



SIRIUS safety relay Basic unit Standard series Relay enabling circuits 3 NO contacts plus Relay signaling circuit 1 NC contact $U_s = 110 - 240 \text{ V AC/DC } 50/60 \text{ Hz}$ screw terminal

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| product brand name | SIRIUS |
| product category | Safety relays |
| product designation | safety relays |
| design of the product | Relay enabling circuits |
| product type designation | 3SK1 |
| product line | Standard basic unit |
| Product Function | |
| product function parameterizable | Sensor floating / monitored start / automatic start |
| product function | |
| • automatic start | Yes |
| • light barrier monitoring | No |
| • protective door monitoring | Yes |
| • magnetically operated switch monitoring NC-NO | No |
| • magnetically operated switch monitoring NC-NC | Yes |
| • laser scanner monitoring | No |
| • light array monitoring | No |
| • EMERGENCY OFF function | Yes |
| • monitored start-up | Yes |
| • pressure-sensitive mat monitoring | No |
| suitability for interaction press control | No |
| suitability for operation device connector 3ZY12 | No |
| suitability for use | |
| • monitoring of floating sensors | Yes |
| • monitoring of non-floating sensors | No |
| • position switch monitoring | Yes |
| • EMERGENCY-OFF circuit monitoring | Yes |
| • opto-electronic protection device monitoring | No |
| • magnetically operated switch monitoring | No |
| • safety switch | Yes |
| • safety-related circuits | Yes |
| General technical data | |
| certificate of suitability UL approval | Yes |
| product feature cross-circuit-proof | Yes |
| power loss [W] maximum | 2.5 W |
| insulation voltage rated value | 300 V |
| degree of pollution | 3 |
| overvoltage category | 3 |
| surge voltage resistance rated value | 4 000 V |
| protection class IP of the enclosure | IP20 |
| shock resistance | 10g / 11 ms |

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| vibration resistance according to IEC 60068-2-6 | 5 ... 500 Hz: 0.75 mm |
| operating frequency maximum | 360 1/h |
| mechanical service life (operating cycles) typical | 10 000 000 |
| thermal current of the switching element with contacts maximum | 5 A |
| reference code according to IEC 81346-2 | F |
| Substance Prohibitance (Date) | 11/05/2012 |
| SVHC substance name | Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol - 79-94-7 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one - 71868-10-5 6,6'-di-tert-butyl-2,2'-methylene-di-p-cresol - 119-47-1 4,4'-isopropylidenediphenol (Bisphenol A, BPA) - 80-05-7 |
| Weight | 0.264 kg |
| Ambient conditions | |
| installation altitude at height above sea level maximum | 4 000 m; Derating, see Product Notification 109792701 |
| ambient temperature | |
| • 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 |
| Electromagnetic compatibility | |
| installation environment regarding EMC | 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. |
| EMC emitted interference | IEC 60947-5-1, Class A |
| Safety related data | |
| product function suitable for safety function | Yes |
| safe state | Safety outputs switched off |
| test wear-related service life necessary | Yes |
| function test interval maximum | 1 a |
| stop category according to IEC 60204-1 | 0 |
| IEC 62061 | |
| SIL Claim Limit (subsystem) according to EN 62061 | 3 |
| Safety Integrity Level (SIL) | |
| • according to IEC 62061 | SIL 3 |
| • at 2-channel evaluation according to IEC 62061 | 3 |
| PFHD with high demand rate according to IEC 62061 | 1.5E-9 1/h |
| ISO 13849 | |
| category according to EN ISO 13849-1 | 4 |
| performance level (PL) | |
| • according to ISO 13849-1 | PL e |
| • at 2-channel evaluation according to ISO 13849-1 | e |
| category | |
| • according to ISO 13849-1 | 4 |
| • at 2-channel evaluation according to ISO 13849-1 | 4 |
| overdimensioning according to ISO 13849-2 necessary | No |
| IEC 61508 | |
| Safety Integrity Level (SIL) | |
| • according to IEC 61508 | 3 |
| • at single-channel evaluation according to IEC 61508 | 1 |
| • at 2-channel evaluation according to IEC 61508 | 3 |
| safety device type according to IEC 61508-2 | Type A |
| PFHD with high demand rate according to IEC 61508 | 1.5E-9 1/h |
| Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508 | 1E-6 1/y |
| PFDavg with low demand rate according to IEC 61508 | 1E-6 |
| Safe failure fraction (SFF) | 99 % |
| hardware fault tolerance | |
| • according to IEC 61508 | 1 |
| • at single-channel evaluation according to IEC 61508 | 0 |
| • at 2-channel evaluation according to IEC 61508 | 1 |
| T1 value | |

