# DATASHEET



## CSS 11-30S-D-M-ST

- Stainless steel enclosure
- Max. 31 sensors can be wired in series.
- Connector M12, 8-pole
- Ø M30
- High repeat accuracy of the switching points
- Max. length of the sensor chain 200 m
- 2 short-circuit proof PNP safety outputs
- Integral cross-short, wire-breakage and external voltage monitoring of the safety cables up to the control cabinet
- Safety sensor can also be installed behind V4A covers.

## Data

### Ordering data

| | |
|---|---|
| Product type description | CSS 11-30S-D-M-ST |
| Article number (order number) | 101204612 |
| EAN (European Article Number) | 4030661381664 |
| eCl@ss number, version 12.0 | 27-27-46-01 |
| eCl@ss number, version 11.0 | 27-27-24-03 |
| eCl@ss number, version 9.0 | 27-27-24-03 |
| ETIM number, version 7.0 | EC001829 |
| ETIM number, version 6.0 | EC001829 |

### Approvals - Standards

| | |
|---|---|
| Certificates | TÜV<br>cULus<br>UKCA |

## General data

| | |
|---|---|
| Standards | EN IEC 60947-5-3<br>EN IEC 61508 |
| Working principle | inductive |
| Housing construction form | Cylinder, thread |
| Installation conditions (mechanical) | not flush |
| Sensor topology | Sensor for series wiring |
| Housing material | Stainless steel |
| Reaction time, maximum | 60 ms |
| Duration of risk, maximum | 60 ms |
| Gross weight | 245 g |

## General data - Features

| | |
|---|---|
| Diagnostic output | Yes |
| Short circuit detection | Yes |
| Cross-circuit detection | Yes |
| Safety functions | Yes |
| Cascadable | Yes |
| Integral system diagnostics, status | Yes |
| Number of LEDs | 2 |
| Number of semi-conductor outputs with signaling function | 1 |
| Number of fail-safe digital outputs | 2 |
| Number of series-wiring of sensors | 31 |

### Safety classification

| | |
|---|---|
| Standards | EN ISO 13849-1<br>EN IEC 60947-5-3<br>EN IEC 61508 |

| | |
|---|---|
| Performance Level, up to | e |
| Category | 4 |
| PFH value | 3.60 x $10^{-9}$ /h |
| Safety Integrity Level (SIL), suitable for applications in | 3 |
| Mission time | 20 Year(s) |

## Mechanical data

| | |
|---|---|
| Actuating panels | Actuation from top |
| Active area | front side |

## Mechanical data - Switching distances according EN IEC 60947-5-3

| | |
|---|---|
| Switch distance, typical | 11 mm |
| Assured switching distance "ON" $S_{ao}$ | 8 mm |
| Assured switching distance "OFF" $S_{ar}$ | 15 mm |
| Hysteresis (Switching distance), maximum | 2 mm |
| Repeat accuracy R | 1 mm |

## Mechanical data - Connection technique

| | |
|---|---|
| Note (length of the sensor chain) | Cable length and cross-section change the voltage drop dependiing on the output current |

## Mechanical data - Dimensions

| | |
|---|---|
| ISO thread of the sensor | M30 |
| Length of sensor | 99.5 mm |

## Ambient conditions

| | |
|---|---|
| Degree of protection | IP65<br>IP67<br>IP69 |
| Ambient temperature | -25 ... +65 °C |
| Storage and transport temperature | -25 ... +85 °C |
| Resistance to vibrations | 10 … 55 Hz, amplitude 1 mm |
| Restistance to shock | 30 g / 11 ms |
| Protection class | II |

## Ambient conditions - Insulation values

| | |
|---|---|
| Rated insulation voltage $U_i$ | 32 VAC/DC |
| Rated impulse withstand voltage $U_{imp}$ | 0.8 kV |
| Overvoltage category | III |
| Degree of pollution | 3 |

## Electrical data

| | |
|---|---|
| Operating voltage | 24 VDC -15 % / +10 % |
| No-load supply current $I_0$, typical | 100 mA |
| Rated operating voltage | 24 VDC |
| Operating current | 600 mA |
| Required rated short-circuit current | 100 A |
| Switching frequency, approx. | 3 Hz |
| Utilisation category DC-12 | 24 VDC / 0.05 A |

## Electrical data - Safety digital outputs

| | |
|---|---|
| Rated operating current (safety outputs) | 250 mA |
| Output current, (fail-safe output), maximum | 0.25 A |
| Design of control elements | p-type |

| | |
|---|---|
| Voltage drop $U_d$, maximum | 0.5 V |
| Leakage current $I_r$, maximum | 0.5 mA |
| Voltage, Utilisation category DC-12 | 24 VDC |
| Current, Utilisation category DC-12 | 0.25 A |
| Voltage, Utilisation category DC-13 | 24 VDC |
| Current, Utilisation category DC-13 | 0.25 A |

