERGENCY STOP applications to protective door monitoring and two-hand operation console.
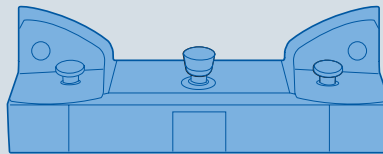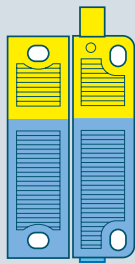
Benefits:

› **Simple** – thanks to a clear product portfolio and universal functionality
› **Flexible** – thanks to a modular product concept and versatile parameterization
› **Economical** – thanks to little variance and low wiring costs

With the SIRIUS 3SK1 Safety Relays, you are ideally equipped for many locally limited safety applications in automated processes. It is not only easy and economical to expand these processes with new devices, you can also enhance and adapt them to future requirements. With just a single basic unit, up to ten mechanical or electronic sensors and up to twenty secure outputs can be controlled via input and output expansion modules that can be flexibly combined.

The design is extremely simple: DIP switches are used to set the parameters on the multifunctional basic units – no programming is necessary. In addition, the new safety relays can be seamlessly integrated into standard automation. That minimizes the costs of engineering and training while maximizing the system's availability. The result: lower installation costs as well as lower costs in terms of system design and operation. The SIRIUS 3SK1 Safety Relays replace the existing SIRIUS 3TK28 product range.
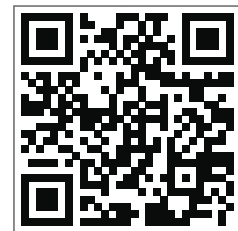
Scan and experience the safe shutdown of a system for yourself!

The basic units – two types for different requirements

SIRIUS 3SK1 Safety Relays offer you a streamlined and clear product range. Whether standard or advanced basic units – safety solutions have never been so easy. With both types you can implement individual solutions as well as solutions integrated into standard automation.

Standard basic units – for a sensor

Both standard basic units are easy to use and offer variable functionality.

They provide a connection for mechanical and electronic sensors and make the wiring particularly easy. On one hand, labeling on the inside of the hinged covers facilitates the connection of the sensor. On the other, the cables are routed in the same direction as the terminals are operated. You can choose between screw-type and spring-loaded connections.

Using the DIP switches, you can set the parameters for the basic units in the blink of an eye for the specific sensor – for instance EMERGENCY STOP, non-contact safety switches, and two-hand operation. The standard basic units are available with relay or semiconductor outputs.

Advanced basic units – for even more flexibility

In addition to the product features of the standard units, the advanced basic units additionally offer greater functionality and flexibility.

This means that you can expand the advanced basic units with input expansion modules for additional sensors. Depending on the unit configuration, a time delay for the outputs can be set using a rotary encoder switch.

A further benefit is the unique device connector – it eliminates the wiring between the basic unit and the expansion modules. Simply attach it and you're done. It is fast, convenient, and eliminates the possibility of faulty wiring.

And when there's very little room in the control cabinet? The Mini advanced basic unit product range featuring a width of just 17.5 mm offers a solution.

Application examples

The benefits of this modular product concept are clear to see based on system configurations. Following are two examples for locally limited applications with one sensor, with one sensor or with multiple sensors.
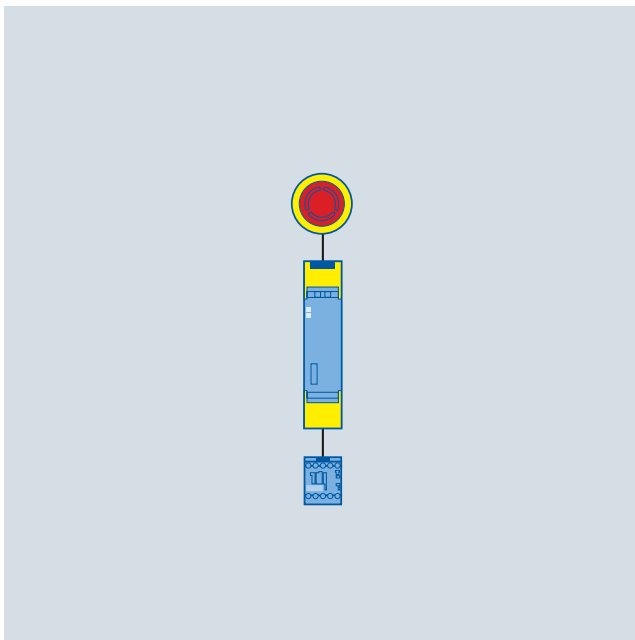
Simplest applications