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| <ul style="list-style-type: none"> • of service life according to IEC 61508 | 20 a |
| <ul style="list-style-type: none"> • for proof test interval or service life according to IEC 61508 | 20 a |
| Electrical Safety | |
| touch protection against electrical shock | finger-safe |
| Short-circuit protection | |
| design of the fuse link | |
| <ul style="list-style-type: none"> • for short-circuit protection of the NO contacts of the relay outputs required | gL/gG: 6A or circuit breaker type A: 3A or circuit breaker type B: 2A or circuit breaker type C: 1A |
| <ul style="list-style-type: none"> • for short circuit protection of the NC contacts of the relay outputs required | Diazed or Neozed fuses, operating class gL/gG: 6 A or MCB type A: 2 A or MCB type B: 2 A or MCB type C: 1 A |
| Inputs | |
| design of input | |
| <ul style="list-style-type: none"> • cascading input/functional switching | No |
| <ul style="list-style-type: none"> • feedback input | Yes |
| <ul style="list-style-type: none"> • start input | Yes |
| pulse duration of the sensor input minimum | 150 ms |
| number of sensor inputs 1-channel or 2-channel | 1 |
| Outputs | |
| number of outputs as contact-affected switching element | |
| <ul style="list-style-type: none"> • as NC contact <ul style="list-style-type: none"> — for signaling function instantaneous contact | 1 |
| <ul style="list-style-type: none"> • as NO contact <ul style="list-style-type: none"> — safety-related instantaneous contact — safety-related delayed switching | 3 0 |
| switching capacity current of the NO contacts of the relay outputs at DC-13 | |
| <ul style="list-style-type: none"> • at 24 V | 5 A |
| <ul style="list-style-type: none"> • at 115 V | 0.2 A |
| <ul style="list-style-type: none"> • at 230 V | 0.1 A |
| switching capacity current of the NO contacts of the relay outputs at AC-15 | |
| <ul style="list-style-type: none"> • at 115 V | 5 A |
| <ul style="list-style-type: none"> • at 230 V | 5 A |
| switching capacity current of the NC contacts of the relay outputs at DC-13 | |
| <ul style="list-style-type: none"> • at 24 V | 1 A |
| <ul style="list-style-type: none"> • at 115 V | 0.2 A |
| <ul style="list-style-type: none"> • at 230 V | 0.1 A |
| switching capacity current of the NC contacts of the relay outputs at AC-15 | |
| <ul style="list-style-type: none"> • at 24 V | 2 A |
| <ul style="list-style-type: none"> • at 115 V | 1.5 A |
| <ul style="list-style-type: none"> • at 230 V | 1.5 A |
| total current maximum | 12 A |
| operational current at 17 V minimum | 5 mA |
| Times | |
| make time with automatic start | |
| <ul style="list-style-type: none"> • typical | 110 ms |
| <ul style="list-style-type: none"> • at DC maximum | 130 ms |
| <ul style="list-style-type: none"> • at AC maximum | 130 ms |
| make time with automatic start after power failure | |
| <ul style="list-style-type: none"> • typical | 110 ms |
| <ul style="list-style-type: none"> • maximum | 130 ms |
| make time with monitored start | |
| <ul style="list-style-type: none"> • typical | 15 ms |
| <ul style="list-style-type: none"> • maximum | 15 ms |
| backslide delay time after opening of the safety circuits typical | 10 ms |
| backslide delay time in the event of power failure | |
| <ul style="list-style-type: none"> • typical | 200 ms |
| <ul style="list-style-type: none"> • maximum | 300 ms |
| recovery time after opening of the safety circuits typical | 10 ms |

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| recovery time after power failure typical | 0.32 s |
| pulse duration | |
| • of the ON pushbutton input minimum | 0.015 s |
| Control circuit/ Control | |
| type of voltage of the control supply voltage | AC/DC |
| control supply voltage at AC | |
| • at 50 Hz rated value | 110 ... 240 V |
| • at 60 Hz rated value | 110 ... 240 V |
| control supply voltage frequency | |
| • 1 rated value | 50 Hz |
| • 2 rated value | 60 Hz |
| control supply voltage at DC rated value | 110 ... 240 V |
| operating range factor control supply voltage rated value of magnet coil at DC | |
| • initial value | 0.85 |
| • full-scale value | 1.1 |
| operating range factor control supply voltage rated value of magnet coil at AC | |
| • at 50 Hz | 0.85 ... 1.1 |
| • at 60 Hz | 0.85 ... 1.1 |
| Installation/ mounting/ dimensions | |
| mounting position | any |
| fastening method | screw and snap-on mounting |
| height | 100 mm |
| width | 22.5 mm |
| depth | 121.6 mm |
| required spacing | |
| • for grounded parts at the side | 5 mm |
| Connections/ Terminals | |
| type of electrical connection | screw terminal |
| wire length | |
| • for total of all sensor circuits with Cu 1.5 mm ² and 150 nF/km maximum | 2 000 m |
| type of connectable conductor cross-sections | |
| • solid | 1x (0.5 ... 2.5 mm ²), 2x (1.0 ... 1.5 mm ²) |
| • finely stranded with core end processing | 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²) |
| • for AWG cables solid | 1x (20 ... 14), 2x (18 ... 16) |
| • for AWG cables stranded | 1x (20 ... 16), 2x (20 ... 16) |
| type of electrical connection plug-in socket | No |

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| Approvals Certificates | |
| General Product Approval | EMV |



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|-------------------|-------------------|----------------------|
| Functional Safety | Test Certificates | Maritime application |
|-------------------|-------------------|----------------------|

[Type Examination Certificate](#)

[Type Test Certificates/Test Report](#)



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| other | Railway | Environment |
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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=3SK1111-1AW20>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SK1111-1AW20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3SK1111-1AW20>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3SK1111-1AW20&lang=en



