

SIRIUS SAFETY RELAY WITH ELECTRONIC RELEASE  
CIRCUIT (RC) DC 24V,  
22.5MM, SPRING-LOADED TERMINAL,  
RC INSTANT.: 1 HL,  
RC DELAYED: 1HL 5...300S, MK: 0,  
AUTOSTART / MONITORED START,  
STANDARD DEVICE,  
MAX. ACHIEVABLE SIL: 3, PL: E

### General technical details:

|                                                                            |     |                                                                                                                                                                                                        |
|----------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| product brand name                                                         |     | SIRIUS                                                                                                                                                                                                 |
| product designation                                                        |     | safety relays                                                                                                                                                                                          |
| Design of the product                                                      |     | for EMERGENCY-STOP units                                                                                                                                                                               |
| protection class IP / of the housing                                       |     | IP40                                                                                                                                                                                                   |
| Protection class IP / of the terminal                                      |     | IP20                                                                                                                                                                                                   |
| Protection against electrical shock                                        |     | finger-safe                                                                                                                                                                                            |
| Insulation voltage / rated value                                           | V   | 50                                                                                                                                                                                                     |
| 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   | 500                                                                                                                                                                                                    |
| 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                                                                                |     | 1                                 |
| <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>                                                                     |     |                                   |
| • according to IEC 61508                                                                                |     | SIL3                              |
| • for delayed release circuit / according to IEC 61508                                                  |     | SIL3                              |
| <b>SIL claim limit (for a subsystem) / according to EN 62061</b>                                        |     | 3                                 |
| <b>Performance Level (PL)</b>                                                                           |     |                                   |
| • according to ISO 13849-1                                                                              |     | e                                 |
| • for delayed release circuit / according to ISO 13849-1                                                |     | 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 | 0.50E-10                          |
| <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>                                        |     |                                   |
| • as NC contact / for reporting function / instantaneous switching                                      |     | 0                                 |
| • as NO contact / safety-related / instantaneous switching                                              |     | 0                                 |
| • as NO contact / safety-related / delayed switching                                                    |     | 0                                 |
| <b>Number of outputs / as contact-less semiconductor switching element</b>                              |     |                                   |
| • safety-related                                                                                        |     |                                   |
| • delayed switching                                                                                     |     | 1                                 |
| • non-delayed                                                                                           |     | 1                                 |
| • for reporting function                                                                                |     |                                   |
| • delayed switching                                                                                     |     | 0                                 |
| • non-delayed                                                                                           |     | 0                                 |
| <b>Stop category / according to DIN EN 60204-1</b>                                                      |     | 0 + 1                             |

#### General technical details:

|                                                            |     |       |
|------------------------------------------------------------|-----|-------|
| <b>Design of the input</b>                                 |     |       |
| • cascading-input/functional switching                     |     | Yes   |
| • feedback input                                           |     | Yes   |
| • start input                                              |     | 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>                          |     |       |

|                                                                                                                                    |    |              |
|------------------------------------------------------------------------------------------------------------------------------------|----|--------------|
| <ul style="list-style-type: none"> <li>• of semiconductor outputs</li> <li>• for enabling circuit / for DC-13 / at 24 V</li> </ul> | A  | 1.5          |
| <b>Design of the fuse link / for short-circuit protection of the NO contacts of the relay outputs / required</b>                   |    | not required |
| <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  | 2,000        |
| <b>Make time / with automatic start</b>                                                                                            |    |              |
| <ul style="list-style-type: none"> <li>• typical</li> </ul>                                                                        | ms | 60           |
| <ul style="list-style-type: none"> <li>• for DC / maximum</li> </ul>                                                               | ms | 100          |
| <b>Make time / with automatic start / after mains power cut</b>                                                                    |    |              |
| <ul style="list-style-type: none"> <li>• typical</li> </ul>                                                                        | ms | 6,000        |
| <ul style="list-style-type: none"> <li>• maximum</li> </ul>                                                                        | ms | 7,000        |
| <b>Make time / with monitored start</b>                                                                                            |    |              |
| <ul style="list-style-type: none"> <li>• maximum</li> </ul>                                                                        | ms | 100          |
| <ul style="list-style-type: none"> <li>• typical</li> </ul>                                                                        | ms | 60           |
| <b>Backslide delay time / at mains power cut</b>                                                                                   |    |              |
| <ul style="list-style-type: none"> <li>• typical</li> </ul>                                                                        | ms | 0            |
| <ul style="list-style-type: none"> <li>• maximum</li> </ul>                                                                        | ms | 0            |
| <b>Adjustable backslide delay time</b>                                                                                             |    |              |
| <ul style="list-style-type: none"> <li>• after opening of the safety circuits</li> </ul>                                           | s  | 5 ... 300    |
| <b>Recovery time / after opening of the safety circuits / typical</b>                                                              | ms | 400          |
| <b>Recovery time / after mains power cut / typical</b>                                                                             | s  | 7            |
| <b>Pulse duration</b>                                                                                                              |    |              |
| <ul style="list-style-type: none"> <li>• of the sensor input / minimum</li> </ul>                                                  | ms | 45           |
| <ul style="list-style-type: none"> <li>• of the ON pushbutton input / minimum</li> </ul>                                           | s  | 0.2          |
| <ul style="list-style-type: none"> <li>• of the cascading-entrance / minimum</li> </ul>                                            | s  | 0.045        |

#### Control circuit:

|                                                                                       |   |              |
|---------------------------------------------------------------------------------------|---|--------------|
| <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>                            |   | 0.9 ... 1.15 |

