

SIRIUS SAFETY RELAY WITH RELAY RELEASE CIRCUITS (RC),  
AC 230V, 45.0MM, SCREW TERMINAL, RC INSTANT.: 2NO, RC  
DELAYED: 2NO 0.05...3S, MC: 1NC, AUTOSTART, BASIC DEVICE,  
MAX. ACHIEVABLE SIL: 3/2, PL: E/D



Figure similar

| General technical data:                                 |                        |
|---------------------------------------------------------|------------------------|
| product brand name                                      | SIRIUS                 |
| Product designation                                     | safety relays          |
| Design of the product                                   | für Schutztüren        |
| 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                |

|                                                                                                                                                                                                                                        |                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EMC emitted interference</b>                                                                                                                                                                                                        | EN 60947-5-1                                                                                                                                                                                           |
| <b>Installation environment regarding EMC</b>                                                                                                                                                                                          | 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. |
| <b>Equipment marking acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750</b>                                                                                                                                             | KT                                                                                                                                                                                                     |
| <b>Equipment marking acc. to DIN EN 61346-2</b>                                                                                                                                                                                        | F                                                                                                                                                                                                      |
| <b>Number of sensor inputs</b><br>• 1-channel or 2-channel                                                                                                                                                                             | 1                                                                                                                                                                                                      |
| <b>Design of the cascading</b>                                                                                                                                                                                                         | none                                                                                                                                                                                                   |
| <b>Type of the safety-related wiring of the inputs</b>                                                                                                                                                                                 | single-channel and two-channel                                                                                                                                                                         |
| <b>Product feature cross-circuit-proof</b>                                                                                                                                                                                             | Yes                                                                                                                                                                                                    |
| <b>Safety Integrity Level (SIL)</b><br>• acc. to IEC 61508<br>• for delayed release circuit acc. to IEC 61508                                                                                                                          | SIL3<br>SIL2                                                                                                                                                                                           |
| <b>SIL Claim Limit (subsystem) acc. to EN 62061</b>                                                                                                                                                                                    | 3                                                                                                                                                                                                      |
| <b>Performance level (PL)</b><br>• acc. to EN ISO 13849-1<br>• for delayed release circuit acc. to EN ISO 13849-1                                                                                                                      | e<br>d                                                                                                                                                                                                 |
| <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>                                                                                                                                                                                     | 0.0000000027 1/h                                                                                                                                                                                       |
| <b>Average probability of failure on demand (PFDavg) with low demand rate acc. to IEC 61508</b>                                                                                                                                        | 0.0000024 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><br>• as NC contact<br>— for signaling function instantaneous contact<br>• as NO contact<br>— safety-related instantaneous contact<br>— safety-related delayed switching | 1<br>2<br>2                                                                                                                                                                                            |
| <b>Number of outputs as contact-less semiconductor switching element</b><br>• safety-related<br>— delayed switching<br>— instantaneous contact<br>• for signaling function                                                             | 0<br>0                                                                                                                                                                                                 |

|                                             |              |
|---------------------------------------------|--------------|
| — delayed switching                         | 0            |
| — instantaneous contact                     | 0            |
| <b>Stop category acc. to DIN EN 60204-1</b> | <b>0 + 1</b> |

#### 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                                                                                                    | 5 A                        |
| — at 115 V                                                                                                   | 0.2 A                      |
| — at 230 V                                                                                                   | 0.1 A                      |
| — at AC-15                                                                                                   |                            |
| — at 115 V                                                                                                   | 5 A                        |
| — at 230 V                                                                                                   | 5 A                        |
| • of the NC contacts of the relay outputs                                                                    |                            |
| — at DC-13                                                                                                   |                            |
| — at 24 V                                                                                                    | 5 A                        |
| — at 115 V                                                                                                   | 0.2 A                      |
| — at 230 V                                                                                                   | 0.1 A                      |
| — at AC-15                                                                                                   |                            |
| — at 115 V                                                                                                   | 5 A                        |
| — at 230 V                                                                                                   | 5 A                        |
| <b>Thermal current of the switching element with contacts maximum</b>                                        | 5 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 Ω                       |
| <b>Wire length between sensor and electronic evaluation device with Cu 1.5 mm² and 150 nF/km maximum</b>     | 1 000 m                    |
| <b>Make time with automatic start</b>                                                                        |                            |
| • at AC maximum                                                                                              | 80 ms                      |
| <b>Backslide delay time in the event of power failure</b>                                                    |                            |
| • maximum                                                                                                    | 100 ms                     |

