SIEMENS

## Data sheet 3TK2810-1KA42



SIRIUS safety relay Safety-oriented Speed monitoring 110-240 V AC/DC, 45 mm overall width Spring-type terminal EC instantaneous: 2 NO EC delayed: 0 SC: 2 electrical Auto-start/manual start Basic device Maximum achievable PL according to EN 13849-1: e Maximum achievable SIL according to IEC 61508: 3

| | |
|---|---|
| **product brand name** | SIRIUS |
| **product designation** | Speed monitor |
| **design of the product** | standstill and speed monitoring |
| **product type designation** | 3TK28 |
| **Product Function** | |
| **product function** | |
| ● automatic start | Yes |
| ● light barrier monitoring | No |
| ● standstill monitoring | Yes |
| ● protective door monitoring | Yes |
| ● magnetically operated switch monitoring NC-NO | No |
| ● magnetically operated switch monitoring NC-NC | No |
| ● rotation speed monitoring | Yes |
| ● laser scanner monitoring | No |
| ● light array monitoring | No |
| ● EMERGENCY OFF function | Yes |
| ● monitored start-up | Yes |
| ● pressure-sensitive mat monitoring | No |
| **product feature cross-circuit-proof** | Yes |
| **suitability for interaction press control** | No |
| **suitability for use** | |
| ● monitoring of floating sensors | Yes |
| ● monitoring of non-floating sensors | No |
| ● position switch monitoring | Yes |
| ● EMERGENCY-OFF circuit monitoring | No |
| ● valve monitoring | No |
| ● opto-electronic protection device monitoring | No |
| ● tactile sensor monitoring | No |
| ● magnetically operated switch monitoring | No |
| ● proximity switch monitoring | Yes |
| ● safety-related circuits | Yes |
| **General technical data** | |
| certificate of suitability UL approval | Yes |
| **insulation voltage rated value** | 300 V |
| **surge voltage resistance rated value** | 4 000 V |
| **protection class IP** | |
| ● of the enclosure | IP20 |
| **shock resistance** | 8 g / 10 ms |
| **vibration resistance according to IEC 60068-2-6** | 10 ... 55 Hz: 0.35 mm |


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| | |
|---|---|
| electrical endurance (operating cycles) typical | 100 000 |
| **Substance Prohibitance (day/month/year)** | 05/01/2012 |
| **SVHC substance name** | Lead monoxide (lead oxide) CAS-No. 1317-36-8 |
| **Net Weight** | 414 g |
| **Ambient conditions** | |
| installation altitude at height above sea level maximum | 2 000 m |
| ● note | installation altitude: 5000 m with derating |
| **ambient temperature** | |
| ● during operation | 0 ... 60 °C; from an operating altitude > 2000 m, the maximum permissible temperature is reduced by 0.5 °C / 100 m |
| ● during storage | -20 ... +70 °C |
| relative humidity during operation | 10 ... 95 % |
| air pressure according to SN 31205 | 90 ... 106 kPa |
| **Electromagnetic compatibility** | |
| **installation environment regarding EMC** | This product is suitable for Class A environments only. In household environments, this device can cause unwanted radio interference. The user is required to implement appropriate measures in this case. |
| **EMC emitted interference** | EN 60947-5-1 |
| **Safety related data** | |
| product function suitable for safety function | Yes |
| **stop category according to IEC 60204-1** | 0 |
| IEC 62061 | |
| SIL Claim Limit (subsystem) according to EN 62061 | 3 |
| **Safety Integrity Level (SIL) according to IEC 62061** | SIL 3 |
| PFHD with high demand rate according to IEC 62061 | 3.4E-9 1/h |
| ISO 13849 | |
| category according to EN ISO 13849-1 | 4 |
| **performance level (PL)** | |
| ● **according to ISO 13849-1** | PL e |
| ● for delayed release circuit according to ISO 13849-1 | e |
| IEC 61508 | |
| **Safety Integrity Level (SIL)** | |
| ● according to IEC 61508 | 3 |
| ● for delayed release circuit according to IEC 61508 | SIL3 |
| **safety device type according to IEC 61508-2** | Type B |
| hardware fault tolerance according to IEC 61508 | 1 |
| T1 value for proof test interval or service life according to IEC 61508 | 20 a |
| Electrical Safety | |
| **touch protection against electrical shock** | finger-safe |
| **Short-circuit protection** | |
| design of the fuse link for short-circuit protection of the NO contacts of the relay outputs required | gL/gG: 4 A |
| **Inputs** | |
| **design of input** | |
| ● cascading input/functional switching | No |
| ● feedback input | Yes |
| ● start input | Yes |
| **number of sensor inputs** | |
| ● 1-channel or 2-channel | 0 |
| ● 2-channel | 3 |
| **Outputs** | |
| **number of outputs as contact-affected switching element** | |
| ● as NC contact | |
| — for signaling function instantaneous contact | 0 |
| — for signaling function delayed switching | 0 |
| — safety-related instantaneous contact | 0 |
| — safety-related delayed switching | 0 |
| ● as NO contact | |
| — for signaling function instantaneous contact | 0 |


