

SIRIUS 3SK1 Safety Relays

General data

Overview



SIRIUS 3SK1 safety relays

SIRIUS 3SK1 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 of width 22.5 mm every safety application can be implemented 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 3SK1 safety relays are permitted for applications up to SIL 3 (IEC 61508/IEC 62061) or PL e (EN ISO 13849-1).

SIRIUS 3SK1 safety relays stand out on account of their flexibility in both parameterization and system configurations with several evaluation units. Optimized solutions when selecting components are facilitated by a clearly structured component range:

- Standard basic units
- Advanced basic units
- Output expansions
- Input expansions
- Accessories

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

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

However, the 3SK1 Advanced basic units also offer the following:

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

In the case of Advanced basic units, the 3ZY1 device connector allows safety functions involving several sensors and actuators to be constructed very quickly.

The 3SK1 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 exceptions are devices with special functions, such as 3TK2826, 3TK2845 and the 3TK2810 devices.

Note:

Conversion table from 3TK28 to 3SK1 [see page 11/12](#) or conversion tool e.g. from 3TK28 to 3SK1 [see \[www.siemens.com/sirius/conversion-tool\]\(http://www.siemens.com/sirius/conversion-tool\)](#).

Overview of functions of the 3SK1 series

Type	Standard basic units		Advanced basic units	
	Relay enabling circuits	Electronic enabling circuits	Relay enabling circuits	Electronic enabling circuits
Sensors				
• Mechanical	✓	✓	✓	✓
• Single-ended	✓ ²⁾	✓	✓	✓
• Antivalent	--	--	✓	✓
• Expandable	--	✓ by means of cascading	✓	✓
Parameters				
• Start (auto/monitored)	✓	✓	✓	✓
• 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 operation consoles	--	--	✓	✓
Enabling circuits				
• Instantaneous	✓	✓	✓	✓
• Time-delayed	--	--	✓	✓
• Expandable with relay enabling circuits	✓ by means of wiring	✓ by means of wiring	✓	✓
• Device connectors	--	--	✓	✓
Rated control supply voltage				
• 24 V DC	✓ ³⁾	✓	✓	✓
• 115 ... 240 V AC/DC	✓	--	✓ ¹⁾	✓ ¹⁾
✓ Available				
-- Not available				

¹⁾ Possible using 3SK1230 power supply via device connector.

²⁾ 24 V basic units only.

³⁾ 24 V AC/DC

3SK112 and 3SK1112 safety relays with DIP switches

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.

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

Number of safe outputs

	Type and number of enabling circuits				Signal- ing circuits	Rear panel connection
	Relays		Electronic			
	Instantaneous	Time-delayed	Instantaneous	Time-delayed		
3SK1 Standard basic units						
3SK1111-.A.0	3	--	--	--	1	--
3SK1112-.BB40	--	--	2	--	1	--
3SK1 Advanced basic units						
3SK1120-.AB40	--	--	1	--	--	✓
3SK1121-.AB40	3	--	--	--	1	✓
3SK1121-.CB4.	2	2	--	--	--	✓
3SK1122-.AB40	--	--	3	--	1	✓
3SK1122-.CB4.	--	--	2	2	--	✓

3SK1 output expansions

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

✓ Available

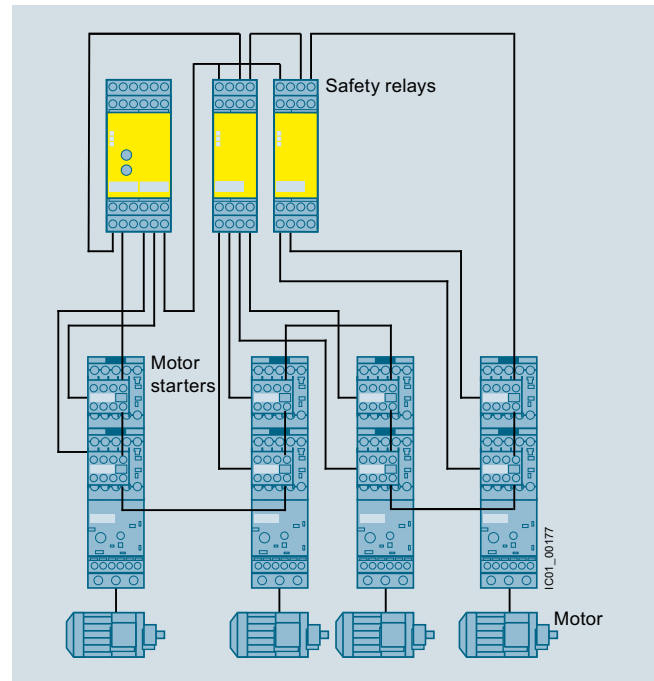
-- Not available

1) For 24 V DC.