The simplest safety applications require only an individual standard or advanced basic unit to which you can connect one sensor and one actuator, for example.
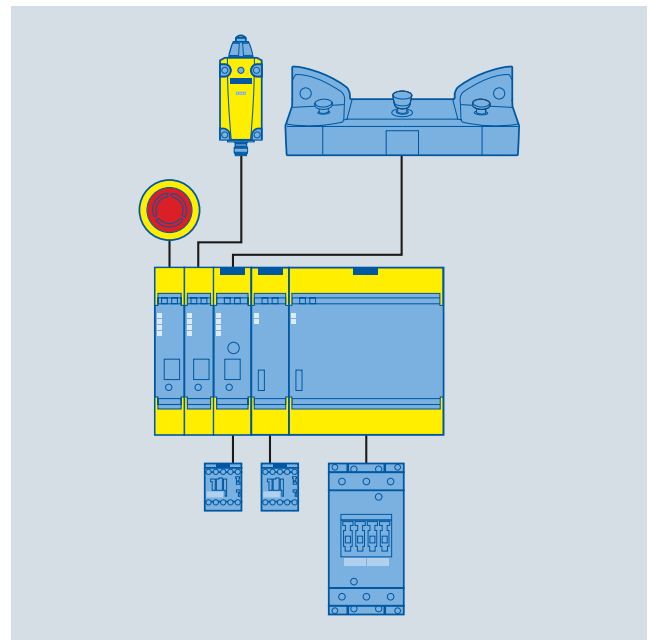
Applications with multiple sensors

If multiple sensors are required for your safety application, a single basic unit is not enough. However, thanks to the modular product design, our safety relays give you the flexibility you need. You can simply use an expandable advanced basic unit and flexibly combine it with a corresponding number of input expansion modules for additional sensors and output expansion modules for additional actuators.

Input expansion module and power supply

Thanks to the modular product concept of the safety relays, you can tailor the basic units to suit your needs on the input side. Adding additional sensor connections is as easy as adding an optional power supply with minimal wiring.

Input expansion module – when more is needed

Could you use a little bit more? If you need more than just one sensor for your safety application, you don't need an additional basic unit – instead you can simply install a cost-effective input expansion module. This module has two sensor inputs which enable you to connect both mechanical and electronic sensors.

