



SIRIUS SAFETY RELAY WITH RELAY RELEASE CIRCUITS (RC),  
AC 230V, 45.0MM, SPRING-LOADED TERMINAL, RC INSTANT.:  
3NO, RC DELAYED: 0NO, MK: 2NC, AUTOSTART / MONITORED  
START, BASIC DEVICE, MAX. ACHIEVABLE SIL: 3, PL: E

### General technical data:

|                                                                                     |                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| product brand name                                                                  | SIRIUS                                                                                                                                                                                                 |
| Product designation                                                                 | safety relays                                                                                                                                                                                          |
| Design of the product                                                               | for EMERGENCY-STOP units                                                                                                                                                                               |
| Protection class IP of the enclosure                                                | IP20                                                                                                                                                                                                   |
| Protection class IP of the terminal                                                 | IP20                                                                                                                                                                                                   |
| Protection against electrical shock                                                 | finger-safe                                                                                                                                                                                            |
| Insulation voltage rated value                                                      | 300 V                                                                                                                                                                                                  |
| Ambient temperature                                                                 |                                                                                                                                                                                                        |
| • during storage                                                                    | -40 ... +80 °C                                                                                                                                                                                         |
| • during operation                                                                  | -25 ... +60 °C                                                                                                                                                                                         |
| Air pressure acc. to SN 31205                                                       | 90 ... 106 kPa                                                                                                                                                                                         |
| Relative humidity during operation                                                  | 10 ... 95 %                                                                                                                                                                                            |
| Installation altitude at height above sea level maximum                             | 2 000 m                                                                                                                                                                                                |
| Vibration resistance acc. to IEC 60068-2-6                                          | 5 ... 500 Hz: 0,075 mm                                                                                                                                                                                 |
| Shock resistance                                                                    | 8g / 10 ms                                                                                                                                                                                             |
| Surge voltage resistance rated value                                                | 4 000 V                                                                                                                                                                                                |
| EMC emitted interference                                                            | EN 60947-5-1                                                                                                                                                                                           |
| Installation environment regarding 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. |
| Equipment marking acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750 | KT                                                                                                                                                                                                     |
| Equipment marking acc. to DIN EN 61346-2                                            | F                                                                                                                                                                                                      |
| Number of sensor inputs                                                             |                                                                                                                                                                                                        |
| • 1-channel or 2-channel                                                            | 1                                                                                                                                                                                                      |
| Design of the cascading                                                             | none                                                                                                                                                                                                   |
| Type of the safety-related wiring of the inputs                                     | single-channel and two-channel                                                                                                                                                                         |
| Product feature cross-circuit-proof                                                 | Yes                                                                                                                                                                                                    |
| Safety Integrity Level (SIL)                                                        |                                                                                                                                                                                                        |

|                                                                                                 |                  |
|-------------------------------------------------------------------------------------------------|------------------|
| • acc. to IEC 61508                                                                             | SIL3             |
| <b>SIL Claim Limit (subsystem) acc. to EN 62061</b>                                             | 3                |
| <b>Performance level (PL)</b>                                                                   |                  |
| • acc. to EN ISO 13849-1                                                                        | e                |
| <b>Category acc. to EN 954-1</b>                                                                | 4                |
| <b>Category acc. to EN ISO 13849-1</b>                                                          | 4                |
| <b>Hardware fault tolerance acc. to IEC 61508</b>                                               | 1                |
| <b>Safety device type acc. to IEC 61508-2</b>                                                   | Type A           |
| <b>PFHD with high demand rate acc. to EN 62061</b>                                              | 0.0000000015 1/h |
| <b>Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508</b> | 0.0000013 1/y    |
| <b>T1 value for proof test interval or service life acc. to IEC 61508</b>                       | 20 y             |
| <b>Number of outputs as contact-affected switching element</b>                                  |                  |
| • as NC contact                                                                                 |                  |
| — for signaling function instantaneous contact                                                  | 2                |
| • as NO contact                                                                                 |                  |
| — safety-related instantaneous contact                                                          | 3                |
| — safety-related delayed switching                                                              | 0                |
| <b>Number of outputs as contact-less semiconductor switching element</b>                        |                  |
| • safety-related                                                                                |                  |
| — delayed switching                                                                             | 0                |
| — instantaneous contact                                                                         | 0                |
| • for signaling function                                                                        |                  |
| — delayed switching                                                                             | 0                |
| — instantaneous contact                                                                         | 0                |
| <b>Stop category acc. to DIN EN 60204-1</b>                                                     | 0                |

