

SIRIUS SAFETY RELAY BASIC UNIT 3SK2 SERIES 10 F-DI, 2 F-DQ, 1 DQ, 24 V DC PARAMETERIZABLE VIA SIRIUS SAFETY ES WIDTH 22.5MM SCREW TERMINALS UP TO SILCL 3 (DIN EN 62061) UP TO PERFORMANCE LEVEL E (ISO 13849-1) 3SK1 OUTPUT EXPANSIONS AND 3RM1 FAIL-SAFE MOTOR STARTER CONNECTABLE VIA DEVICE CONNECTOR



Figure similar

|                     |              |
|---------------------|--------------|
| Product brand name  | SIRIUS       |
| Product category    | Safety relay |
| Product designation | Base-Unit    |

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                                                            |
| Insulation voltage rated value                                                                     | 50 V                                                          |
| <b>Degree of pollution</b>                                                                         | 3                                                             |
| <b>Surge voltage resistance rated value</b>                                                        | 800 V                                                         |
| Consumed current for rated value of supply voltage                                                 |                                                               |
| • without semiconductor output                                                                     | 100 mA                                                        |
| <b>Protection class IP</b>                                                                         | IP20                                                          |
| • of the enclosure                                                                                 | IP20                                                          |
| • of the terminal                                                                                  | IP20                                                          |
| <b>Shock resistance</b>                                                                            | 15g / 11 ms                                                   |
| Vibration resistance acc. to IEC 60068-2-6                                                         | 5 ... 500 Hz: 0.75 mm                                         |
| <b>Switching capacity current of semiconductor outputs at DC-13 at 24 V</b>                        | 4 A                                                           |
| <b>Equipment marking</b>                                                                           |                                                               |
| • acc. to DIN EN 61346-2                                                                           | K                                                             |
| • acc. to DIN EN 81346-2                                                                           | F                                                             |
| <b>Readback time maximum</b>                                                                       | 400 ms                                                        |
| <b>Light test period</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                                                           |
| Operating power rated value                                                                        | 2.5 W                                                         |
| <b>Communication/ Protocol</b>                                                                     |                                                               |
| Protocol is supported PROFINET IO protocol                                                         | No                                                            |
| <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       |
| <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>Inputs/ Outputs</b>                                                        |              |
| <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                                                              | 10           |
| • 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 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                                                    | 2            |
| • for testing contact-based sensors                                           | 2            |
| <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</b>      |              |
| • safety-related 2-channel                                                    | 2            |
| • non-safety-related 2-channel                                                | 1            |
| <b>Design of the contactless switching element safety-related</b>             | P potential  |
| <b>Recovery time of the safe outputs</b>                                      | 0 ms         |
| <b>Residual current</b>                                                       |              |
| • maximum                                                                     | 0.05 mA      |

|                                             |         |
|---------------------------------------------|---------|
| • at digital output with signal <0> maximum | 0.1 mA  |
| <b>Total current maximum</b>                | 6.5 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>             | 22.5 mm                                                               |
| <b>Depth</b>             | 124.5 mm                                                              |

#### Connections/Terminals

|                                                                              |                                                                      |
|------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Product function</b>                                                      |                                                                      |
| • removable terminal                                                         | Yes                                                                  |
| • removable terminal for control circuit                                     | Yes                                                                  |
| • removable terminal for auxiliary and control circuit                       | Yes                                                                  |
| <b>Type of electrical connection</b>                                         | screw-type terminals                                                 |
| • for auxiliary and control current circuit                                  | screw-type terminals                                                 |
| <b>Type of connectable conductor cross-sections</b>                          |                                                                      |
| • solid                                                                      | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (1.0 ... 1.5 mm <sup>2</sup> ) |
| • finely stranded with core end processing                                   | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> ) |
| • at AWG conductors solid                                                    | 1x (20 ... 14), 2x (18 ... 16)                                       |
| • at AWG conductors stranded                                                 | 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>               |                                                                      |
| • solid                                                                      | 20 ... 14                                                            |
| • stranded                                                                   | 20 ... 14                                                            |

