



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 spring-loaded terminal (push-in) up to SIL 3 (IEC 62061) up to performance level e (ISO 13849-1) output expansions 3SK1, coupling relay 3RQ1 and fail-safe motor starters 3RM1 via device connector connectable

<b>product brand name</b>	SIRIUS
<b>product category</b>	Safety relay
<b>product designation</b>	Base-Unit
<b>design of the product</b>	20 F-DI, 4 F-DQ, 2 DQ
<b>suitability for use for monitoring of optoelectronic protective devices according to IEC 61496-1</b>	Yes
<b>suitability for use</b>	
• monitoring of floating sensors	Yes
• monitoring of non-floating sensors	Yes
• position switch monitoring	Yes
• EMERGENCY-OFF circuit monitoring	Yes
• valve monitoring	Yes
• opto-electronic protection device monitoring	Yes
• magnetically operated switch monitoring	Yes
• proximity switch monitoring	Yes
• safety-related circuits	Yes
<b>General technical data</b>	
<b>product function</b>	
• 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
• monitored start-up	Yes
• two-hand control according to EN 574	Yes
<b>configuration software required</b>	Yes; Safety ES V1.0 and higher
<b>number of function blocks typical</b>	50
<b>insulation voltage rated value</b>	50 V
<b>degree of pollution</b>	3
<b>surge voltage resistance rated value</b>	800 V
<b>protection class IP</b>	
• of the enclosure	IP20

• of the terminal	IP20
<b>shock resistance</b>	15g / 11 ms
<b>vibration resistance according to IEC 60068-2-6</b>	5 ... 500 Hz: 0.75 mm
<b>operating frequency maximum</b>	2 000 1/h
<b>reference code according to IEC 81346-2</b>	F
<b>Substance Prohibitance (Date)</b>	05/28/2009
<b>SVHC substance name</b>	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol - 79-94-7 Lead titanium zirconium oxide - 12626-81-2 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one - 71868-10-5
<b>Weight</b>	0.369 kg
<b>product function suitable for AS-i Power24V</b>	No
<b>product function diagnostics with CTT2 device</b>	No
<b>Ambient conditions</b>	
installation altitude at height above sea level maximum	4 000 m; Derating, see Product Notification 109792701
<b>ambient temperature</b>	
• during operation	-25 ... +60 °C
• during storage	-40 ... +80 °C
• during transport	-40 ... +80 °C
relative humidity during operation	10 ... 95 %
air pressure according to SN 31205	90 ... 106 kPa
<b>Electromagnetic compatibility</b>	
EMC emitted interference according to IEC 60947-1	class A
<b>conducted interference</b>	
• due to burst according to IEC 61000-4-4	2 kV (power ports) / 1 kV (signal ports)
<b>field-based interference according to IEC 61000-4-3</b>	10 V/m
<b>electrostatic discharge according to IEC 61000-4-2</b>	4 kV contact discharge / 8 kV air discharge
<b>Safety related data</b>	
<b>test wear-related service life necessary</b>	No
<b>diagnostics test interval by internal test function maximum</b>	1 000 s
<b>stop category according to IEC 60204-1</b>	0 / 1
IEC 62061	
SIL Claim Limit (subsystem) according to EN 62061	3
<b>Safety Integrity Level (SIL)</b>	
• according to IEC 62061	SIL 3
• at single-channel evaluation according to IEC 62061	1
• at 2-channel evaluation according to IEC 62061	3
<b>PFHD with high demand rate</b>	
• according to IEC 62061	1E-8 1/h
ISO 13849	
performance level (PL) according to EN ISO 13849-1	e
category according to EN ISO 13849-1	4
<b>performance level (PL)</b>	
• according to ISO 13849-1	PL e
• at single-channel evaluation according to ISO 13849-1	c
• at 2-channel evaluation according to ISO 13849-1	e
<b>category</b>	
• according to ISO 13849-1	4
• at 2-channel evaluation according to ISO 13849-1	4
<b>device type according to ISO 13849-1</b>	1
<b>overdimensioning according to ISO 13849-2 necessary</b>	No
IEC 61508	
<b>Safety Integrity Level (SIL)</b>	
• according to IEC 61508	3
• at single-channel evaluation according to IEC 61508	1
• at 2-channel evaluation according to IEC 61508	3
<b>PFHD with high demand rate according to IEC 61508</b>	1E-8 1/h
PFDAvg with low demand rate according to IEC 61508	1.8E-5
<b>Safe failure fraction (SFF)</b>	99 %

