

SIRIUS SAFETY RELAY WITH REL.- U. EL. RELEASE CIRCUIT (RC),  
DC 24V, 45.0MM, SCREW TERMINAL,  
RC INSTANT.: 2S, RC DELAYED: 2, MK: 1,  
ENABLING SWITCH, BASIC DEVICE,  
MAX. ACHIEVABLE PL TO EN13849-1: E,  
MAX. ACHIEVABLE SIL TO IEC61508:3,

### General technical details:

|                                                                            |     |                                                                                                                                                                                                        |
|----------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| product brand name                                                         |     | SIRIUS                                                                                                                                                                                                 |
| product designation                                                        |     | safety relays                                                                                                                                                                                          |
| Design of the product                                                      |     | acknowledgement button                                                                                                                                                                                 |
| protection class IP / of the housing                                       |     | IP20                                                                                                                                                                                                   |
| Protection class IP / of the terminal                                      |     | IP20                                                                                                                                                                                                   |
| Protection against electrical shock                                        |     | finger-safe                                                                                                                                                                                            |
| Insulation voltage / rated value                                           | V   | 300                                                                                                                                                                                                    |
| Ambient temperature                                                        |     |                                                                                                                                                                                                        |
| • during storage                                                           | °C  | -40 ... +80                                                                                                                                                                                            |
| • during operating                                                         | °C  | -25 ... +60                                                                                                                                                                                            |
| Air pressure                                                               |     |                                                                                                                                                                                                        |
| • according to SN 31205                                                    | kPa | 90 ... 106                                                                                                                                                                                             |
| Relative humidity                                                          |     |                                                                                                                                                                                                        |
| • during operating phase                                                   | %   | 10 ... 95                                                                                                                                                                                              |
| Installation altitude / at a height over sea level / maximum               | m   | 2,000                                                                                                                                                                                                  |
| Resistance against vibration / according to IEC 60068-2-6                  |     | 5 ... 500 Hz: 0,075 mm                                                                                                                                                                                 |
| Resistance against shock                                                   |     | 8g / 10 ms and 15g / 5 ms                                                                                                                                                                              |
| Impulse voltage resistance / rated value                                   | V   | 4,000                                                                                                                                                                                                  |
| EMC emitted interference                                                   |     | IEC 60947-5-1, IEC 60000-4-3, IEC 60000-4-5, IEC 60000-4-6                                                                                                                                             |
| Installation environment relating to EMC                                   |     | This product is suitable for Class A environments only. It can cause undesired radio-frequency interference in residential environments. If this is the case, the user must take appropriate measures. |
| Item designation                                                           |     |                                                                                                                                                                                                        |
| • according to DIN 40719 extendable after IEC 204-2 / according to IEC 750 |     | KT                                                                                                                                                                                                     |
| • according to DIN EN 61346-2                                              |     | F                                                                                                                                                                                                      |
| Number of sensor inputs                                                    |     |                                                                                                                                                                                                        |
| • 1-channel or 2-channel                                                   |     | 2                                                                                                                                                                                                      |