2) Feedback circuit

Can be expanded by adding the 3RM1 motor starter

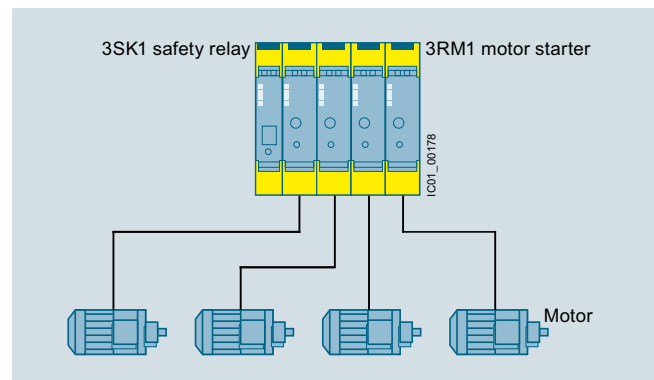
With previous safety relay and motor starter designs, a huge amount of wiring was required to monitor the motor starters in safety applications.



Traditional system design

With the integration of the SIRIUS 3RM1 motor starter into the SIRIUS 3SK1 safety relay system family, this wiring has been minimized for the first time.

Motors up to 3 kW can be easily integrated into the safety relay system using SIRIUS 3ZY1 device connectors, without having to run a cable between the evaluation unit and the motor starter.



System design using 3SK1 and 3RM1

SIRIUS 3SK1 Safety Relays

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Code conversion table

The table below lists the existing 3TK28 article numbers with the corresponding 3SK1 article numbers.