#### General technical data:

|                                                     |           |
|-----------------------------------------------------|-----------|
| <b>Design of input</b>                              |           |
| • cascading input/functional switching              | No        |
| • feedback input                                    | Yes       |
| • Start input                                       | Yes       |
| <b>Type of electrical connection Plug-in socket</b> | Yes       |
| <b>Operating frequency maximum</b>                  | 1 000 1/h |
| <b>Switching capacity current</b>                   |           |
| • of the NO contacts of the relay outputs           |           |
| — at DC-13                                          |           |
| — at 24 V                                           | 6 A       |
| — at 115 V                                          | 0.2 A     |
| — at 230 V                                          | 0.1 A     |

|                                                                                                                     |                            |
|---------------------------------------------------------------------------------------------------------------------|----------------------------|
| — at AC-15                                                                                                          |                            |
| — at 115 V                                                                                                          | 6 A                        |
| — at 230 V                                                                                                          | 6 A                        |
| • of the NC contacts of the relay outputs                                                                           |                            |
| — at DC-13                                                                                                          |                            |
| — at 24 V                                                                                                           | 6 A                        |
| — at 115 V                                                                                                          | 0.2 A                      |
| — at 230 V                                                                                                          | 0.1 A                      |
| — at AC-15                                                                                                          |                            |
| — at 115 V                                                                                                          | 6 A                        |
| — at 230 V                                                                                                          | 6 A                        |
| <b>Thermal current of the switching element with contacts maximum</b>                                               | 6 A                        |
| <b>Electrical endurance (switching cycles) typical</b>                                                              | 100 000                    |
| <b>Mechanical service life (switching cycles) typical</b>                                                           | 10 000 000                 |
| <b>Design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required</b>        | gL/gG: 6 A, or quick: 10 A |
| <b>DC resistance of the cable maximum</b>                                                                           | 30 $\Omega$                |
| <b>Wire length between sensor and electronic evaluation device with Cu 1.5 mm<sup>2</sup> and 150 nF/km maximum</b> | 1 000 m                    |
| <b>Make time with automatic start</b>                                                                               |                            |
| • at AC maximum                                                                                                     | 150 ms                     |
| <b>Make time with monitored start</b>                                                                               |                            |
| • maximum                                                                                                           | 25 ms                      |
| <b>Backslide delay time in the event of power failure</b>                                                           |                            |
| • maximum                                                                                                           | 350 ms                     |
| <b>Recovery time after opening of the safety circuits typical</b>                                                   | 200 ms                     |
| <b>Recovery time after power failure typical</b>                                                                    | 500 ms                     |
| <b>Pulse duration</b>                                                                                               |                            |
| • of the sensor input minimum                                                                                       | 25 ms                      |
| • of the ON pushbutton input minimum                                                                                | 0.025 s                    |
| <b>Control circuit/ Control:</b>                                                                                    |                            |
| <b>Type of voltage of the control supply voltage</b>                                                                | AC                         |
| <b>Control supply voltage frequency</b>                                                                             |                            |
| • 1 rated value                                                                                                     | 50 Hz                      |
| • 2 rated value                                                                                                     | 60 Hz                      |
| <b>Control supply voltage 1 at AC</b>                                                                               |                            |
| • at 50 Hz rated value                                                                                              | 230 V                      |
| • at 60 Hz rated value                                                                                              | 230 V                      |
| <b>Operating range factor control supply voltage rated value of magnet coil</b>                                     |                            |

|            |              |
|------------|--------------|
| • at AC    |              |
| — at 50 Hz | 0.85 ... 1.1 |
| — at 60 Hz | 0.85 ... 1.1 |
| • at DC    | 0.85 ... 1.1 |