|                                                                                                                                                                                                                                                              |     |                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|
| <b>Design of the cascading</b>                                                                                                                                                                                                                               |     | cascading or in-service switching |
| <b>Type of the safety-related wiring / of the inputs</b>                                                                                                                                                                                                     |     | single-channel and two-channel    |
| <b>Product feature / transverse contact-secure</b>                                                                                                                                                                                                           |     | Yes                               |
| <b>Safety Integrity Level (SIL)</b><br>• according to IEC 61508<br>• for delayed release circuit / according to IEC 61508                                                                                                                                    |     | SIL3<br>SIL3                      |
| <b>SIL claim limit (for a subsystem) / according to EN 62061</b>                                                                                                                                                                                             |     | 3                                 |
| <b>Performance Level (PL)</b><br>• according to ISO 13849-1<br>• for delayed release circuit / according to ISO 13849-1                                                                                                                                      |     | e<br>e                            |
| <b>Category / according to EN 954-1</b>                                                                                                                                                                                                                      |     | 4                                 |
| <b>Category / according to ISO 13849-1</b>                                                                                                                                                                                                                   |     | 4                                 |
| <b>Hardware fault tolerance / according to IEC 61508</b>                                                                                                                                                                                                     |     | 1                                 |
| <b>Safety device type / according to IEC 61508-2</b>                                                                                                                                                                                                         |     | Type B                            |
| <b>Probability of dangerous failure per hour (PFHD) / with high demand rate / according to EN 62061</b>                                                                                                                                                      | 1/h | 0.69E-8                           |
| <b>T1 value / for proof test interval or service life / according to IEC 61508</b>                                                                                                                                                                           | a   | 20                                |
| <b>Number of outputs / as contact-affected switching element</b><br>• as NC contact / for reporting function / instantaneous switching<br>• as NO contact / safety-related / instantaneous switching<br>• as NO contact / safety-related / delayed switching |     | 0<br>1<br>1                       |
| <b>Number of outputs / as contact-less semiconductor switching element</b><br>• safety-related<br>• delayed switching<br>• non-delayed<br>• for reporting function<br>• delayed switching<br>• non-delayed                                                   |     | 1<br>1<br>0<br>1                  |
| <b>Stop category / according to DIN EN 60204-1</b>                                                                                                                                                                                                           |     | 0 + 1                             |

#### General technical details:

|                                                                                                           |     |                   |
|-----------------------------------------------------------------------------------------------------------|-----|-------------------|
| <b>Design of the input</b><br>• cascading-input/functional switching<br>• feedback input<br>• start input |     | Yes<br>Yes<br>Yes |
| <b>Design of the electrical connection / jumper socket</b>                                                |     | Yes               |
| <b>Operating cycles / maximum</b>                                                                         | 1/h | 2,000             |
| <b>Switching capacity current</b><br>• of semiconductor outputs                                           |     |                   |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------|
| <ul style="list-style-type: none"> <li>• for signaling function / for DC-13 / at 24 V</li> <li>• for enabling circuit / for DC-13 / at 24 V</li> <li>• of NO contacts of relay outputs <ul style="list-style-type: none"> <li>• at DC-13 <ul style="list-style-type: none"> <li>• at 24 V</li> <li>• at 115 V</li> <li>• at 230 V</li> </ul> </li> <li>• at AC-15 <ul style="list-style-type: none"> <li>• at 115 V</li> <li>• at 230 V</li> </ul> </li> </ul> </li> </ul> | A            | 0.5                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A            | 1                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A            | 1                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A            | 0.1                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A            | 0.1                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A            | 3                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A            | 3                             |
| <b>Mechanical operating cycles as operating time / typical</b>                                                                                                                                                                                                                                                                                                                                                                                                             |              | 100,000                       |
| <b>Design of the fuse link / for short-circuit protection of the NO contacts of the relay outputs / required</b>                                                                                                                                                                                                                                                                                                                                                           |              | gL/gG: 4 A or fast-acting: 4A |
| <b>Resistance to direct current / of the cable / maximum</b>                                                                                                                                                                                                                                                                                                                                                                                                               | Ω            | 1,000                         |
| <b>Cable length / between sensor and electronic evaluation device / with Cu 1.5 mm² and 150 nF/km / maximum</b>                                                                                                                                                                                                                                                                                                                                                            | m            | 1,000                         |
| <b>Make time / with automatic start</b> <ul style="list-style-type: none"> <li>• typical</li> <li>• for DC / maximum</li> </ul>                                                                                                                                                                                                                                                                                                                                            | ms<br>ms     | 60<br>100                     |
| <b>Make time / with monitored start</b> <ul style="list-style-type: none"> <li>• maximum</li> <li>• typical</li> </ul>                                                                                                                                                                                                                                                                                                                                                     | ms<br>ms     | 100<br>60                     |
| <b>Backslide delay time / at mains power cut</b> <ul style="list-style-type: none"> <li>• typical</li> <li>• maximum</li> </ul>                                                                                                                                                                                                                                                                                                                                            | ms<br>ms     | 25<br>30                      |
| <b>Adjustable backslide delay time</b> <ul style="list-style-type: none"> <li>• after opening of the safety circuits</li> </ul>                                                                                                                                                                                                                                                                                                                                            | s            | 0.05 ... 3                    |
| <b>Recovery time / after opening of the safety circuits / typical</b>                                                                                                                                                                                                                                                                                                                                                                                                      | ms           | 400                           |
| <b>Recovery time / after mains power cut / typical</b>                                                                                                                                                                                                                                                                                                                                                                                                                     | s            | 8                             |
| <b>Pulse duration</b> <ul style="list-style-type: none"> <li>• of the sensor input / minimum</li> <li>• of the ON pushbutton input / minimum</li> <li>• of the cascading-entrance / minimum</li> </ul>                                                                                                                                                                                                                                                                     | ms<br>s<br>s | 45<br>0.2<br>0.045            |
| <b>Control circuit:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |                               |
| <b>Type of voltage / of the controlled supply voltage</b>                                                                                                                                                                                                                                                                                                                                                                                                                  |              | DC                            |
| <b>Control supply voltage / 1 / for DC / rated value</b>                                                                                                                                                                                                                                                                                                                                                                                                                   | V            | 24                            |
| <b>operating range factor control supply voltage rated value / of the magnet coil</b> <ul style="list-style-type: none"> <li>• for DC</li> </ul>                                                                                                                                                                                                                                                                                                                           |              | 0.85 ... 1.15                 |