## Electrical data - Diagnostic outputs

| | |
|---|---|
| Design of control elements | p-type |
| Voltage drop $U_d$, maximum | 5 V |
| Voltage, Utilisation category DC-12 | 24 VDC |
| Current, Utilisation category DC-12 | 0.05 A |
| Voltage, Utilisation category DC-13 | 24 VDC |
| Current, Utilisation category DC-13 | 0.05 A |

## Electrical data - Electromagnetic compatibility (EMC)

| | |
|---|---|
| Interfering radiation | IEC 61000-6-4 |
| EMC rating | IEC 61000-6-2 |

## Pin assignment

| | |
|---|---|
| PIN 1 | 1A1 Ue: (1) |
| PIN 2 | X1 Safety input 1 |
| PIN 3 | A2 GND |
| PIN 4 | Y1 Safety output 1 |
| PIN 5 | OUT Diagnostic output |
| PIN 6 | X2 Safety input 2 |

| | |
|---|---|
| PIN 7 | Y2 Safety output 2 |
| PIN 8 | IN without function |

### Scope of delivery

| | |
|---|---|
| Scope of delivery | Actuator must be ordered separately. |
| Scope of delivery of mounting material | 2x Mounting material M30 x 1.5 nuts |

### Accessory

| | |
|---|---|
| Recommendation (actuator) | CST 30S-1 |
| Recommended safety switchgear | PROTECT PSC1<br>SRB-E-301ST<br>SRB-E-201LC |

### Note

| | |
|---|---|
| Note (General) | Evaluation requirements: The switch-off pauses of 250 µs – 1500 µs must be tolerated by the evaluation.<br>The switch-off time of the safety sensor of 250 µs is additionally extended according the cable length and the capacity of the cable used. Typically a switch off time of 500 µs with 100 m of connection cable is reached. |

### Ordering code

Product type description:
CSS 30S-(1)-M-ST

(1)

| | |
|---|---|
| **D** | With diagnostic output |
| **SD** | Serial diagnostic output |

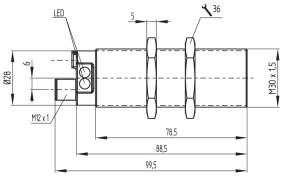
## Pictures

### Product picture (catalogue individual photo)



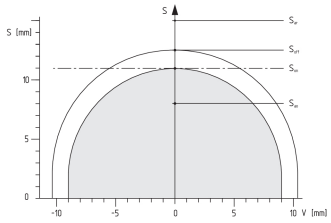
ID: kcss3f14
| 310.8 kB | .jpg | 352.778 x 529.167 mm - 1000 x 1500 px - 72 dpi
| 29.4 kB | .png | 74.083 x 111.125 mm - 210 x 315 px - 72 dpi
| 21.0 kB | .jpg | 82.197 x 123.472 mm - 233 x 350 px - 72 dpi

## Dimensional drawing basic component



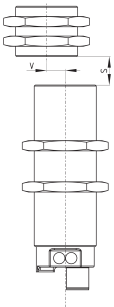

ID: 1css3g05
| 30.3 kB | .cdr |
| 3.7 kB | .png | 74.083 x 51.153 mm - 210 x 145 px - 72 dpi
| 84.4 kB | .jpg | 352.778 x 243.769 mm - 1000 x 691 px - 72 dpi

## Characteristic curve



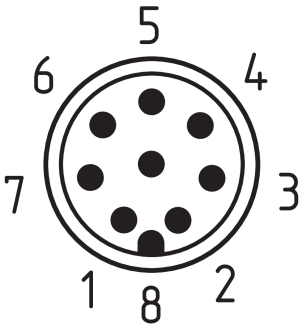

ID: kcss3d03
| 21.1 kB | .cdr |
| 3.4 kB | .png | 74.083 x 49.036 mm - 210 x 139 px - 72 dpi
| 75.4 kB | .jpg | 352.778 x 233.892 mm - 1000 x 663 px - 72 dpi

## Operating principle



ID: kcss3a09
| 31.2 kB | .cdr |
| 221.5 kB | .jpg | 352.778 x 1053.394 mm - 1000 x 2986 px - 72 dpi
| 3.6 kB | .png | 74.083 x 221.192 mm - 210 x 627 px - 72 dpi

## Contact arrangement




ID: km23-k8b
| 5.3 kB | .png | 73.731 x 79.728 mm - 209 x 226 px - 72 dpi
| 139.8 kB | .jpg | 352.778 x 380.647 mm - 1000 x 1079 px - 72 dpi

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The details and data referred to have been carefully checked. Images may diverge from original. Further technical data can be found in the manual. Technical amendments and errors possible.
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