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| | |
|---|---|
| — for signaling function delayed switching | 0 |
| — safety-related instantaneous contact | 1 |
| — safety-related delayed switching | 1 |
| **mechanical service life (operating cycles) typical** | 50 000 000 |
| **thermal current of the switching element with contacts maximum** | 5 A |
| **number of outputs as contact-less semiconductor switching element** | |
| ● for signaling function | |
| — delayed switching | 1 |
| — instantaneous contact | 1 |
| ● safety-related | |
| — delayed switching | 0 |
| — instantaneous contact | 0 |
| **switching capacity current of semiconductor outputs** | |
| ● for signaling function at DC-13 at 24 V | 0.02 A |
| **switching capacity current of the NO contacts of the relay outputs at DC-13** | |
| ● at 24 V | 2 A |
| ● at 115 V | 2 A |
| **switching capacity current of the NO contacts of the relay outputs at AC-15** | |
| ● at 24 V | 3 A |
| ● at 230 V | 3 A |
| **switching capacity current of the NC contacts of the relay outputs at AC-15** | |
| ● at 24 V | 3 A |
| ● at 115 V | 3 A |
| ● at 230 V | 2 A |
| **type of switching output** | optionally PNP or NPN |
| **Encoder** | |
| **encoder signal evaluation** | two signal tracks each with inverted signals |
| **type of signal level of the encoder** | optionally TTL, HTL or sin/cos (Ua = 1Vss) |
| **type of failure response of the encoder** | high-resistance |
| **Proximity switch** | |
| **type of voltage of the supply voltage of proximity switches** | DC |
| **supply voltage of proximity switches** | 24 V; provided by the device |
| **current consumption of proximity switches maximum** | 30 mA |
| **input voltage for proximity switch minimum** | 10 V |
| **pulse duration of proximity switches minimum** | 75 µs |
| **interpulse period of proximity switches minimum** | 75 µs |
| **adjustment range of signal frequency of proximity switches** | 1 Hz ... 2 kHz |
| **measuring precision** | +-2 % |
| **switching hysteresis** | 6.25 % |
| **Control circuit/ Control** | |
| **type of voltage of the control supply voltage** | AC/DC |
| **control supply voltage 1 at AC** | |
| ● at 50 Hz | 110 ... 240 V |
| ● at 60 Hz | 110 ... 240 V |
| **control supply voltage frequency** | |
| **● 1 rated value** | 50 Hz |
| **● 2 rated value** | 60 Hz |
| **control supply voltage 1 at DC** | 110 ... 240 V |
| **operating range factor control supply voltage rated value of magnet coil at DC** | |
| ● initial value | 0.8 |
| ● full-scale value | 1.1 |
| **operating range factor control supply voltage rated value of magnet coil at AC** | |
| ● at 50 Hz | 0.8 ... 1.1 |
| ● at 60 Hz | 0.8 ... 1.1 |


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| Installation/ mounting/ dimensions | |
|---|---|
| **mounting position** | any |
| **fastening method** | screw and snap-on mounting |
| **height** | 107.7 mm |
| **width** | 45 mm |
| **depth** | 124.3 mm |
| **Connections/ Terminals** | |
| **type of electrical connection** | spring-loaded terminals |
| **type of connectable conductor cross-sections** | |
| ● solid | 1x (0.5 ... 4 mm²) |
| ● finely stranded with core end processing | 2 x (0.25 ... 1.5 mm²) |
| ● finely stranded without core end processing | 2x (0.25 ... 1.5 mm²) |
| ● for AWG cables solid | 2x (24 ... 16) |
| ● for AWG cables stranded | 2x (20 ... 16) |
| **connectable conductor cross-section** | |
| ● solid | 0.25 ... 1.5 mm² |
| ● finely stranded with core end processing | 0.25 ... 1.5 mm² |
| ● finely stranded without core end processing | 0.25 ... 1.5 mm² |
| **AWG number as coded connectable conductor cross section** | |
| ● solid | 24 ... 16 |
| ● stranded | 24 ... 16 |