#### Installation/mounting/dimensions:

|                          |    |                            |
|--------------------------|----|----------------------------|
| <b>mounting position</b> |    | any                        |
| <b>Type of mounting</b>  |    | screw and snap-on mounting |
| <b>Width</b>             | mm | 22.5                       |
| <b>Height</b>            | mm | 120                        |
| <b>Depth</b>             | mm | 88                         |

## Connections:

|                                                                             |  |                                     |
|-----------------------------------------------------------------------------|--|-------------------------------------|
| <b>Design of the electrical connection</b>                                  |  | spring-loaded terminals             |
| <b>Type of the connectable conductor cross-section</b>                      |  |                                     |
| • solid                                                                     |  | 2x (0.25 ... 1.5 mm <sup>2</sup> )  |
| • finely stranded                                                           |  |                                     |
| • with wire end processing                                                  |  | 2 x (0.25 ... 1.5 mm <sup>2</sup> ) |
| • without wire end processing                                               |  | 2x (0.25 ... 1.5 mm <sup>2</sup> )  |
| <b>Type of the connectable conductor cross-section / for AWG conductors</b> |  |                                     |
| • solid                                                                     |  | 2x (24 ... 16)                      |
| • stranded                                                                  |  | 2x (24 ... 16)                      |

## Product Function:

|                                                                              |  |     |
|------------------------------------------------------------------------------|--|-----|
| <b>Product function</b>                                                      |  |     |
| • 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                                                        |  | Yes |
| <b>Suitability for interaction / pressing control</b>                        |  | No  |
| <b>Acceptability for application</b>                                         |  |     |
| • 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                                                           |  | No  |
| • tactile sensor monitoring                                                  |  | Yes |
| • magnetically operated switches monitoring                                  |  | Yes |
| • safety-related circuits                                                    |  | Yes |

## Certificates/approvals:

|                                                   |  |                                                                        |
|---------------------------------------------------|--|------------------------------------------------------------------------|
| <b>Verification of suitability</b>                |  | UL, CSA, EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508, DIN EN 50156-1 |
| • TÜV (German technical inspectorate) certificate |  | Yes                                                                    |
| • UL-registration                                 |  | Yes                                                                    |
| • BG BIA certificate                              |  | Yes                                                                    |

|                                 |            |                                                |
|---------------------------------|------------|------------------------------------------------|
| <b>General Product Approval</b> | <b>EMC</b> | <b>Functional Safety / Safety of Machinery</b> |
|---------------------------------|------------|------------------------------------------------|



CCC



CSA



GOST



UL



C-TICK



VDE

|                                  |                          |              |
|----------------------------------|--------------------------|--------------|
| <b>Declaration of Conformity</b> | <b>Test Certificates</b> | <b>other</b> |
|----------------------------------|--------------------------|--------------|



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:

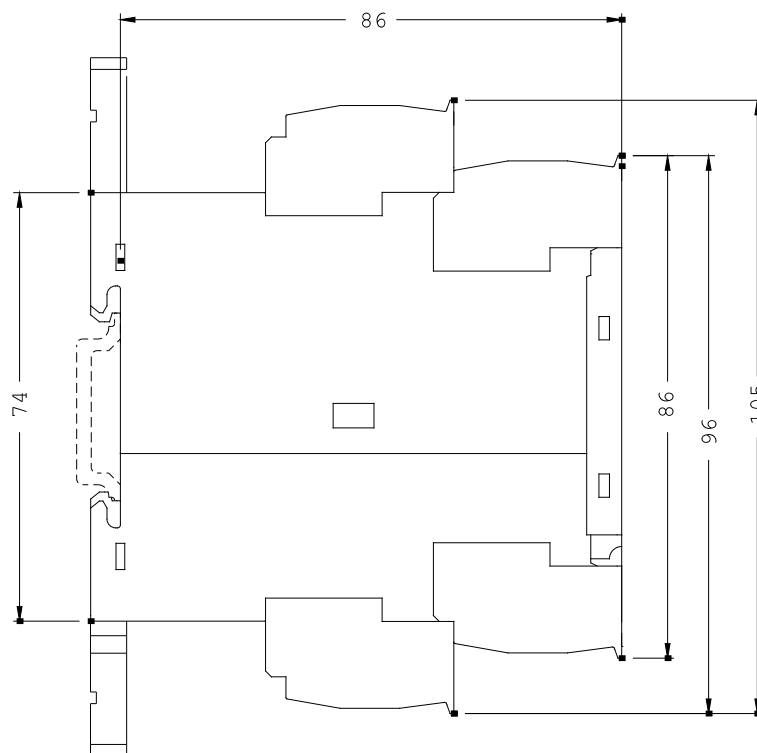
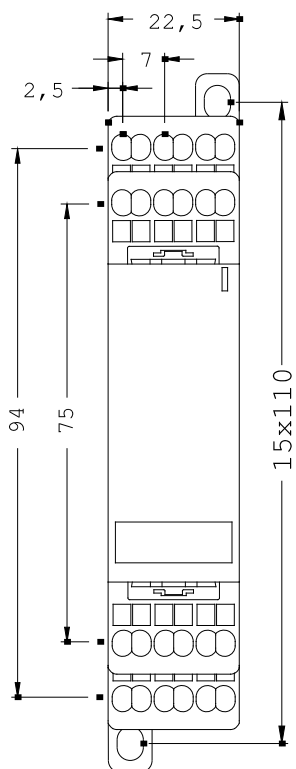
<http://www.siemens.com/cax>

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

<http://support.automation.siemens.com/WW/view/en/3TK2842-2BB44/all>

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

[http://www.automation.siemens.com/bilddb/cax\\_en.aspx?mlfb=3TK2842-2BB44](http://www.automation.siemens.com/bilddb/cax_en.aspx?mlfb=3TK2842-2BB44)



last change:

Feb 18, 2013