



SIRIUS safety relay Input expansion Advanced Input expansion for an additional 2-channel or two 1-channel sensors Us = 24 V DC Spring-type terminal (push-in)

product brand name	SIRIUS
product category	Safety relays
product designation	Sensor extension
product type designation	3SK1
<b>Product Function</b>	
product function parameterizable	sensor floating / sensor non-floating, monitored start-up / automatic start, 1-channel / 2-channel sensor connection, cross-circuit detection, startup testing, antivalent sensors, 2-hand switches
product function	<ul style="list-style-type: none"> <li>• automatic start</li> <li>• light barrier monitoring</li> <li>• protective door monitoring</li> <li>• magnetically operated switch monitoring NC-NO</li> <li>• magnetically operated switch monitoring NC-NC</li> <li>• laser scanner monitoring</li> <li>• light array monitoring</li> <li>• EMERGENCY OFF function</li> <li>• monitored start-up</li> <li>• pressure-sensitive mat monitoring</li> </ul>
suitability for interaction press control	No
<b>suitability for use</b>	
<ul style="list-style-type: none"> <li>• monitoring of floating sensors</li> <li>• monitoring of non-floating sensors</li> <li>• position switch monitoring</li> <li>• EMERGENCY-OFF circuit monitoring</li> <li>• opto-electronic protection device monitoring</li> <li>• magnetically operated switch monitoring</li> <li>• safety switch</li> <li>• safety-related circuits</li> </ul>	Yes Yes Yes Yes Yes Yes Yes Yes Yes No
<b>General technical data</b>	
certificate of suitability UL approval	Yes
product feature cross-circuit-proof	Yes
power loss [W] maximum	1.2 W
insulation voltage rated value	50 V
degree of pollution	3
overvoltage category	3
surge voltage resistance rated value	800 V
protection class IP of the enclosure	IP20
shock resistance	10g / 11 ms
vibration resistance according to IEC 60068-2-6	5 ... 500 Hz: 0.75 mm
reference code according to IEC 81346-2	F

<b>Substance Prohibitance (Date)</b>	11/05/2012
<b>SVHC substance name</b>	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 Lead titanium zirconium oxide - 12626-81-2
<b>Weight</b>	0.151 kg
<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
relative humidity during operation	10 ... 95 %
air pressure according to SN 31205	900 ... 1 060 hPa
<b>Electromagnetic compatibility</b>	
<b>installation environment regarding EMC</b>	This product is suitable for Class A environments only. In household environments, this device can cause unwanted radio interference. The user is required to implement appropriate measures in this case.
<b>EMC emitted interference</b>	IEC 60947-5-1, Class A
<b>Safety related data</b>	
<b>stop category according to IEC 60204-1</b>	0
IEC 62061	
SIL Claim Limit (subsystem) according to EN 62061	3
<b>Safety Integrity Level (SIL) according to IEC 62061</b>	SIL 3
PFHD with high demand rate according to IEC 62061	1E-9 1/h
ISO 13849	
category according to EN ISO 13849-1	4
<b>performance level (PL) according to ISO 13849-1</b>	PL e
IEC 61508	
Safety Integrity Level (SIL) according to IEC 61508	3
<b>safety device type according to IEC 61508-2</b>	Type B
<b>Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508</b>	7E-6 1/y
PFDavg with low demand rate according to IEC 61508	7E-6
hardware fault tolerance according to IEC 61508	1
T1 value for proof test interval or service life according to IEC 61508	20 a
Electrical Safety	
<b>touch protection against electrical shock</b>	finger-safe
<b>Inputs</b>	
<b>design of input</b>	
• feedback input	No
• start input	Yes
number of sensor inputs 1-channel or 2-channel	1
<b>Outputs</b>	
<b>number of outputs as contact-affected switching element</b>	
• as NC contact	
— for signaling function instantaneous contact	0
— for signaling function delayed switching	0
— safety-related instantaneous contact	0
— safety-related delayed switching	0
• as NO contact	
— for signaling function instantaneous contact	0
— for signaling function delayed switching	0
— safety-related instantaneous contact	0
— safety-related delayed switching	0
<b>number of outputs as contact-less semiconductor switching element</b>	
• for signaling function	
— delayed switching	0
<b>wire length between sensor and electronics evaluation device with Cu 1.5 mm<sup>2</sup> and 150 nF/km maximum</b>	4 000 m
<b>Times</b>	
<b>make time with automatic start</b>	
• typical	60 ms

• at DC maximum	60 ms
<b>make time with automatic start after power failure</b>	
• typical	6 500 ms
• maximum	6 500 ms
<b>make time with monitored start</b>	
• typical	60 ms
• maximum	60 ms
<b>backslide delay time after opening of the safety circuits typical</b>	40 ms
<b>recovery time after opening of the safety circuits typical</b>	30 ms
<b>pulse duration</b>	
• of the sensor input minimum	60 ms
• of the ON pushbutton input minimum	0.15 s

#### Control circuit/ Control

<b>type of voltage of the control supply voltage</b>	DC
<b>control supply voltage at DC rated value</b>	24 V
<b>operating range factor control supply voltage rated value of magnet coil at DC</b>	
• initial value	0.8
• full-scale value	1.2

#### Installation/ mounting/ dimensions

<b>mounting position</b>	any
<b>fastening method</b>	screw and snap-on mounting
<b>height</b>	100 mm
<b>width</b>	17.5 mm
<b>depth</b>	121.6 mm
<b>required spacing</b>	
• with side-by-side mounting at the side	0 mm
• for grounded parts at the side	5 mm

#### Connections/ Terminals

<b>type of electrical connection</b>	spring-loaded terminal (push-in)
<b>type of connectable conductor cross-sections</b>	
• 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> )
• finely stranded without core end processing	1x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> )
• for AWG cables solid	1x (20 ... 16), 2x (20 ... 16)
• for AWG cables stranded	1x (20 ... 16), 2x (20 ... 16)
<b>type of electrical connection plug-in socket</b>	No

#### Approvals Certificates

<b>General Product Approval</b>
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[Confirmation](#)



<b>EMV</b>	<b>Functional Safety</b>	<b>Test Certificates</b>	<b>Marine / Shipping</b>
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[Type Examination Certificate](#)

[Type Test Certificates/Test Report](#)



<b>Marine / Shipping</b>	<b>other</b>	<b>Railway</b>	<b>Environment</b>
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[Confirmation](#)

[Confirmation](#)

[Environmental Confirmations](#)

## Further information

Information on the packaging

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

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=3SK1220-2AB40>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SK1220-2AB40>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3SK1220-2AB40>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3SK1220-2AB40&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3SK1220-2AB40&lang=en)



