



CSS 8-180-2P-E-L

- Pre-wired cable 4-pole
- 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 hysteresis range
- Self-monitoring series-wiring of 16 sensors
- 2 short-circuit proof PNP safety outputs

Data

Ordering data

EAN (European Article Number)	4030661219509
eCl@ss number, Version 9.0	27-27-24-03
eCl@ss number, Version 11.0	27-27-24-03

Approval - Standards

Certificates	cULus EAC
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General data

Standards	IEC 61508 IEC 60947-5-3
Active principle	inductive

Housing construction form	Cylinder, thread
Installation conditions (mechanical)	not flush
Sensor topology	Individual sensor or end sensor in a series
Enclosure material	Glass-fibre, reinforced thermoplastic
Active area	Glass-fibre, reinforced thermoplastic
Material of the nuts	Glass-fibre, reinforced thermoplastic
Gross weight	137.4 g
Reaction time, maximum	30 ms
Duration of risk, maximum	30 ms

General data - Features

Short circuit detection	Yes
Short-circuit recognition	Yes
Safety functions	Yes
Integral System Diagnostics, status	Yes
Number of fail-safe digital outputs	2
Number of Series-wiring of sensors	16

Safety appraisal

Standards	EN ISO 13849-1 IEC 60947-5-3 IEC 61508
Performance level, up to	e
Control category to EN13849	4
PFH-value	2.50×10^{-9} /h
Safety Integrity Level (SIL), suitable for applications in	3
Mission Time	20 Year(s)

Mechanical data

Hysteresis (Switch distance), maximum	0.7 mm
Repeat accuracy R R	0.2 mm
Tightening torque of nuts, maximum	3 Nm

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

Switch distance	8 mm
Ensured switch distance "ON" S_{ao}	7 mm
Ensured switch distance "OFF" S_{ar}	10 mm

Mechanical data - Connection technique

Terminal Connector	Cable
Length of cable	2 m
Terminal connector, Output	4-pole
Wire cross-section	0.5 mm ²
Wire cross-section	20 AWG

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 to EN 60529 IP67 to EN 60529
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Ambient temperature, minimum	-25 °C
Ambient temperature, maximum	+60 °C
Storage and transport temperature, minimum	-25 °C
Storage and transport temperature, maximum	+85 °C
Resistance to vibrations to EN 60068-2-6	10 ... 55 Hz, amplitude 1 mm
Resistance to shock	30 g / 11 ms
Protection rating	II

Ambient conditions - Insulation value

Rated insulation voltage U_i	32 VDC
Rated impulse withstand voltage U_{imp}	0.8 kV
Overvoltage category	III
Degree of pollution to VDE 0100	3

Electrical data

Voltage type	DC (direct current)
Operating voltage, minimum	20.4 VDC
Operating voltage, maximum	26.4 VDC
No-load supply current I_0	50 mA
Rated operating voltage	24 VDC
Operating current	1,000 mA
Switching frequency, approx.	3 Hz

Electrical data - Fail-safe digital outputs

Rated operating current (safety outputs)	500 mA
Output current, (fail-safe output), maximum	0.5 A
Versions	p-type
Voltage drop U_d , maximum	0.5 V
Current leakage I_r	0.5 mA
Voltage, Utilisation category DC12	24 VDC
Current, Utilisation category DC12	0.5 A
Voltage, Utilisation category DC13	24 VDC
Current, Utilisation category DC13	0.5 A

Status indication

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

PIN 1	A1 Ue Brown
PIN 2	Y2 safety output 2: White
PIN 3	A2 GND Blue
PIN 4	Y1 Safety output 1 Black

Scope of delivery

Included in delivery	Actuators must be ordered separately.
Delivery scope 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

Notes

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.
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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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