<b>hardware fault tolerance</b>	
<ul style="list-style-type: none"> <li>• according to IEC 61508</li> </ul>	1
<ul style="list-style-type: none"> <li>• at single-channel evaluation according to IEC 61508</li> </ul>	0
<ul style="list-style-type: none"> <li>• at 2-channel evaluation according to IEC 61508</li> </ul>	1
<b>T1 value</b>	
<ul style="list-style-type: none"> <li>• of service life according to IEC 61508</li> </ul>	20 a
<ul style="list-style-type: none"> <li>• for proof test interval or service life according to IEC 61508</li> </ul>	20 a
<b>Electrical Safety</b>	
<b>touch protection against electrical shock</b>	finger-safe
<b>Inputs/ Outputs</b>	
<b>product function</b>	
<ul style="list-style-type: none"> <li>• parameterizable inputs</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• parameterizable outputs</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• at the digital outputs short-circuit protection</li> </ul>	Yes
<b>number of inputs</b>	
<ul style="list-style-type: none"> <li>• safety-related</li> </ul>	20
<ul style="list-style-type: none"> <li>• non-safety-related</li> </ul>	0
<b>input delay time</b>	0 ... 150 ms
<b>type of digital inputs according to IEC 60947-1</b>	Type 1
<b>ingress acquisition time at digital input maximum</b>	60 ms
<b>input delay time at digital input maximum</b>	150 ms
<b>input current at digital input</b>	
<ul style="list-style-type: none"> <li>• for signal &lt;1&gt; typical</li> </ul>	2.6 mA
<b>number of outputs</b>	
<ul style="list-style-type: none"> <li>• safety-related 2-channel</li> </ul>	4
<ul style="list-style-type: none"> <li>• for testing contact-based sensors</li> </ul>	4
number of outputs as contact-affected switching element safety-related	
<ul style="list-style-type: none"> <li>• 1-channel</li> </ul>	0
<ul style="list-style-type: none"> <li>• 2-channel</li> </ul>	0
<b>number of outputs as contact-less semiconductor switching element</b>	
<ul style="list-style-type: none"> <li>• safety-related 2-channel</li> </ul>	4
<ul style="list-style-type: none"> <li>• non-safety-related</li> </ul>	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>dark period of the common drivers</b>	3 ms
switching capacity current of semiconductor outputs at DC-13 at 24 V	4 A
<b>residual current</b>	
<ul style="list-style-type: none"> <li>• maximum</li> </ul>	0.1 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
voltage drop maximum	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> </ul>	1 000 m 600 m
<ul style="list-style-type: none"> <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
<b>Communication/ Protocol</b>	
<b>protocol optional is supported</b>	
<ul style="list-style-type: none"> <li>• PROFIBUS DP protocol</li> </ul>	Yes; when using the DP interface module; 64 bit cyclical data
<ul style="list-style-type: none"> <li>• PROFINET IO protocol</li> </ul>	Yes; when using the PN interface module; 64-bit cyclic data
protocol is supported AS-Interface protocol	No
<b>Control circuit/ Control</b>	

type of voltage	DC
control supply voltage rated value	24 V
operating range factor control supply voltage rated value at DC	
• initial value	0.85
• full-scale value	1.2
inrush current peak	
• at 24 V	11 A
duration of inrush current peak	
• at 24 V	1 ms
operating power rated value	4.5 W

#### Installation/ mounting/ dimensions

mounting position	any
fastening method	Snap-mounted to DIN rail or screw-mounted with additional push-in lug
height	100 mm
width	45 mm
depth	124.5 mm

#### Connections/ Terminals

product function removable terminal	Yes
type of electrical connection	spring-loaded terminal (push-in)
type of connectable conductor cross-sections	
• solid	1x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> )
• finely stranded with core end processing	1x (0.5 ... 1.0 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> )
• for AWG cables solid	1x (20 ... 16), 2x (20 ... 16)
• for AWG cables stranded	1x (20 ... 16), 2x (20 ... 16)
connectable conductor cross-section finely stranded with core end processing	0.5 ... 1 mm <sup>2</sup>
AWG number as coded connectable conductor cross section	
• solid	20 ... 16
• stranded	20 ... 16

#### Approvals Certificates

General Product Approval	EMV	Functional Safety
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[Type Examination Certificate](#)

Test Certificates	other	Environment
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[Type Test Certificates/Test Report](#)



[Confirmation](#)

[Environmental Confirmations](#)

#### Further information

Information on the packaging

<https://support.industry.siemens.com/cs/ww/en/view/109813875>

Information for data generation and storage

<https://support.industry.siemens.com/cs/ww/en/view/109995012>

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

<https://www.siemens.com/ic10>

Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3SK2122-2AA10>

Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SK2122-2AA10>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3SK2122-2AA10>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3SK2122-2AA10&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3SK2122-2AA10&lang=en)