**Approvals Certificates**

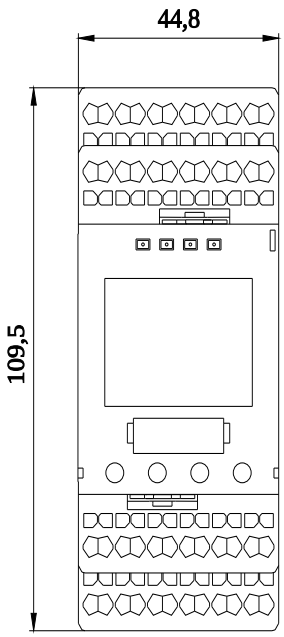
| Environment | General Product Approval | | | | |
|---|---|---|---|---|---|
| Environmental Confirmations | CCC | UL | EAC | CE EG-Konf. | UKCA |

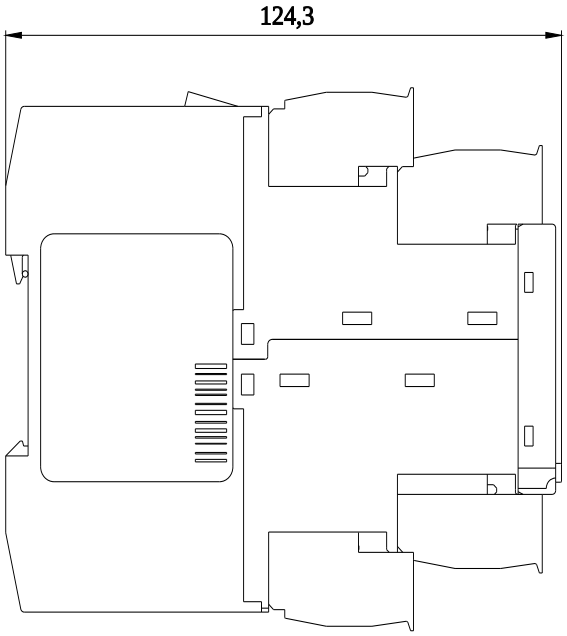
| Functional Saftey | Test Certificates | other | | Railway |
|---|---|---|---|---|
| Type Examination Certificate | Special Test Certificate | Confirmation | 产品合格 QC PASS | Confirmation |

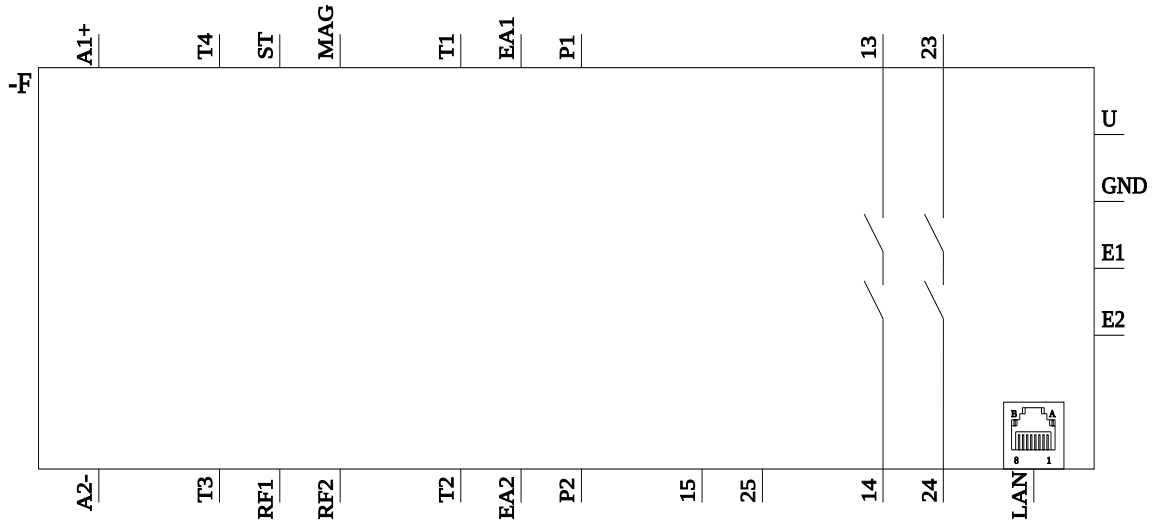
**Further information**

**Information on the packaging**
https://support.industry.siemens.com/cs/ww/en/view/109813875
**Information for data generation and storage**
https://support.industry.siemens.com/cs/ww/en/view/109995012
**Information- and Downloadcenter (Catalogs, Brochures,…)**
https://www.siemens.com/ic10
**Industry Mall (Online ordering system)**
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3TK2810-1KA42
**Cax online generator**
https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3TK2810-1KA42
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3TK2810-1KA42
**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3TK2810-1KA42&lang=en


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