# DATASHEET

## SRB301ST-24V-(V.2)

- Suitable for the signal processing of outputs with contact sensors
- Suitable for signal processing of outputs connected to potentials (AOPDs), e.g. safety light grids/curtains
- Suitable for the signal processing of outputs with contact sensors
- 3 safety contacts, STOP 0
- 1 Signalling output

## Data

### Approvals - Standards

| | |
|---|---|
| Certificates | TÜV<br>cULus<br>CCC<br>TILVA |

### General data

| | |
|---|---|
| Standards | EN IEC 62061<br>EN 81-20/-50<br>EN ISO 13849-1<br>EN IEC 60947-5-1<br>EN IEC 60947-5-3<br>EN IEC 60947-5-5<br>EN IEC 61508<br>EN IEC 60204-1<br>EN IEC 60947-1 |
| Climatic stress | EN 60068-2-78 |
| Enclosure material | Glass-fibre reinforced thermoplastic, ventilated |
| Gross weight | 250 g |

### General data - Features

| | |
|---|---|
| Stop-Category | 0 |

| | |
|---|---|
| Electronic Fuse | Yes |
| Wire breakage detection | Yes |
| Cross-circuit detection | Yes |
| Removable Terminals | Yes |
| Start input | Yes |
| Feedback circuit | Yes |
| Automatic reset function | Yes |
| Reset edge detection | Yes |
| Earth connection detection | Yes |
| Integral system diagnostics, status | Yes |
| Number of auxiliary contacts | 1 |
| Number of LEDs | 5 |
| Number of normally closed (NC) | 2 |
| Number of safety contacts | 3 |

**Safety classification**

| | |
|---|---|
| Standards | EN ISO 13849-1<br>EN IEC 62061<br>EN IEC 61508 |

**Safety classification - Relay outputs**

| | |
|---|---|
| Performance Level, stop 0, up to | e |
| Category, Stop 0 | 4 |
| Diagnostic Coverage (DC) Level, Stop 0 | ≥ 99 % |
| PFH value, Stop 0 | 2.00 x $10^{-8}$ /h |

| | |
|---|---|
| Safety Integrity Level (SIL), Stop 0, suitable for applications in | 3 |
| Mission time | 20 Year(s) |
| Common Cause Failure (CCF), minimum | 65 |

## Mechanical data

| | |
|---|---|
| Mechanical life, minimum | 10,000,000 Operations |
| Mounting | Snaps onto standard DIN rail to EN 60715 |

## Mechanical data - Connection technique

| | |
|---|---|
| Termination | rigid or flexible<br>Screw connection, plug-in |
| Terminal designations | IEC/EN 60947-1 |
| Cable section, minimum | 0.25 mm² |
| Cable section, maximum | 2.5 mm² |
| Tightening torque of Clips | 0.6 Nm |

## Mechanical data - Dimensions

| | |
|---|---|
| Width | 22.5 mm |
| Height | 120 mm |
| Depth | 121 mm |

## Ambient conditions

| | |
|---|---|
| Degree of protection of the enclosure | IP40 |

| | |
|---|---|
| Degree of protection of the mounting space | IP54 |
| Degree of protection of clips or terminals | IP20 |
| Ambient temperature | -25 ... +60 °C |
| Storage and transport temperature, minimum | -40 °C |
| Storage and transport temperature, maximum | +85 °C |
| Resistance to vibrations | 10 ... 55 Hz, Amplitude 0.35 mm |
| Restistance to shock | 30 g / 11 ms |

## Ambient conditions - Insulation values

| | |
|---|---|
| Rated impulse withstand voltage U<sub>imp</sub> | 4 kV |
| Overvoltage category | III |
| Degree of pollution | 2 |

## Electrical data

| | |
|---|---|
| Frequency range | 50 Hz<br>60 Hz |
| Operating voltage | 24 VAC -15 % / +10 %<br>24 VDC -10 % / +20 % |
| Ripple voltage | 10 % |
| Rated operating voltage | 24 VAC |
| Rated operating voltage | 24 VDC |
| Rated AC voltage for controls, 50 Hz, minimum | 20.4 VAC |

| | |
|---|---|
| Rated control voltage at AC 50 Hz, maximum | 26.4 VAC |
| Rated AC voltage for controls, 60 Hz, minimum | 20.4 VAC |
| Rated control voltage at AC 60 Hz, maximum | 26.4 VAC |
| Rated AC voltage for controls at DC minimum | 20.4 VDC |
| Rated control voltage at DC, maximum | 28.8 VDC |
| Electrical power consumption | 2 W |
| Electrical power consumption | 4.9 VA |
| Contact resistance, maximum | 0.1 Ω |
| Note (Contact resistance) | in new state |
| Drop-out delay in case of power failure, typically | 80 ms |
| Drop-out delay in case of emergency, typically | 20 ms |
| Pull-in delay at automatic start, maximum, typically | 100 ms |
| Pull-in delay at RESET, typically | 20 ms |
| Material of the contacts, electrical | AgSn0. self-cleaning, positive drive |

