

SIRIUS safety relay Basic unit 3SK2 series 20 F-DI, 4 F-DQ, 2 DQ, 24 V DC Can be parameterized via SIRIUS Safety ES 45 mm width screw terminal up to SILCL 3 (DIN EN 62061) Up to Performance Level E (ISO 13849-1) Output expansions 3SK1 and fail-safe motor starters 3RM1 via device connector connectable



Product brand name	SIRIUS
Product category	Safety relay
Product designation	Base-Unit
Design of the product	20 F-DI, 4 F-DQ, 2 DQ

### General technical data

Product function	
• EMERGENCY STOP function	Yes
• protective door monitoring	Yes
• protective door monitoring with tumbler	Yes
• muting, 2 sensor-parallel	Yes
• muting, 4 sensor-parallel	Yes
• muting, 4 sensor-sequential	Yes
• Monitoring parameterizable	Yes
• evaluation: electro-sensitive protective equipment	Yes
• evaluation: selector switch	Yes
• Pressure-sensitive mat monitoring	Yes
• evaluation: two-hand operator panel	Yes
• evaluation: enabling switch	Yes

<ul style="list-style-type: none"> <li>• monitored start-up</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• two-hand control acc. to EN 574</li> </ul>	Yes
<b>Configuration software required</b>	Yes; Safety ES V1.0 and higher
<b>Number of function blocks typical</b>	50
<b>Degree of pollution</b>	3
<b>Surge voltage resistance rated value</b>	800 V
<b>Protection class IP</b>	IP20
<ul style="list-style-type: none"> <li>• of the enclosure</li> </ul>	IP20
<ul style="list-style-type: none"> <li>• of the terminal</li> </ul>	IP20
<b>Shock resistance</b>	15g / 11 ms
<b>Operating frequency maximum</b>	2 000 1/h
<b>Reference code acc. to DIN EN 81346-2</b>	F
<b>Reference code acc. to DIN EN 61346-2</b>	K
<b>Period of darkness of the common drivers</b>	3 ms
<b>Product function suitable for AS-i Power24V</b>	No
<b>Product function Diagnostics with CTT2 slave</b>	No
Protocol is supported ASIsafe (Safety at work) protocol	No
<b>Suitability for use</b>	
<ul style="list-style-type: none"> <li>• Monitoring of floating sensors</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Monitoring of non-floating sensors</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• position switch monitoring</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• EMERGENCY-OFF circuit monitoring</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• valve monitoring</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• opto-electronic protection device monitoring</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• magnetically operated switch monitoring</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• proximity switch monitoring</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• safety-related circuits</li> </ul>	Yes
<b>Suitability for use for monitoring of optoelectronic protective devices acc. to IEC 61496-1</b>	Yes
Operating power rated value	4.5 W
<b>Communication/ Protocol</b>	
<b>Protocol optional is supported PROFIBUS DP protocol</b>	Yes; when using the DP interface module; 64 bit cyclical data
Protocol is supported AS-Interface protocol	No
<b>Amount of data of the cyclic user data</b>	
<ul style="list-style-type: none"> <li>• for inputs with PROFIBUS DP</li> </ul>	64 bit
<ul style="list-style-type: none"> <li>• for outputs with PROFIBUS DP</li> </ul>	64 bit
<b>Control circuit/ Control</b>	
<b>Type of voltage</b>	DC
<b>Type of voltage of the control supply voltage</b>	DC
<b>Control supply voltage rated value</b>	24 V

Control supply voltage 1 at DC rated value	24 V
<b>Inrush current peak</b>	
• at 24 V	11 A
<b>Duration of inrush current peak</b>	
• at 24 V	1 ms
<b>Consumed current for rated value of supply voltage without semiconductor output</b>	185 mA

## Inputs/ Outputs

<b>Product function</b>	
• Parameterizable inputs	Yes
• Parameterizable outputs	Yes
• at the digital outputs Short-circuit protection	Yes
<b>Number of inputs</b>	
• safety-related	20
• non-safety-related	0
<b>Input delay time</b>	0 ... 150 ms
<b>Type of digital inputs acc. to IEC 60947-1</b>	Type 1
<b>Input recording time at digital input maximum</b>	60 ms
<b>Input delay time at digital input maximum</b>	150 ms
<b>Input voltage at digital input</b>	
• at DC rated value	24 V
• with signal <0> at DC	-3 ... +5 V
• for signal <1> at DC	15 ... 30
<b>Input current at digital input</b>	
• for signal <1> typical	2.6 mA
<b>Number of outputs</b>	
• safety-related 2-channel	4
• for testing contact-based sensors	4
<b>Number of outputs as contact-affected switching element safety-related</b>	
• 1-channel	0
• 2-channel	0
<b>Number of outputs as contact-less semiconductor switching element non-safety-related</b>	2
<b>Design of the contactless switching element safety-related</b>	P potential
<b>Recovery time of the safe outputs</b>	0 ms
<b>Readback time maximum</b>	400 ms
<b>Light test period</b>	3 ms
<b>Switching capacity current of semiconductor outputs at DC-13 at 24 V</b>	4 A
<b>Residual current</b>	
• maximum	0.05 mA