The input expansion module can only be used with advanced basic units. Up to five of these modules can be easily connected to an advanced basic unit via a device connector.
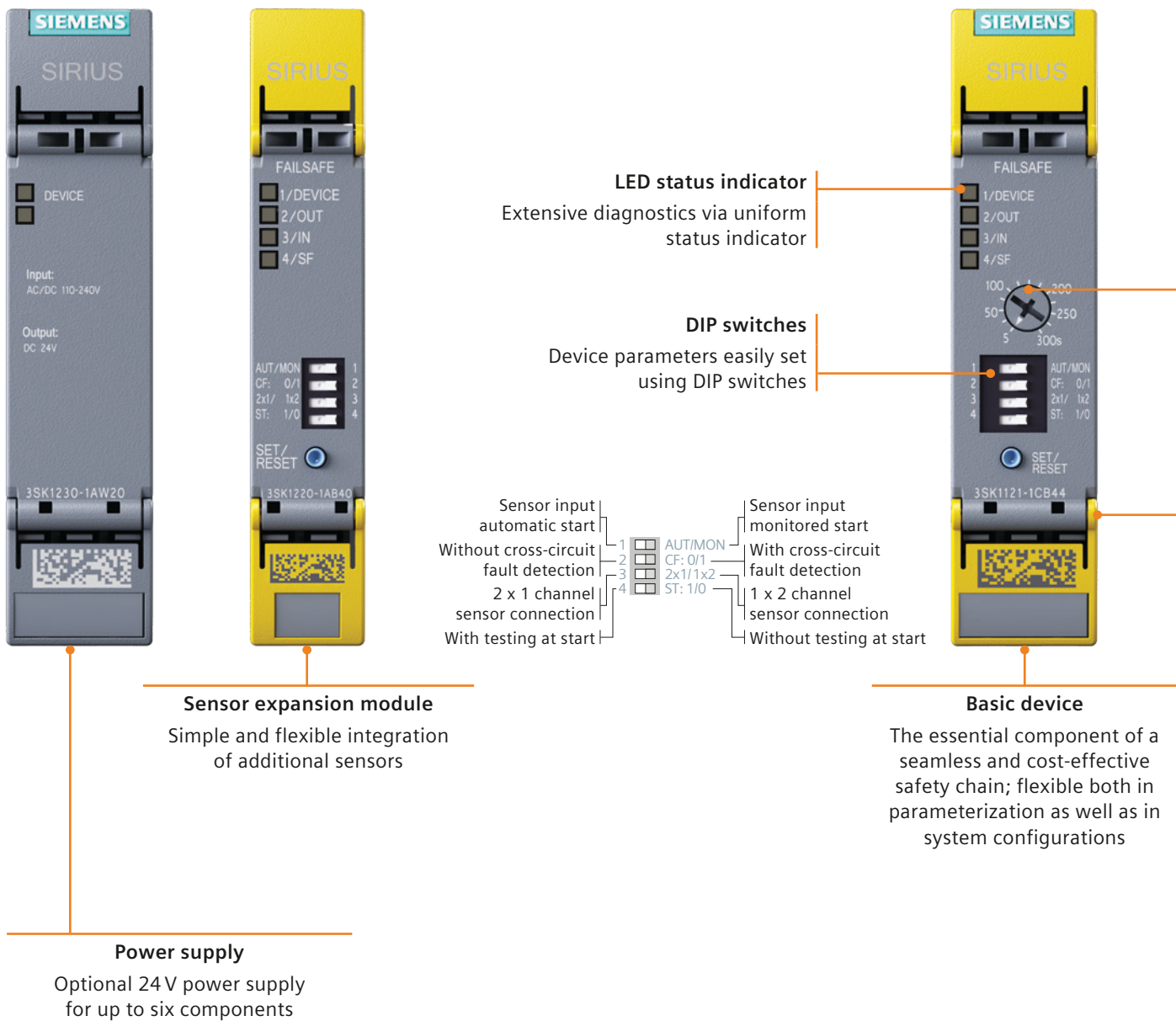
Optional power supply – for worldwide use

The 24 V power supply can supply power to up to six components – whether they are basic units, input expansion modules, or output expansion modules. It handles all common international control voltages from 110 to 240 V AC/DC, enabling the safety relays to be used worldwide. This eliminates the need for country-specific versions, which greatly simplifies your ordering and stockkeeping.

The power supply can be used with standard and advanced basic units. The power supply can be wired or, in the case of advanced basic units, connected via the device connector.

The new housing concept of the safety relays incorporates clearly labeled hinged covers, which facilitates sensor connection. In addition, you can add a seal to prevent parameters from accidentally being adjusted and to avoid time delays.

Flexible, simple, and economical

With SIRIUS 3SK1, you receive safety relays that simplify operation, save money and time, and are distinguished by their high degree of modularity and flexibility.

LED status indicator

Extensive diagnostics via uniform status indicator

DIP switches

Device parameters easily set using DIP switches

Sensor input automatic start | Sensor input monitored start

Without cross-circuit fault detection | With cross-circuit fault detection

2 x 1 channel sensor connection | 1 x 2 channel sensor connection

With testing at start | Without testing at start

1 AUT/MON
2 CF: 0/1
3 2x1/1x2
4 ST: 1/0

Sensor expansion module

Simple and flexible integration of additional sensors

Basic device

The essential component of a seamless and cost-effective safety chain; flexible both in parameterization as well as in system configurations

Power supply

Optional 24 V power supply for up to six components

Rotary encoder switch

Time delay setting

Connection technology

Simplified wiring thanks to optimized working angles – available with screw-type and springloaded connection technology

4RO output expansion module

Expansion of a basic unit's enable circuits with a switching capacity of 5 A, AC 15

3RO output expansion module

Expansion of a basic unit's enable circuits with power contacts for high currents up to 10 A, AC 15

Device connector

Fast and easy connection of input and output expansion modules to advanced basic units without separate wiring

The output expansion modules

The modular product concept enables you to individually tailor the number of outputs to control the actuators to match your specific safety application.