#### 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 |

|                                                                    |                |
|--------------------------------------------------------------------|----------------|
| Diagnostics test interval by internal test function maximum        | 1 000 000 ms   |
| PFHD with high demand rate acc. to EN 62061                        | 0.00000001 1/h |
| PFDavg with low demand rate acc. to IEC 61508                      | 0.000015       |
| MTBF                                                               | 110 y          |
| Hardware fault tolerance acc. to IEC 61508                         | 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)    |
| Field-bound parasitic coupling acc. to IEC 61000-4-3 | 10 V/m                                      |
| Electrostatic discharge acc. to IEC 61000-4-2        | 4 kV contact discharge / 8 kV air discharge |

#### Ambient conditions

|                                                         |                |
|---------------------------------------------------------|----------------|
| Installation altitude at height above sea level maximum | 2 000 m        |
| <b>Ambient temperature</b>                              |                |
| • during operation                                      | -25 ... +60 °C |
| • during storage                                        | -40 ... +80 °C |
| • during transport                                      | -40 ... +80 °C |
| Air pressure acc. to SN 31205                           | 90 ... 106 kPa |

#### Certificates/approvals

| General Product Approval                                                                   | Functional Safety/Safety of Machinery                                                     | Declaration of Conformity                                                                  | other                                                                                             |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <br>CSA | <br>UL | <br>EAC | <br>EG-Konf. |

[Type Examination Certificate](#)

[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=3SK2112-1AA10>

**Cax online generator**

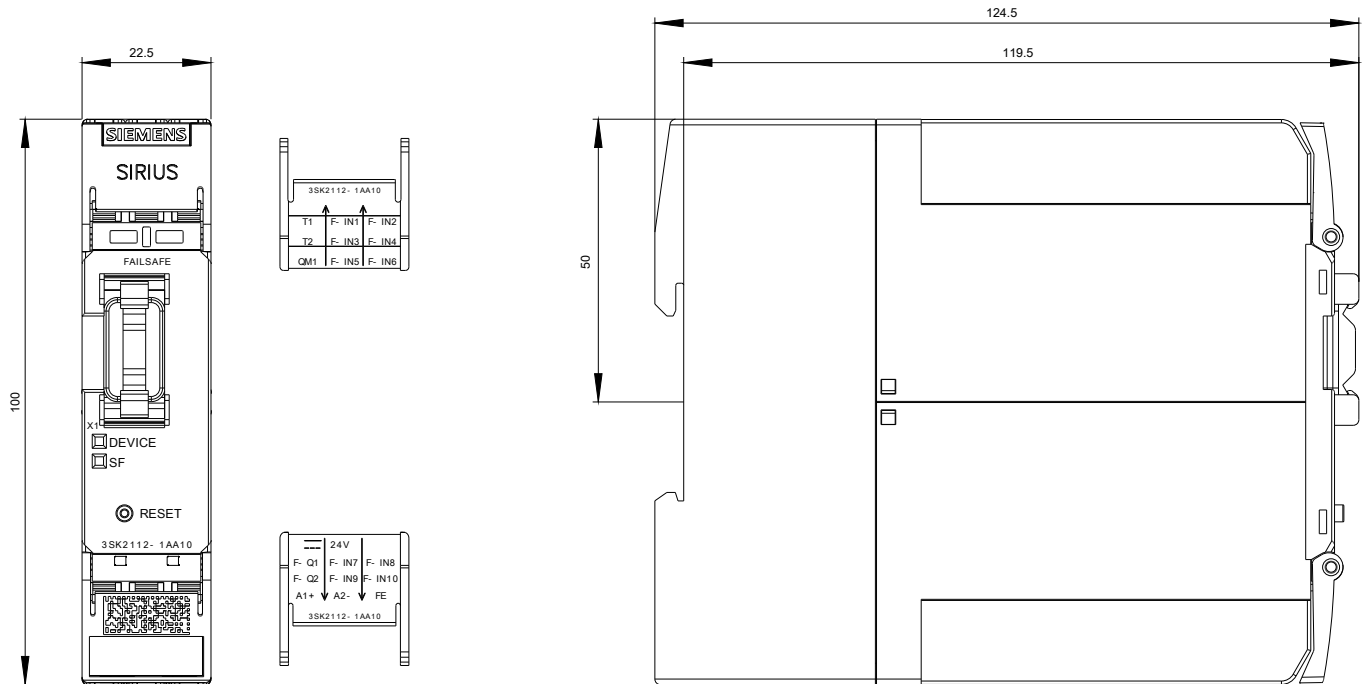
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SK2112-1AA10>