Article number 3TK28 basic units	Article number 3SK1 Standard basic units	Article number 3SK1 Advanced basic units	Article number 3TK28 basic units	Article number 3SK1 Standard basic units	Article number 3SK1 Advanced basic units
3TK2820			3TK2828		
3TK2820-1AJ20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20	3TK2828-1AB20	--	--
3TK2820-1AL20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20	3TK2828-1AB21	--	--
3TK2820-1CB30	3SK1111-1AB30	3SK1121-1AB40	3TK2828-1AJ20	--	3SK1121-1CB42 + 3SK1230-1AW20 3SK1121-1CB41 + 3SK1230-1AW20
3TK2820-2AJ20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20	3TK2828-1AJ21	--	3SK1121-1CB42 + 3SK1230-1AW20 3SK1121-1CB41 + 3SK1230-1AW20
3TK2820-2AL20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20	3TK2828-1AL20	--	3SK1121-1CB42 + 3SK1230-1AW20 3SK1121-1CB41 + 3SK1230-1AW20
3TK2820-2CB30	3SK1111-2AB30	3SK1121-2AB40	3TK2828-1AL21	--	3SK1121-1CB42 + 3SK1121-1CB41
3TK2821			3TK2828-1BB40	--	--
3TK2821-1CB30	3SK1111-1AB30	3SK1121-1AB40	3TK2828-1BB41	--	--
3TK2821-2CB30	3SK1111-2AB30	3SK1121-2AB40	3TK2828-2AB20	--	--
3TK2822			3TK2828-2AB21	--	--
3TK2822-1CB30	3SK1111-1AB30	3SK1121-1AB40	3TK2828-2AJ20	--	3SK1121-2CB42 + 3SK1230-2AW20 3SK1121-2CB41 + 3SK1230-2AW20
3TK2822-2CB30	3SK1111-2AB30	3SK1121-2AB40	3TK2828-2AJ21	--	3SK1121-2CB42 + 3SK1230-2AW20 3SK1121-2CB41 + 3SK1230-2AW20
3TK2823			3TK2828-2AL20	--	3SK1121-2CB42 + 3SK1230-2AW20 3SK1121-2CB41 + 3SK1230-2AW20
3TK2823-1CB30	3SK1111-1AB30	3SK1121-1AB40	3TK2828-2AL21	--	3SK1121-2CB41 + 3SK1230-2AW20 3SK1121-2CB42
3TK2823-2CB30	3SK1111-2AB30	3SK1121-2AB40	3TK2828-2BB40	--	--
3TK2824			3TK2830		
3TK2824-1AJ20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20	3TK2830-1AJ20	3SK1211-1BW20	3SK1211-1BB40
3TK2824-1AL20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20	3TK2830-1AL20	3SK1211-1BW20	3SK1211-1BB40
3TK2824-1BB40	3SK1111-1AB30	3SK1121-1AB40	3TK2830-1CB30	3SK1211-1BB40	3SK1211-1BB40
3TK2824-1CB30	3SK1111-1AB30	3SK1121-1AB40	3TK2830-2AJ20	3SK1211-2BW20	3SK1211-2BB40
3TK2824-2AJ20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20	3TK2830-2AL20	3SK1211-2BW20	3SK1211-2BB40
3TK2824-2AL20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20	3TK2830-2CB30	3SK1211-2BB40	3SK1211-2BB40
3TK2824-2BB40	3SK1111-2AB30	3SK1121-2AB40	3TK2834		
3TK2824-2CB30	3SK1111-2AB30	3SK1121-2AB40	3TK2834-1AB20	--	--
3TK2825			3TK2834-1AJ20	--	3SK1121-1AB40 + 3SK1230-1AW20 3SK1121-1AB40 + 3SK1230-1AW20 3SK1121-1AB40
3TK2825-1AB20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20	3TK2834-1AL20	--	--
3TK2825-1AJ20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20	3TK2834-1BB40	--	--
3TK2825-1AL20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20	3TK2834-2AB20	--	3SK1121-2AB40 + 3SK1230-2AW20 3SK1121-2AB40 + 3SK1230-2AW20
3TK2825-1BB40	3SK1111-1AB30	3SK1121-1AB40	3TK2834-2AJ20	--	3SK1121-2AB40 + 3SK1230-2AW20 3SK1121-2AB40
3TK2825-2AB20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20	3TK2834-2AL20	--	3SK1230-2AW20 3SK1121-2AB40
3TK2825-2AJ20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20	3TK2834-2BB40	--	--
3TK2825-2AL20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20	3TK2840		
3TK2825-2BB40	3SK1111-2AB30	3SK1121-2AB40	3TK2840-1BB40	3SK1112-1BB40	3SK1122-1AB40
3TK2827			3TK2840-2BB40	3SK1112-2BB40	3SK1122-2AB40
3TK2827-1AB20	--	--	3TK2841		
3TK2827-1AB21	--	--	3TK2841-1BB40	3SK1112-1BB40	3SK1122-1AB40
3TK2827-1AJ20	--	3SK1121-1CB42 + 3SK1230-1AW20	3TK2841-2BB40	3SK1112-2BB40	3SK1122-2AB40
3TK2827-1AJ21	--	3SK1121-1CB41 + 3SK1230-1AW20	3TK2842		
3TK2827-1AL20	--	3SK1121-1CB42 + 3SK1230-1AW20	3TK2842-1BB41	--	3SK1122-1CB41
3TK2827-1AL21	--	3SK1121-1CB41 + 3SK1230-1AW20	3TK2842-1BB42	--	3SK1122-1CB42
3TK2827-1BB40	--	3SK1121-1CB42	3TK2842-1BB44	--	3SK1122-1CB44
3TK2827-1BB41	--	3SK1121-1CB41	3TK2842-2BB41	--	3SK1122-2CB41
3TK2827-2AB20	--	--	3TK2842-2BB42	--	3SK1122-2CB42
3TK2827-2AB21	--	--	3TK2842-2BB44	--	3SK1122-2CB44
3TK2827-2AJ20	--	3SK1121-2CB42 + 3SK1230-2AW20	3TK2850		
3TK2827-2AJ21	--	3SK1121-2CB41 + 3SK1230-2AW20	3TK2850-1AJ20	3SK1111-1AW20 + 3SK1213-1AJ20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2827-2AL20	--	3SK1121-2CB42 + 3SK1230-2AW20	3TK2850-1AL20	3SK1111-1AW20 + 3SK1213-1AL20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2827-2AL21	--	3SK1121-2CB41 + 3SK1230-2AW20	3TK2850-1BB40	3SK1111-1AB30 + 3SK1213-1AB40	3SK1220-1AB40 + 3SK1213-1AB40
3TK2827-2BB40	--	3SK1121-2CB42	3TK2850-2AJ20	3SK1111-2AW20 + 3SK1213-2AJ20	3SK1120-2AB40 + 3SK1213-2AB40
3TK2827-2BB41	--	3SK1121-2CB41	3TK2850-2AL20	3SK1111-2AW20 + 3SK1213-2AL20	3SK1120-2AB40 + 3SK1213-2AB40
			3TK2850-2BB40	3SK1111-2AB30 + 3SK1213-2AB40	3SK1120-2AB40 + 3SK1213-2AB40

