



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 overall width Spring-type terminal (push-in) 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 |

|                                                                                                    |                                |
|----------------------------------------------------------------------------------------------------|--------------------------------|
| • monitored start-up                                                                               | Yes                            |
| • two-hand control acc. 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>Degree of pollution</b>                                                                         | 3                              |
| <b>Surge voltage resistance rated value</b>                                                        | 800 V                          |
| <b>Protection class IP</b>                                                                         | IP20                           |
| • of the enclosure                                                                                 | IP20                           |
| • of the terminal                                                                                  | 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>                                                                         |                                |
| • 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>Suitability for use for monitoring of optoelectronic protective devices acc. to IEC 61496-1</b> | Yes                            |
| <b>Operating power rated value</b>                                                                 | 4.5 W                          |

#### Communication/ Protocol

|                                                            |                                                               |
|------------------------------------------------------------|---------------------------------------------------------------|
| <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>              |                                                               |
| • for inputs with PROFIBUS DP                              | 64 bit                                                        |
| • for outputs with PROFIBUS DP                             | 64 bit                                                        |

#### Control circuit/ Control

|                                                      |      |
|------------------------------------------------------|------|
| <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><br>• at 24 V                                                | 11 A   |
| <b>Duration of inrush current peak</b><br>• 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><br>• Parameterizable inputs<br>• Parameterizable outputs<br>• at the digital outputs Short-circuit protection | Yes<br>Yes<br>Yes                |
| <b>Number of inputs</b><br>• safety-related<br>• non-safety-related                                                                   | 20<br>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><br>• at DC rated value<br>• with signal <0> at DC<br>• for signal <1> at DC                     | 24 V<br>-3 ... +5 V<br>15 ... 30 |
| <b>Input current at digital input</b><br>• for signal <1> typical                                                                     | 2.6 mA                           |
| <b>Number of outputs</b><br>• safety-related 2-channel<br>• for testing contact-based sensors                                         | 4<br>4                           |
| <b>Number of outputs as contact-affected switching element safety-related</b><br>• 1-channel<br>• 2-channel                           | 0<br>0                           |
| <b>Number of outputs as contact-less semiconductor switching element non-safety-related 2-channel</b>                                 | 0                                |
| <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><br>• maximum                                                                                                  | 0.05 mA                          |

|                                             |         |
|---------------------------------------------|---------|
| • at digital output with signal <0> maximum | 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>      |         |
| • to the inputs                             |         |
| — shielded maximum                          | 1 000 m |
| — unshielded maximum                        | 600 m   |
| • to the outputs                            |         |
| — shielded maximum                          | 1 000 m |
| — unshielded maximum                        | 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>                                         | Push-in terminal                           |
| <b>Type of connectable conductor cross-sections</b>                          |                                            |
| • solid                                                                      | 1x (0.5 ... 1.5 mm²), 2x (0.5 ... 1.5 mm²) |
| • finely stranded with core end processing                                   | 1x (0.5 ... 1.0 mm²), 2x (0.5 ... 1.0 mm²) |
| • at AWG conductors solid                                                    | 1x (20 ... 16), 2x (20 ... 16)             |
| • at AWG conductors stranded                                                 | 1x (20 ... 16), 2x (20 ... 16)             |
| Connectable conductor cross-section finely stranded with core end processing | 0.5 ... 1 mm²                              |
| <b>AWG number as coded connectable conductor cross section</b>               |                                            |
| • solid                                                                      | 20 ... 16                                  |
| • stranded                                                                   | 20 ... 16                                  |

#### Safety related data

|                                                                    |                 |
|--------------------------------------------------------------------|-----------------|
| <b>Safety Integrity Level (SIL) acc. to IEC 61508</b>              | 3               |
| <b>SIL Claim Limit (subsystem) acc. to EN 62061</b>                | 3               |
| <b>Performance level (PL) acc. to EN ISO 13849-1</b>               | e               |
| <b>Category acc. to EN ISO 13849-1</b>                             | 4               |
| <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               |

|                                                                    |             |
|--------------------------------------------------------------------|-------------|
| T1 value for proof test interval or service life acc. to IEC 61508 | 20 y        |
| Protection against electrical shock                                | 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

| General Product Approval                                                               | Functional Safety/Safety of Machinery                                                 | Declaration of Conformity                                                                     |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|  CSA |  UL |  EAC        |
|                                                                                        | <a href="#">Type Examination Certificate</a>                                          |  EG-Konf. |
|                                                                                        |                                                                                       | <a href="#">Miscellaneous</a>                                                                 |

#### other

[Confirmation](#)

#### Further information

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

<http://www.siemens.com/industrial-controls/catalogs>

**Industry Mall (Online ordering system)**

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

**Cax online generator**

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

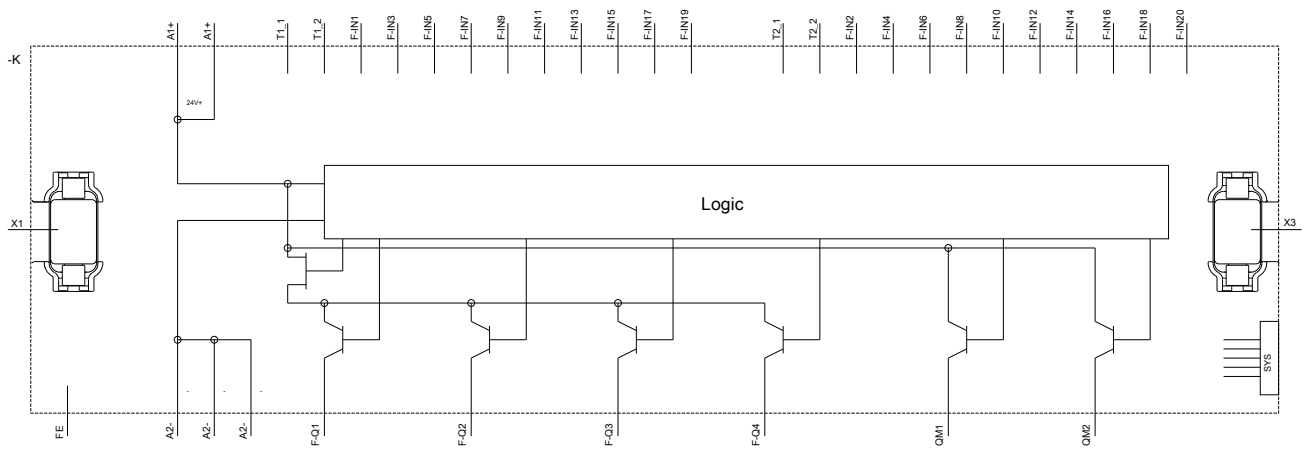
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**

<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, ...)**

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





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