| Installation/mounting/dimensions: |    |                            |
|-----------------------------------|----|----------------------------|
| mounting position                 |    | any                        |
| Type of mounting                  |    | screw and snap-on mounting |
| Width                             | mm | 45                         |
| Height                            | mm | 138.5                      |
| Depth                             | mm | 88                         |

| Connections:                                                         |  |                                                                      |
|----------------------------------------------------------------------|--|----------------------------------------------------------------------|
| Design of the electrical connection                                  |  | screw-type terminals                                                 |
| Type of the connectable conductor cross-section                      |  |                                                                      |
| • solid                                                              |  | 1x (0.5 ... 4 mm <sup>2</sup> ), 2x (0.5 ... 2.5 mm <sup>2</sup> )   |
| • finely stranded                                                    |  |                                                                      |
| • with wire end processing                                           |  | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> ) |
| Type of the connectable conductor cross-section / for AWG conductors |  |                                                                      |
| • solid                                                              |  | 2x (20 ... 14)                                                       |
| • stranded                                                           |  | 2x (20 ... 14)                                                       |

| Product Function:                                                            |  |     |
|------------------------------------------------------------------------------|--|-----|
| Product function                                                             |  |     |
| • light barrier monitoring                                                   |  | Yes |
| • standstill monitoring                                                      |  | No  |
| • protective door monitoring                                                 |  | Yes |
| • automatic start                                                            |  | Yes |
| • magnetic switch monitoring Normally closed contact-Normally open contact   |  | No  |
| • rotation speed monitoring                                                  |  | No  |
| • laser scanner monitoring                                                   |  | Yes |
| • monitored start-up                                                         |  | Yes |
| • light grid monitoring                                                      |  | Yes |
| • magnetic switch monitoring Normally closed contact-Normally closed contact |  | Yes |
| • emergency stop function                                                    |  | Yes |
| • step mat monitoring                                                        |  | No  |
| Suitability for interaction / pressing control                               |  | No  |
| Acceptability for application                                                |  |     |
| • monitoring of floating sensors                                             |  | Yes |
| • monitoring of non-floating sensors                                         |  | Yes |
| • safety cut-out switch                                                      |  | Yes |
| • position switch monitoring                                                 |  | Yes |
| • EMERGENCY-OFF circuit monitoring                                           |  | Yes |

- valve monitoring
- tactile sensor monitoring
- magnetically operated switches monitoring
- safety-related circuits

No  
Yes  
Yes  
Yes

#### Certificates/approvals:

##### Verification of suitability

- TÜV (German technical inspectorate) certificate
- UL-registration
- BG BIA certificate

UL, CSA, EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508  
Yes  
Yes  
Yes

##### General Product Approval

##### EMC

##### Functional Safety / Safety of Machinery



CCC



CSA



GOST



UL



C-TICK



VDE

##### Declaration of Conformity

##### Test Certificates

##### other



EG-Konf.