## Electrical data - Safe relay outputs

| | |
|---|---|
| Voltage, Utilisation category AC-15 | 230 VAC |
| Current, Utilisation category AC-15 | 6 A |

| | |
|---|---|
| Voltage, Utilisation category DC-13 | 24 VDC |
| Current, Utilisation category DC-13 | 6 A |
| Switching capacity, minimum | 10 VDC |
| Switching capacity, minimum | 10 mA |
| Switching capacity, maximum | 250 VAC |
| Switching capacity, maximum | 8 A |

## Electrical data - Digital inputs

| | |
|---|---|
| Conduction resistance, maximum | 40 Ω |

## Electrical data - Relay outputs (auxiliary contacts)

| | |
|---|---|
| Switching capacity, maximum | 24 VDC |
| Switching capacity, maximum | 2 A |

## Electrical data - Electromagnetic compatibility (EMC)

| | |
|---|---|
| EMC rating | EMC-Directive |

## Status indication

| | |
|---|---|
| Note (LED switching conditions display) | QS: cross-wire short detection status (LED on when cross-wire short detection active). |
| Indicated operating states | Position relay K2<br>Position relay K1<br>Internal operating voltage $U_i$ |

## Other data

| | |
|---|---|
| Note (applications) | Safety sensor<br>Guard system<br>Emergency-Stop button<br>Pull-wire emergency stop switches<br>Safety light barriers |

### Note

| | |
|---|---|
| Note (General) | Inductive loads (e.g. contactors, relays, etc.) are to be suppressed by means of a suitable circuit. |

### Wiring example

| | |
|---|---|
| Note (Wiring diagram) | The wiring diagram is shown with guard doors closed and in de-energised condition.<br>Input level: The example shows a 2-channel control of a guard door monitoring with two position switches, whereof one with positive break, external reset button (R) and feedback circuit (H2).<br>Relay outputs: Suitable for 2 channel control, for increase in capacity or number of contacts by means of contactors or relays with positive-guided contacts.<br>The control recognises cross-short, cable break and earth leakages in the monitoring circuit.<br>Switch setting: The cross-wire short detection function (factory default) is programmed by means of the switch located underneath the front cover of the module: Pposition nQS (top): no cross-wire short protection, suitable for 1-channel applications and applications with outputs with potential in the control circuits. Position QS (bottom): cross-wire short protection, suitable for 2-channel applications without outputs with potential in the control circuits.<br>For 1-channel control, connect NC contact to S11/S12 and bridge S12/S22 (QS-switch = nQS)<br>Connect potential p-type outputs of safety light grids/curtains to S12/S22. The devices must have the same reference potential. QS-switch = nQS<br>Automatic start: The automatic start is programmed by connecting the feedback circuit to the terminals S12/X3. If the feedback circuit is not required, establish a bridge.<br>F1 = Hybrid fuse |

## Pictures

### Product picture (catalogue individual photo)

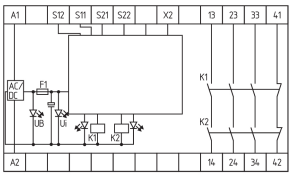

ID: ksrb3f04
| 808.3 kB | .jpg | 265.994 x 625.122 mm - 754 x 1772 px - 72 dpi
| 101.1 kB | .png | 74.083 x 173.919 mm - 210 x 493 px - 72 dpi

## Symbol (technical standard)

| K | n-op/y | t-cycle |
|---|---|---|
| 20 % | 525.600 | 1,0 min |
| 40 % | 210.240 | 2,5 min |
| 60 % | 75.087 | 7,0 min |
| 80 % | 30.918 | 17,0 min |
| 100 % | 12.223 | 43,0 min |

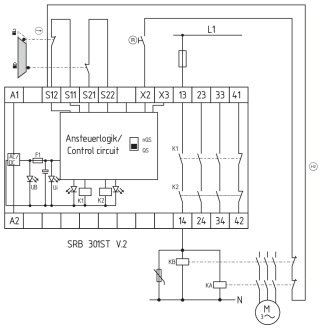
ID: kformm02
| 191.1 kB | .jpg | 352.778 x 246.592 mm - 1000 x 699 px - 72 dpi

## Wiring example



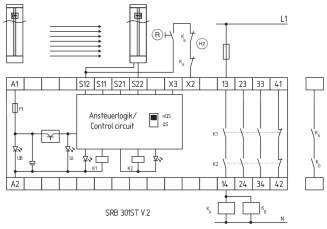

ID: 1srb3l05
| 69.6 kB | .cdr |
| 96.2 kB | .jpg | 352.778 x 248.003 mm - 1000 x 703 px - 72 dpi

## Wiring example




ID: ksrb3l05
| 44.5 kB | .cdr |
| 161.4 kB | .jpg | 352.778 x 360.892 mm - 1000 x 1023 px - 72 dpi

## Wiring example




ID: ksrb3l26
| 36.4 kB | .cdr |
| 125.5 kB | .jpg | 352.778 x 241.3 mm - 1000 x 684 px - 72 dpi