Flexibly meet any safety requirement

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

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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.

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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 Sirius 3SK1 provides 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 function.

With the SIRIUS 3SK1 Safety Relays, you can handle many locally limited safety applications in automated processes. Not only easy and economical to expand these processes with new devices, you can also enhance and adapt them to future requirements. 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 with just a single basic unit.

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. This 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 shut-down 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 – e.g., EMERGENCY STOP or non-contact safety switch. 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. Below are three examples for locally limited applications with one sensor, multiple sensors, and applications for safely shutting down motors.

Simple applications

The simplest safety applications require only an individual standard or advanced basic unit to which you can connect two more modules; for example, you could connect one sensor and one actuator.

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 such as additional sensors and output expansion modules for additional actuators.

Applications for safe motor control

To safely shut down motors, you can easily combine the new safety relays with the new SIRIUS 3RM1 Motor Starters and integrate them into your safety application. This eliminates the need for additional devices and wiring and thus reduces costs. The motor starters are available as direct or reversing starters.

Also available is a special version that provides for a safe shutdown. Only 22.5 mm wide, these devices offer the additional benefit of integrated overload protection which enables them to protect people, machinery, and the environment as well as your motors.
Thanks to the modular product concept of the safety relays, you can tailor the basic units to suit your needs and minimal wiring. The new housing concept of the safety relays incorporates clearly labeled sensor connection. In addition, you can add a seal to prevent sensor inputs which enable you to connect both mechanical and electronic sensors.

The 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 entire new basic unit. Instead, you can simply install a cost-effective input expansion module – instead you can simply install a cost-effective input expansion module. This module has two sensor inputs which enable you to connect either two sensor inputs or two expansion modules. It handles the loading of connected circuits with a switching capacity of 5A, AC 15. The output expansion modules come into play: when additional output are needed outside of the safety application, you don’t need an entire new basic unit. Instead, you can simply install a cost-effective output expansion module. This module has four relay outputs for high currents up to 5A, AC 15.

The essential component of a safety chain; flexible both in system configurations and in the technology used.

More simplicity, greater flexibility, and an integrated unit: The SIRIUS 3RM1 Motor Starters for three-phase motors up to 3kW. For the first time, units from the control and main circuit have been merged into a single system for the SIRIUS 3RM1 Motor Starters – narrow widths up to 22.5 mm – less wiring thanks to device connectors and infeed systems – SIRIUS 3RM1 Motor Starters are seamlessly integrated. The combination of safety relays and motor starters ensures a safe start-up and shutdown, because the motor starters take over the motor contactors and one overload relay – functional with a width of just 22.5 mm. The SIRIUS 3RM1 Motor Starters are multifunctional Motor Starters. When it comes to technology, they also share a uniform design. The SIRIUS 3RM1 Motor Starters are seamlessly integrated.

Benefits:
- More simplicity
- Greater flexibility
- Integrated unit
- Narrow widths up to 22.5 mm
- No additional system costs
- No additional accessories
- Easy and flexible integration of operational circuits with power contacts for high currents up to 10A, AC 15
- Stand-alone units are connected by means of standard links in the case of a system configuration with power contacts for high currents up to 10A, AC 15
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Input expansion module and power supply

The output expansion modules

When additional output are needed, output expansion modules come into play:
- Current expansion with four relay output and power contactors up to 10A
- Current expansion with three power contactors for high currents up to 10A
- With these expansion modules, you can modularly expand and adapt the safety relay to your specific needs. You can order and stockkeep them as a group or individually. The combination of safety relays and motor starters ensures a safe start-up and shutdown, because the motor starters take over the motor contactors and one overload relay – functional with a width of just 22.5 mm. The SIRIUS 3RM1 Motor Starters are multifunctional Motor Starters. When it comes to technology, they also share a uniform design. The SIRIUS 3RM1 Motor Starters are seamlessly integrated.
Example of a filling system with protective door and EMERGENCY STOP

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 is switched via the integrated SIRIUS 3RM1 motor starter. In addition, the valves are controlled via the output expansion module for lower currents up to 5A and via the output expansion module for larger currents up to 10A.

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, 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.

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.

<table>
<thead>
<tr>
<th>Relay enable circuit</th>
<th>Semiconductor enable circuit</th>
<th>Current</th>
<th>Number of outputs</th>
<th>Device connector*</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIRIUS 3SK1 standard basic units</td>
<td>3SK1 111 – ⃞ Ab 30</td>
<td>24V AC/DC</td>
<td>3EC + 1SC</td>
<td></td>
</tr>
<tr>
<td>3SK1 111 – ⃞ Aw 20</td>
<td>110 – 240 V AC/DC</td>
<td>3EC + 1SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIRIUS 3SK1 advanced basic units</td>
<td>3SK1 121 – ⃞ Ab 40</td>
<td>24V DC</td>
<td>1</td>
<td>3ZY1212-1BA00</td>
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<tr>
<td>3SK1 121 – ⃞ Bb 40</td>
<td>24V DC</td>
<td>2EC + 1SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIRIUS 3SK1 output expansion modules</td>
<td>3SK1 211 – ⃞ Bb 00</td>
<td>24V AC</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3SK1 211 – ⃞ Bb 40</td>
<td>24V DC</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3SK1 211 – ⃞ Bw 20</td>
<td>110 – 240 V AC/DC</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIRIUS 3SK1 sensor expansion module</td>
<td>3SK1 213 – ⃞ Ab 40</td>
<td>24V DC</td>
<td>3</td>
<td>3ZY1212-0FA01</td>
</tr>
<tr>
<td>3SK1 213 – ⃞ Aj 20</td>
<td>115V AC</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3SK1 213 – ⃞ Al 20</td>
<td>230V AC</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>3SK1 230 – ⃞ Aw 20</td>
<td></td>
<td></td>
<td>3ZY1212-2BA00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EC = enable circuit(s)</th>
<th>SC = signaling circuit(s)</th>
<th>td = delayed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Screw-type connection</td>
<td>0.05 – 3 sec</td>
<td></td>
</tr>
<tr>
<td>2. Spring-loaded connection</td>
<td>0.5 – 30 sec</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>5.0 – 300 sec</td>
<td></td>
</tr>
</tbody>
</table>

* Device connector: The device connector is necessary for connecting various expansion modules to an Advanced basic unit. Use of the device connector in output expansion modules is optional. The last device in the system must have a device terminator.


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.