|                                                                       |              |
|-----------------------------------------------------------------------|--------------|
| <b>Adjustable OFF-delay time after opening of the safety circuits</b> | 0.05 ... 3 s |
| <b>Recovery time after power failure typical</b>                      | 1 000 ms     |
| <b>Pulse duration</b>                                                 |              |
| • of the sensor input minimum                                         | 25 ms        |
| • of the ON pushbutton input minimum                                  | 0.025 s      |

#### Control circuit/ Control:

|                                                                                 |              |
|---------------------------------------------------------------------------------|--------------|
| <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>             | 44.8 mm                    |
| <b>Height</b>            | 138.5 mm                   |
| <b>Depth</b>             | 120 mm                     |

#### Connections/ Terminals:

|                                                                       |                                            |
|-----------------------------------------------------------------------|--------------------------------------------|
| <b>Type of electrical connection</b>                                  | screw-type terminals                       |
| <b>Type of connectable conductor cross-sections</b>                   |                                            |
| • solid                                                               | 1x (0.5 ... 4.0 mm²), 2x (0.5 ... 2.5 mm²) |
| • finely stranded                                                     |                                            |
| — with core end processing                                            | 1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.5 mm²) |
| <b>Type of connectable conductor cross-sections at AWG conductors</b> |                                            |
| • solid                                                               | 2x (20 ... 14)                             |
| • stranded                                                            | 2x (20 ... 14)                             |

#### 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                              | No                                                               |
| • Light array monitoring                          | No                                                               |
| • magnetically operated switch monitoring NC-NC   | No                                                               |
| • EMERGENCY OFF function                          | No                                                               |
| • 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                | No                                                               |
| • valve monitoring                                | No                                                               |
| • tactile sensor monitoring                       | No                                                               |
| • magnetically operated switch monitoring         | No                                                               |
| • safety-related circuits                         | Yes                                                              |
| <b>Certificates/ approvals:</b>                   |                                                                  |
| <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 |
|---------------------------|-------------------|-------|



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#### 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**

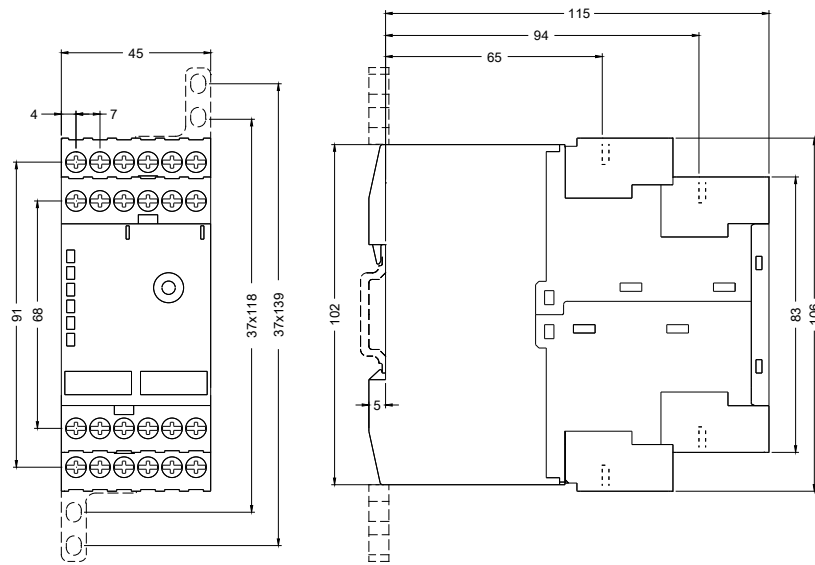
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2828-1AL21>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3TK2828-1AL21>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3TK2828-1AL21&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2828-1AL21&lang=en)



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