DATASHEET

CSS 8-180-2P+D-E-LST

- Connector M12, 5-pole
- Comfortable diagnostics through sensor LED and electronic signalling output
- Thermoplastic enclosure
- Electronic contact-free, coded system
- Misaligned actuation possible
- High repeat accuracy of the switching points
- Max. length of the sensor chain 200 m
- Early warning when operating near the limit of the sensor's hysteris range
- Self-monitoring series-wiring of 16 sensors
- 2 short-circuit proof PNP safety outputs

Data

Ordering data

Product type description	CSS 8-180-2P+D-E-LST
Article number (order number)	101169553
EAN (European Article Number)	4030661295978
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 cULus UKCA

General data

Standards	EN IEC 60947-5-3 EN IEC 61508
Coding level according to EN ISO 14119	Low
Working principle	inductive
Housing construction form	Cylinder, thread
Installation conditions (mechanical)	not flush
Sensor topology	Individual sensor or end sensor in a series
Housing material	Glass-fibre, reinforced thermoplastic
Active area	Glass-fibre, reinforced thermoplastic
Material of the nuts	Glass-fibre, reinforced thermoplastic
Reaction time, maximum	30 ms
Duration of risk, maximum	30 ms
Gross weight	145 g

General data - Features

Short circuit detection	Yes
Cross-circuit detection	Yes
Safety functions	Yes
Integral system diagnostics, status	Yes
Number of semi-conductor outputs with signaling function	1
Number of fail-safe digital outputs	2
Number of series-wiring of sensors	16

Safety classification

Standards	EN ISO 13849-1 EN IEC 60947-5-3 EN IEC 61508
Performance Level, up to	e
Category	4
PFH value	2.50 x 10^{-9} /h
Safety Integrity Level (SIL), suitable for applications in	3
Mission time	20 Year(s)

Mechanical data

Tightening torque of nuts, maximum	3 Nm

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

Switch distance, typical	8 mm
Assured switching distance "ON" S_{ao}	7 mm
Assured switching distance "OFF" S_{ar}	10 mm
Hysteresis (Switching distance), maximum	0.7 mm
Repeat accuracy R	0.2 mm

Mechanical data - Connection technique

Length of cable	2 m
Termination	Connector M12, 5-pole, A-coded
Terminal connector, Output	M12 connector, 5 pole

Mechanical data - Dimensions

ISO thread of the sensor	M18
width across flats	24 BK
Length of sensor	92 mm

Ambient conditions

Degree of protection	IP65 IP67
Ambient temperature	-25 ... +60 °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 VDC
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	50 mA
Rated operating voltage	24 VDC
Operating current	1,000 mA
Switching frequency, approx.	3 Hz
Utilisation category DC-12	24 VDC / 0.05 A

Electrical data - Safety digital outputs

Rated operating current (safety outputs)	500 mA
Output current, (fail-safe output), maximum	0.5 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	0.5 A
Voltage, Utilisation category DC-13	24 VDC
Current, Utilisation category DC-13	0.5 A

Electrical data - Diagnostic outputs

Rated operating voltage	24 VDC
Design of control elements	p-type
Voltage drop U_d, maximum	4 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

Status indication

Note (LED switching conditions display)	Multi-coloured LED: Green, Red, Yellow

Pin assignment

PIN 1	1A1 Ue: (1)
PIN 2	Y2 Safety output 2
PIN 3	A2 GND
PIN 4	Y1 Safety output 1
PIN 5	Signalling output

Scope of delivery

Scope of delivery	Actuator must be ordered separately.
Scope of delivery of mounting material	2x nuts M18 x 1

Accessory

Recommendation (actuator)	CST 180-1 CST 180-2
Recommended safety switchgear	PROTECT PSC1 SRB-E-301ST SRB-E-201LC

Note

Note (General)	Evaluation requirements: dual-channel safety input, suitable for p-type sensors with NO function. The safety-monitoring module must tolerate internal functional tests of the sensors with cyclic switch-off of the sensor outputs for max. 0.25 ms. Short-circuit recognition by the evaluation is not necessary.

Ordering code

Product type description:
CSS 8-180-(1)-(2)-(3)

(1)

2P	2 short-circuit proof PNP safety outputs
2P+D	2 short-circuit proof PNP safety outputs and diagnostic output

(2)

E	Individual sensor or end sensor in a series
Y	Series-wiring
M	Multifunction connection

(3)

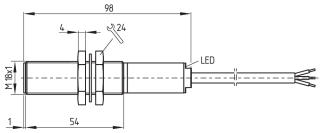
L	Cable
LST	Cable with connector
ST	Connector plug

Pictures

Product picture (catalogue individual photo)

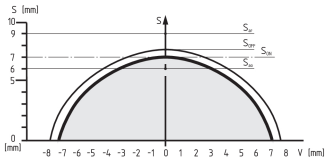
ID: kcs18f01
| 188.8 kB | .jpg | 352.778 x 164.747 mm - 1000 x 467 px - 72 dpi
| 15.4 kB | .png | 74.083 x 34.572 mm - 210 x 98 px - 72 dpi
| 26.2 kB | .jpg | 123.472 x 57.503 mm - 350 x 163 px - 72 dpi

Dimensional drawing basic component



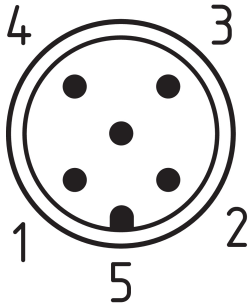
ID: 1css1g01
| 24.2 kB | .cdr |
| 4.9 kB | .png | 74.083 x 29.633 mm - 210 x 84 px - 72 dpi
| 54.5 kB | .jpg | 352.778 x 140.758 mm - 1000 x 399 px - 72 dpi

Characteristic curve



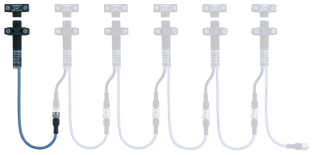
ID: kcss1d03
| 3.0 kB | .png | 74.083 x 35.278 mm - 210 x 100 px - 72 dpi
| 83.4 kB | .jpg | 352.778 x 168.275 mm - 1000 x 477 px - 72 dpi

Contact arrangement



ID: km12-k5d
| 17.3 kB | .cdr |
| 5.9 kB | .png | 74.083 x 96.661 mm - 210 x 274 px - 72 dpi
| 151.6 kB | .jpg | 352.778 x 460.728 mm - 1000 x 1306 px - 72 dpi

Wiring example



ID: kcs18f21
| 127.3 kB | .jpg | 352.778 x 178.858 mm - 1000 x 507 px - 72 dpi