Output expansion modules

Do you need additional outputs? That is when output expansion modules come into play:

› Contact expansion with four relay outputs for currents up to 5 A

› Contact expansion with three power relay outputs for high currents up to 10 A

With these expansion modules you can easily add additional outputs to the basic units. Using a slide switch on the expansion module, you can set the parameters for the respective outputs as instantaneous or time-delayed for the advanced basic units. This means you need just a single basic unit in order to switch multiple groups of actuators at different times.

To keep the product line transparent and ensure that the product selection remains simple, the output expansion modules are identical for standard as well as advanced basic units.

That simplifies planning and assembly for you and reduces the costs associated with purchasing, storage, and maintenance.


Terminals with optimized working angles:Cable routing and terminal operation occur from the same direction and are clearly visible during wiring. Labeled hinged covers facilitate the assignment of connections.

Maximum flexibility for any application

With SIRIUS 3SK1 Safety Relays, you can easily implement locally limited safety solutions at the cell level and reliably shut down machinery when a hazard is detected. For the protection of operators, the environment, and machinery.

Example of a filling system with protective door and EMERGENCY STOP
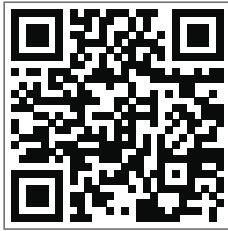
Scan und experience the system expansion in moving images!

This automated filling system meets high requirements relating to hygiene and personal protection and is housed in a safety cell. If the cell is entered during operation or if the EMERGENCY STOP is activated, the safety relays safely shut down the system.

The monitored start and safe stop of the machinery is handled via an advanced basic unit, in which the motor and the valves are controlled via the output expansion module for low currents up to 5 A and via the output expansion module for larger currents up to 10 A.

The non-contact safety switch is connected to the basic unit, and the EMERGENCY STOP connections are made via input expansion modules. All safety relays can be quickly and easily plugged into the SIRIUS 3ZY12 device connector – without complex wiring.

Thanks to the modular product concept, the filling system can be quickly and easily expanded at any time and tailored to changing requirements.

With the SIRIUS 3SK1 Safety Relays, it is just as easy to safely shut down a system as it is to expand it.

Order number overview

The simplicity of the modular product concept is matched by the clear range of products and order numbers.
Based on the order numbers, you can also determine the connection type and the off delay time.

	Relay enable circuit	Semiconductor enable circuit	Current	Number of outputs
SIRIUS 3SK1 standard basic units	3SK1 111 – □ AB 30		24 V AC/DC	3 EC + 1SC
	3SK1 111 – □ AW 20		110 – 240 V AC/DC	3 EC + 1SC
		3SK1 112 – □ BB 40	24 V DC	2 EC + 1SC
SIRIUS 3SK1 advanced basic units		3SK1 120 – □ AB 40	24 V DC	1
	3SK1 121 – □ AB 40	3SK1 122 – □ AB 40	24 V DC	3 EC + 1SC
	3SK1 121 – □ CB 4 □	3SK1 122 – □ CB 4 □	24 V DC	EC: 2/2td
SIRIUS 3SK1 output expansion modules	3SK1 211 – □ BB 00		24 V AC	4
	3SK1 211 – □ BB 40		24 V DC	4
	3SK1 211 – □ BW 20		110 – 240 V AC/DC	4
	3SK1 213 – □ AB 40		24 V DC	3
	3SK1 213 – □ AJ 20		115 V AC	3
	3SK1 213 – □ AL 20		230 V AC	3
SIRIUS 3SK1 sensor expansion module	3SK1 220 – □ AB 40			
Power supply	3SK1 230 – □ AW 20			

1 Screw-type connection
2 Spring-loaded connection

1 0.05 – 3 sec
2 0.5 – 30 sec
4 5.0 – 300 sec

EC = enable circuit(s)
SC = signaling circuit(s)
td = delayed

SIRIUS 3SK1
Safety Relays –
scan and view
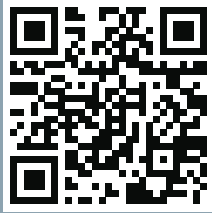
Additional information

To learn more about SIRIUS Safety Relays:
www.siemens.com/safety-relays

To learn more about Safety Integrated:
www.siemens.com/safety-integrated

Planning Efficiency for SIRIUS:
www.siemens.com/planning-efficiency