#### Installation/ mounting/ dimensions:

|                          |                            |
|--------------------------|----------------------------|
| <b>Mounting position</b> | any                        |
| <b>Mounting type</b>     | screw and snap-on mounting |
| <b>Width</b>             | 45 mm                      |
| <b>Height</b>            | 138.5 mm                   |
| <b>Depth</b>             | 120 mm                     |

#### Connections/ Terminals:

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

#### Product Function:

|                                                  |     |
|--------------------------------------------------|-----|
| <b>Product function</b>                          |     |
| • Light barrier monitoring                       | No  |
| • Standstill monitoring                          | No  |
| • protective door monitoring                     | Yes |
| • Automatic start                                | Yes |
| • magnetically operated switch monitoring NC-NO  | No  |
| • rotation speed monitoring                      | No  |
| • laser scanner monitoring                       | No  |
| • monitored start-up                             | Yes |
| • Light array monitoring                         | No  |
| • magnetically operated switch monitoring NC-NC  | No  |
| • EMERGENCY OFF function                         | Yes |
| • Pressure-sensitive mat monitoring              | Yes |
| <b>Suitability for interaction press control</b> | No  |
| <b>Suitability for use</b>                       |     |
| • Monitoring of floating sensors                 | Yes |
| • Monitoring of non-floating sensors             | No  |

|                                           |     |
|-------------------------------------------|-----|
| • safety switch                           | Yes |
| • position switch monitoring              | Yes |
| • EMERGENCY-OFF circuit monitoring        | Yes |
| • valve monitoring                        | No  |
| • tactile sensor monitoring               | No  |
| • magnetically operated switch monitoring | No  |
| • safety-related circuits                 | Yes |

#### Certificates/ approvals:

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

#### General Product Approval

#### EMC

#### Functional Safety/Safety of Machinery



| Declaration of Conformity | Test Certificates                                                  | other                             |                               |
|---------------------------|--------------------------------------------------------------------|-----------------------------------|-------------------------------|
| <p>EG-Konf.</p>           | <a href="#">spezielle Prüfbescheinigungen</a><br><a href="#">n</a> | <a href="#">Umweltbestätigung</a> | <a href="#">Bestätigungen</a> |

#### Further information

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

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

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

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

##### Cax online generator

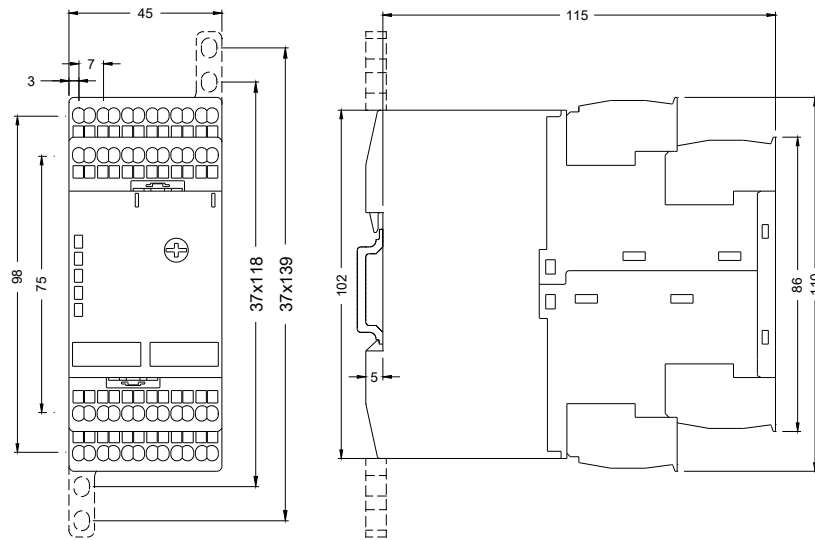
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2825-2AL20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3TK2825-2AL20>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3TK2825-2AL20&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2825-2AL20&lang=en)



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