General data

Article number 3TK28 basic units	Article number 3SK1 Standard basic units	Article number 3SK1 Advanced basic units
3TK2851		
3TK2851-1AJ20	3SK1111-1AW20 + 3SK1213-1AJ20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2851-1AL20	3SK1111-1AW20 + 3SK1213-1AL20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2851-1BB40	3SK1111-1AB30 + 3SK1213-1AB40	3SK1120-1AB40 + 3SK1213-1AB40
3TK2851-2AJ20	3SK1111-2AW20 + 3SK1213-2AJ20	3SK1120-2AB40 + 3SK1213-2AB40
3TK2851-2AL20	3SK1111-2AW20 + 3SK1213-2AL20	3SK1120-2AB40 + 3SK1213-2AB40
3TK2851-2BB40	3SK1111-2AB30 + 3SK1213-2AB40	3SK1120-2AB40 + 3SK1213-2AB40
3TK2852		
3TK2852-1AL20	3SK1111-1AW20 + 3SK1213-1AL20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2852-1BB40	3SK1111-1AB30 + 3SK1213-1AB40	3SK1120-1AB40 + 3SK1213-1AB40
3TK2852-2AL20	3SK1111-2AW20 + 3SK1213-2AL20	3SK1120-2AB40 + 3SK1213-2AB40
3TK2852-2BB40	3SK1111-2AB30 + 3SK1213-2AB40	3SK1120-2AB40 + 3SK1213-2AB40

Article number 3TK28 basic units	Article number 3SK1 Standard basic units	Article number 3SK1 Advanced basic units
3TK2853		
3TK2853-1BB40	3SK1111-1AB30 + 3SK1213-1AB40	3SK1120-1AB40 + 3SK1213-1AB40
3TK2853-2BB40	3SK1111-2AB30 + 3SK1213-2AB40	3SK1120-2AB40 + 3SK1213-2AB40
3TK2856		
3TK2856-1BB40	3SK1213-1AB40	3SK1213-1AB40
3TK2856-2BB40	3SK1213-2AB40	3SK1213-2AB40
3TK2857		
3TK2857-1BB41	--	3SK1213-1AB40 (delay as for basic unit)
3TK2857-1BB42	--	3SK1213-1AB40 (delay as for basic unit)
3TK2857-1BB44	--	3SK1213-1AB40 (delay as for basic unit)
3TK2857-2BB41	--	3SK1213-2AB40 (delay as for basic unit)
3TK2857-2BB42	--	3SK1213-2AB40 (delay as for basic unit)
3TK2857-2BB44	--	3SK1213-2AB40 (delay as for basic unit)

Note:

Conversion tool e.g. 3TK28 to 3SK1 see
www.siemens.com/sirius/conversion-tool.

Article No. scheme

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

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.

Overview



3SK112 Advanced basic units

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

Note:

Overview of the number of enabling and signaling circuits see table "Number of safe outputs" page 11/11.

Selection and ordering data

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





3SK1121-1AB40



3SK1122-1AB40



3SK1122-1CB41

Rated control supply voltage U_s at DC	Adjustable OFF-delay time	Number of outputs as contacting contact blocks		Number of outputs as contactless semiconductor contact block		DT	Screw terminals 		DT	Spring-type terminals (push-in) 	
		instantaneous switching	delayed switching	instantaneous switching	delayed switching		Article No.	Price per PU		Article No.	Price per PU
V	s										
Advanced basic units with 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 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		