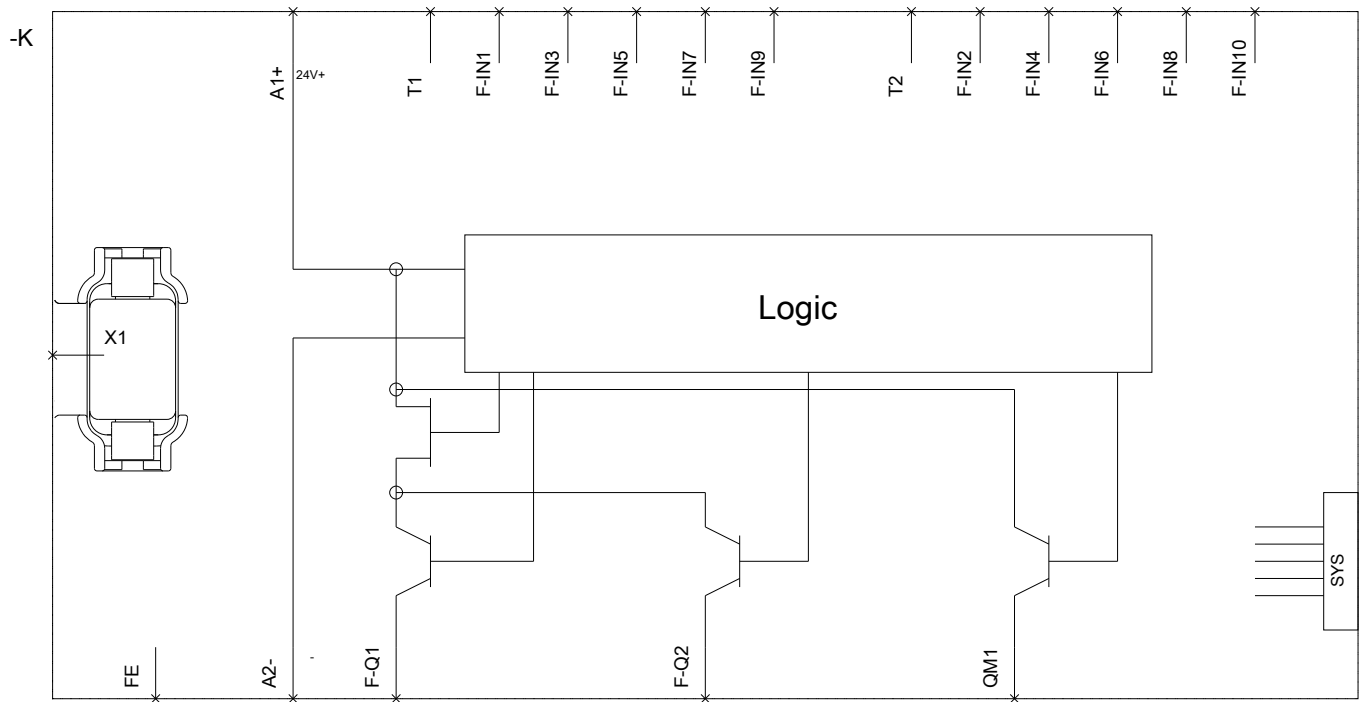
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**

<https://support.industry.siemens.com/cs/ww/en/ps/3SK2112-1AA10>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3SK2112-1AA10&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3SK2112-1AA10&lang=en)





last modified:

09/13/2017