<ul style="list-style-type: none"> <li>• at digital output with signal &lt;0&gt; maximum</li> </ul>	0.1 mA
<b>Total current maximum</b>	7 A
<b>Voltage drop maximum</b>	0.5 V
<b>Wire length of the signal cable</b>	
<ul style="list-style-type: none"> <li>• to the inputs <ul style="list-style-type: none"> <li>— shielded maximum</li> <li>— unshielded maximum</li> </ul> </li> <li>• to the outputs <ul style="list-style-type: none"> <li>— shielded maximum</li> <li>— unshielded maximum</li> </ul> </li> </ul>	1 000 m 600 m 1 000 m 600 m

Installation/ mounting/ dimensions	
<b>Mounting position</b>	any
<b>Mounting type</b>	Snap-mounted to DIN rail or screw-mounted with additional push-in lug
<b>Height</b>	100 mm
<b>Width</b>	45 mm
<b>Depth</b>	124.5 mm

Connections/ Terminals	
Product function removable terminal	Yes
<b>Type of electrical connection</b>	screw-type terminals
<b>Type of connectable conductor cross-sections</b>	
<ul style="list-style-type: none"> <li>• solid</li> </ul>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (1.0 ... 1.5 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>• finely stranded with core end processing</li> </ul>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>• at AWG conductors solid</li> </ul>	1x (20 ... 14), 2x (18 ... 16)
<ul style="list-style-type: none"> <li>• at AWG conductors stranded</li> </ul>	1x (20 ... 14), 2x (18 ... 16)
Connectable conductor cross-section finely stranded with core end processing	0.5 ... 2.5 mm <sup>2</sup>
<b>AWG number as coded connectable conductor cross section</b>	
<ul style="list-style-type: none"> <li>• solid</li> </ul>	20 ... 14
<ul style="list-style-type: none"> <li>• stranded</li> </ul>	20 ... 14

Safety related data	
<b>Safety Integrity Level (SIL) acc. to IEC 61508</b>	3
<b>Stop category acc. to DIN EN 60204-1</b>	0 / 1
<b>Diagnostics test interval by internal test function maximum</b>	1 000 s
<b>PFHD with high demand rate acc. to EN 62061</b>	0.000000012 1/h
<b>PFDAvg with low demand rate acc. to IEC 61508</b>	0.000018
<b>Hardware fault tolerance acc. to IEC 61508</b>	1
<b>T1 value for proof test interval or service life acc. to IEC 61508</b>	20 y
<b>Protection against electrical shock</b>	finger-safe

## Electromagnetic compatibility

EMC emitted interference acc. to IEC 60947-1	class A
<b>Conducted interference</b>	
• due to burst acc. to IEC 61000-4-4	2 kV (power ports) / 1 kV (signal ports)
<b>Field-bound parasitic coupling acc. to IEC 61000-4-3</b>	10 V/m
<b>Electrostatic discharge acc. to IEC 61000-4-2</b>	4 kV contact discharge / 8 kV air discharge

## Ambient conditions

Installation altitude at height above sea level maximum	2 000 m
Air pressure acc. to SN 31205	90 ... 106 kPa

## Certificates/approvals

<b>General Product Approval</b>	<b>Functional Safety/Safety of Machinery</b>	<b>Declaration of Conformity</b>
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CSA



UL



[Type Examination Certificate](#)



EG-Konf.

[Miscellaneous](#)

## other

[Confirmation](#)

## Further information

### Information- and Downloadcenter (Catalogs, Brochures,...)

[www.siemens.com/sirius/catalogs](http://www.siemens.com/sirius/catalogs)

### Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3SK2122-1AA10>

### Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SK2122-1AA10>

### Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3SK2122-1AA10>

### Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3SK2122-1AA10&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3SK2122-1AA10&lang=en)