[Special Test  
Certificate](#)

[Confirmation](#)

[Environmental  
Confirmations](#)

#### Further information:

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

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

##### Industry Mall (Online ordering system)

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

##### Cax online generator:

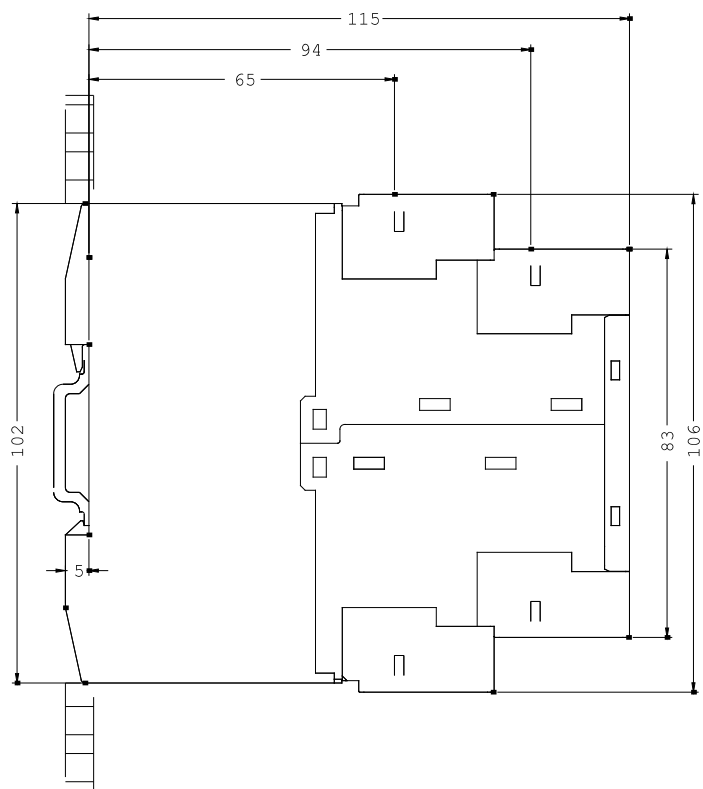
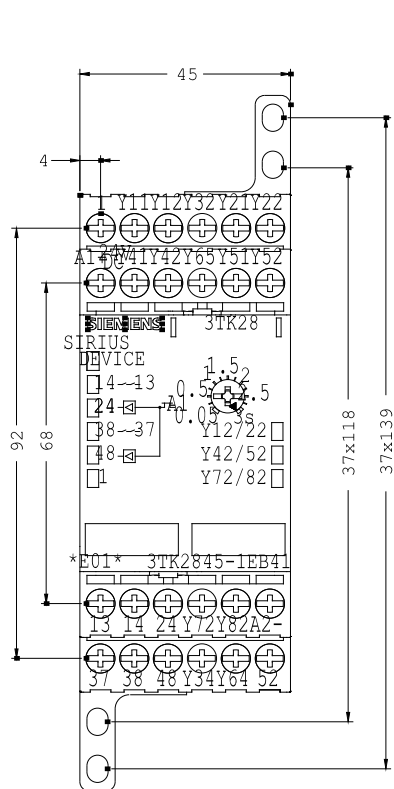
<http://www.siemens.com/cax>

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

<http://support.automation.siemens.com/WW/view/en/3TK2845-1EB41/all>

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

[http://www.automation.siemens.com/bilddb/cax\\_en.aspx?mlfb=3TK2845-1EB41](http://www.automation.siemens.com/bilddb/cax_en.aspx?mlfb=3TK2845-1EB41)



last change:

Feb 18, 2013